

Appendix I

Geomembrane Quality Control Documents And Inventory

Appendix I.1 - Résumés of Installation Personnel

Appendix I.2 - 80-mil LLDPE DSMS Geomembrane Site Inventory Control

Appendix I.3 - 40-mil LLDPE Smooth Geomembrane Site Inventory Control

Appendix I.4 - 80-mil LLDPE DSMS Geomembrane Roll Quality Control Certificates

Appendix I.5 - 40-mil LLDPE Smooth Geomembrane Roll Quality Control Certificates

Appendix I.6 - 80-mil LLDPE DSMS Geomembrane Resin Quality Control Certificates

Appendix I.7 - 40-mil LLDPE Smooth Geomembrane Resin Quality Control Certificates

Appendix I.8 – Welding Rod Resin Quality Control Certificates

Appendix I.9 – Geotextile Roll Quality Control Certificates

Appendix I.1

Résumés of Installation Personnel



GILBERTO BELLO
PROJECT SUPERINTENDENT

Gilberto has been active in the geosynthetics installation industry since 1992. He has 22 years experience as a Project Superintendent. He is responsible for day to day site management, quality, safety, production and personnel training. He has assisted in all aspects of lining system installation and has had in-house training and hands on experience satisfying all the criteria required to be rated as a Superintendent, Master Welder, QC Technician and Equipment Operator. Gilberto has successfully supervised 138 million square feet of geosynthetics throughout his outstanding career. Gilberto has completed numerous complex liner installation projects across the United States and internationally, including several Hazardous Waste Disposal Facilities.

Gilberto is up to date on the following trainings such as; MSHA (Part 48), OSHA (30), Access Rope and holds Safety Certifications in (CPR, First Aid and Forklift Driver).

Components Installed

- HDPE (Textured & Smooth)
- LLDPE (Textured & Smooth)
- Hypalon
- XR 5
- Polypropylene
- Geotextiles
- Geocomposites
- PVC
- GCL
- Geo-Net
- HDPE Sumps
- Pipe Boots
- Batten Systems

Applications

- Landfill Cells (including Haz)
- Landfill Closures
- Leachate Ponds
- Waste Water Lagoons
- Potable Water Reservoirs
- Evaporation Ponds
- Leach Pads
- Process Ponds
- Tank Liners
- Tailings Impoundments
- Floating Covers
- Secondary Containment
- Methane Barriers

The Superintendent is the direct contact between the Project Manager and the craftsmen performing installation tasks. His job is to implement the plans, budget and monitor the progress on a daily basis as well as assist with updates on critical path schedules. The Superintendent and Project Manager work together as a team to ensure that each project is delivered on-time, within budget and at the highest quality.



DANTE TELLEZ
QUALITY CONTROL TECHNICIAN

Dante Tellez has 4 years of experience in installation, inspection and quality control of a variety of synthetic liners and components. He is qualified to serve as an assistant to the onsite superintendent. He has assisted in all aspects of lining system installation and has had in-house training and hands on experience that has met all the criteria required to be rated as a Master Seamer, QC Technician and Installer. He has a Geomembrane Master Welder rating which requires a minimum of five million square feet of hands on welding experience with all currently utilized machines and methods. He is also qualified to assist in the training of Geomembrane Welders, QC Technician and Installers.

Components Installed

- HDPE (Textured & Smooth)
- LLDPE (Textured & Smooth)
- Hypalon
- XR 5
- Polypropylene
- Geotextiles
- Geocomposites
- PVC
- GCL
- Geo-Net
- HDPE Sumps
- Pipe Boots
- Batten Systems

Applications

- Landfill Cells (including Haz)
- Landfill Closures
- Leachate Ponds
- Waste Water Lagoons
- Potable Water Reservoirs
- Evaporation Ponds
- Leach Pads
- Process Ponds
- Tank Liners
- Tailings Impoundments
- Floating Covers
- Secondary Containment
- Methane Barriers



JUAN DELGADO
QUALITY CONTROL TECHNICIAN

Juan Delgado has 21 years of experience in installation, inspection and quality control of a variety of synthetic liners and components. He is qualified to serve as an assistant to the onsite superintendent. He has assisted in all aspects of lining system installation and has had in-house training and hands on experience that has met all the criteria required to be rated as a Geomembrane Welder and Installer. He has a Geomembrane Master Welder rating which requires a minimum of five million square feet of hands on welding experience with all currently utilized machines and methods. He is also qualified to assist in the training of Geomembrane Welders and Installers.

Components Installed

- HDPE (Textured & Smooth)
- LLDPE (Textured & Smooth)
- Hypalon
- XR 5
- Polypropylene
- Geotextiles
- Geocomposites
- PVC
- GCL
- Geo-Net
- HDPE Sumps
- Pipe Boots
- Batten Systems

Applications

- Landfill Cells (including Haz)
- Landfill Closures
- Leachate Ponds
- Waste Water Lagoons
- Potable Water Reservoirs
- Evaporation Ponds
- Leach Pads
- Process Ponds
- Tank Liners
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- Secondary Containment
- Methane Barriers



ABRAHAM ROBLES CAMPOS
MASTER SEAMER

Abraham Robles Campos has 22 years of experience in installation and seaming of a variety of synthetic liners and components. He has assisted in all aspects of lining system installation and has had in-house training and hands on experience that has met all the criteria required to be rated as a Master Seamer, Equipment Operator and Installer. He has a Master Seamer rating which requires a minimum of five million square feet of hands on welding experience with all currently utilized machines and methods. He is also qualified to assist in the training of Geomembrane Welders, Equipment Operator, and Installers.

Components Installed

- HDPE (Textured & Smooth)
- LLDPE (Textured & Smooth)
- Hypalon
- XR 5
- Polypropylene
- Geotextiles
- Geocomposites
- PVC
- GCL
- Geo-Net
- HDPE Sumps
- Pipe Boots
- Batten Systems

Applications

- Landfill Cells (including Haz)
- Landfill Closures
- Leachate Ponds
- Waste Water Lagoons
- Potable Water Reservoirs
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- Process Ponds
- Tank Liners
- Tailings Impoundments
- Floating Covers
- Secondary Containment
- Methane Barriers



PATRICIO CARBAJAL
FOREMAN / MASTER SEAMER

Patricio Carbajal has 15 years of experience in installation and seaming of a variety of synthetic liners and components. He is qualified to serve as an assistant to the on site Superintendent. He has assisted in all aspects of lining system installation and has had in-house training and hands on experience that has met all the criteria required to be rated as a Master Seamer, QC Technician, Installer, and Equipment Operator. He has a Master Seamer rating which requires a minimum of five million square feet of hands on welding experience with all currently utilized machines and methods. He is also qualified to assist in the training of Geomembrane Welders, QC Technicians, Equipment Operators and Installers.

Components Installed

- HDPE (Textured & Smooth)
- LLDPE (Textured & Smooth)
- Hypalon
- XR 5
- Polypropylene
- Geotextiles
- Geocomposites
- PVC
- GCL
- Geo-Net
- HDPE Sumps
- Pipe Boots
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Applications

- Landfill Cells (including Haz)
- Landfill Closures
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**OSCAR MIRANDA
MASTER SEAMER**

Oscar Miranda has 15p years of experience in installation and seaming of a variety of synthetic liners and components. He has assisted in all aspects of lining system installation and has had in-house training and hands on experience that has met all the criteria required to be rated as a Master Seamer and Installer. He has a Master Seamer rating which requires a minimum of five million square feet of hands on welding experience with all currently utilized machines and methods. He is also qualified to assist in the training of Geomembrane Welders, and Installers.

Components Installed

- HDPE (Textured & Smooth)
- LLDPE (Textured & Smooth)
- Hypalon
- XR 5
- Polypropylene
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ROBERTO RODEA
SEAMING TECHNICIAN

Roberto Rodea has 3 years of experience in installation and seaming of a variety of synthetic liners and components. He has assisted in all aspects of lining system installation and has had in-house training and hands on experience that has met all the criteria required to be rated as a Seamer and Installer. He has a Seamer rating which requires a minimum of two million square feet of hands on welding experience with all currently utilized machines and methods. He is also qualified to assist in the training of Geomembrane Welders and Installers.

Components Installed

- HDPE (Textured & Smooth)
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- Hypalon
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GONZALO HERNANDEZ
SEAMING TECHNICIAN

Gonzalo Hernandez has 1 years of experience in installation and seaming of a variety of synthetic liners and components. He has assisted in all aspects of lining system installation and has had in-house training and hands on experience that has met all the criteria required to be rated as a Seamer and Installer. He has a Seamer rating which requires a minimum of two million square feet of hands on welding experience with all currently utilized machines and methods. He is also qualified to assist in the training of Geomembrane Welders and Installers.

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JOSE REYES
SEAMING TECHNICIAN

Jose Reyes has 15 years of experience in installation and seaming of a variety of synthetic liners and components. He has assisted in all aspects of lining system installation and has had in-house training and hands on experience that has met all the criteria required to be rated as a Seamer and Installer. He has a Seamer rating which requires a minimum of two million square feet of hands on welding experience with all currently utilized machines and methods. He is also qualified to assist in the training of Geomembrane Welders and Installers.

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ALFONZO RAMIREZ
SEAMING TECHNICIAN

Alfonzo Ramirez has 2 years of experience in installation and seaming of a variety of synthetic liners and components. He has assisted in all aspects of lining system installation and has had in-house training and hands on experience that has met all the criteria required to be rated as a Seamer and Installer. He has a Seamer rating which requires a minimum of two million square feet of hands on welding experience with all currently utilized machines and methods. He is also qualified to assist in the training of Geomembrane Welders and Installers.

Components Installed

- HDPE (Textured & Smooth)
- LLDPE (Textured & Smooth)
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FRANCISCO CARBAJAL
SEAMING TECHNICIAN

Francisco Carbajal has 3 years of experience in installation and seaming of a variety of synthetic liners and components. He has assisted in all aspects of lining system installation and has had in-house training and hands on experience that has met all the criteria required to be rated as a Seamer and Installer. He has a Seamer rating which requires a minimum of two million square feet of hands on welding experience with all currently utilized machines and methods. He is also qualified to assist in the training of Geomembrane Welders and Installers.

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ANTHONY RAMIREZ
SEAMING TECHNICIAN

Anthony Ramirez has 1 years of experience in installation and seaming of a variety of synthetic liners and components. He has assisted in all aspects of lining system installation and has had in-house training and hands on experience that has met all the criteria required to be rated as a Seamer and Installer. He has a Seamer rating which requires a minimum of two million square feet of hands on welding experience with all currently utilized machines and methods. He is also qualified to assist in the training of Geomembrane Welders and Installers.

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FABIAN RAMIREZ
SEAMING TECHNICIAN

Fabian Ramirez has 1 years of experience in installation and seaming of a variety of synthetic liners and components. He has assisted in all aspects of lining system installation and has had in-house training and hands on experience that has met all the criteria required to be rated as a Seamer and Installer. He has a Seamer rating which requires a minimum of two million square feet of hands on welding experience with all currently utilized machines and methods. He is also qualified to assist in the training of Geomembrane Welders and Installers.

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JOAQUIN VASQUEZ
SEAMING TECHNICIAN

Joaquin Vasquez has 1 years of experience in installation and seaming of a variety of synthetic liners and components. He has assisted in all aspects of lining system installation and has had in-house training and hands on experience that has met all the criteria required to be rated as a Seamer and Installer. He has a Seamer rating which requires a minimum of two million square feet of hands on welding experience with all currently utilized machines and methods. He is also qualified to assist in the training of Geomembrane Welders and Installers.

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JORGE BENITEZ
SEAMING TECHNICIAN

Jorge Benitez has 1 years of experience in installation and seaming of a variety of synthetic liners and components. He has assisted in all aspects of lining system installation and has had in-house training and hands on experience that has met all the criteria required to be rated as a Seamer and Installer. He has a Seamer rating which requires a minimum of two million square feet of hands on welding experience with all currently utilized machines and methods. He is also qualified to assist in the training of Geomembrane Welders and Installers.

Components Installed

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JORGE RAMIREZ
SEAMING TECHNICIAN

Jorge Ramirez has 1 years of experience in installation and seaming of a variety of synthetic liners and components. He has assisted in all aspects of lining system installation and has had in-house training and hands on experience that has met all the criteria required to be rated as a Seamer and Installer. He has a Seamer rating which requires a minimum of two million square feet of hands on welding experience with all currently utilized machines and methods. He is also qualified to assist in the training of Geomembrane Welders and Installers.

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OCTAVIO RAMIREZ
SEAMING TECHNICIAN

Octavio Ramirez has 1 years of experience in installation and seaming of a variety of synthetic liners and components. He has assisted in all aspects of lining system installation and has had in-house training and hands on experience that has met all the criteria required to be rated as a Seamer and Installer. He has a Seamer rating which requires a minimum of two million square feet of hands on welding experience with all currently utilized machines and methods. He is also qualified to assist in the training of Geomembrane Welders and Installers.

Components Installed

- HDPE (Textured & Smooth)
- LLDPE (Textured & Smooth)
- Hypalon
- XR 5
- Polypropylene
- Geotextiles
- Geocomposites
- PVC
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- HDPE Sumps
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- Methane Barriers

Appendix I.2

80-mil LLDPE DSMS Geomembrane Site Inventory Control

**Cripple Creek Victor Mining Company
Squaw Gulch Vally Leach Facility-Phase 1
(9,450' Bench to 9,550 Bench)
80-mil LLDPE DSMS Geomembrane
Site Inventory Control**



Roll Number	Resin Lot	Width (feet)	Length (feet)	Area (feet ²)	Conformance Test	Agru QC Cert	Resin Cert	Recv'd Onsite
F14A231002	CEE810230	23	385	8,855	X	X	X	10/26/2014
F14A231003	CEE810230	23	385	8,855		X	X	10/26/2014
F14A231004	CEE810230	23	385	8,855		X	X	10/26/2014
F14A231005	CEE810230	23	385	8,855		X	X	10/26/2014
F14A231006	CEE810230	23	385	8,855		X	X	7/11/2014
F14A231007	CEE810230	23	385	8,855		X	X	7/11/2014
F14A231008	CEE810230	23	385	8,855		X	X	7/11/2014
F14A231009	CEE810230	23	385	8,855		X	X	7/11/2014
F14A231010	CEE810230	23	385	8,855		X	X	7/11/2014
F14A231011	CEE810230	23	385	8,855		X	X	7/11/2014
F14A231012	CEE810230	23	385	8,855		X	X	7/11/2014
F14A231013	CEE810230	23	385	8,855		X	X	7/11/2014
F14A231014	CEE810230	23	385	8,855		X	X	7/15/2014
F14A231015	CEE810230	23	385	8,855		X	X	7/15/2014
F14A232016	CEE810230	23	385	8,855		X	X	7/15/2014
F14A232017	CEE810230	23	385	8,855		X	X	7/15/2014
F14A232018	CEE810230	23	385	8,855	X	X	X	7/15/2014
F14A232019	CEE810230	23	385	8,855		X	X	7/15/2014
F14A232020	CEE810230	23	385	8,855		X	X	7/15/2014
F14A232021	CEE810230	23	385	8,855		X	X	7/15/2014
F14A232022	CEE810230	23	385	8,855		X	X	7/15/2014
F14A232023	CEE810230	23	385	8,855		X	X	7/15/2014
F14A232024	CEE810230	23	385	8,855		X	X	7/15/2014
F14A232025	CEE810230	23	385	8,855		X	X	7/15/2014
F14A232026	CEE810230	23	385	8,855		X	X	7/15/2014
F14A232027	CEE810230	23	385	8,855		X	X	7/15/2014
F14A232028	CEE810230	23	385	8,855		X	X	7/15/2014
F14A232029	CEE810230	23	385	8,855		X	X	7/15/2014
F14A233030	CEE810230	23	385	8,855		X	X	7/15/2014
F14A233031	CEE810230	23	385	8,855		X	X	7/15/2014
F14A233032	CEE810230	23	385	8,855		X	X	7/15/2014
F14A233033	CEE810230	23	385	8,855		X	X	7/15/2014
F14A233034	CEE810230	23	385	8,855		X	X	7/15/2014
F14A233035	CEE810230	23	385	8,855	X	X	X	7/15/2014
F14A233036	CEE810230	23	385	8,855		X	X	7/15/2014
F14A233037	CEE810100	23	385	8,855		X	X	7/15/2014
F14A233038	CEE810100	23	385	8,855		X	X	7/16/2014
F14A233039	CEE810100	23	385	8,855		X	X	7/16/2014
F14A233040	CEE810100	23	385	8,855		X	X	7/16/2014

Note:
Grey text indicates rolls of liner not used between the
9,450' & 9,550' benches

**Cripple Creek Victor Mining Company
Squaw Gulch Vally Leach Facility-Phase 1
(9,450' Bench to 9,550 Bench)
80-mil LLDPE DSMS Geomembrane
Site Inventory Control**



Roll Number	Resin Lot	Width (feet)	Length (feet)	Area (feet ²)	Conformance Test	Agru QC Cert	Resin Cert	Recv'd Onsite
F14A233041	CEE810100	23	385	8,855		X	X	7/16/2014
F14A233042	CEE810100	23	385	8,855		X	X	7/16/2014
F14A233043	CEE810100	23	385	8,855		X	X	7/16/2014
F14A234044	CEE810100	23	385	8,855		X	X	7/16/2014
F14A234045	CEE810100	23	385	8,855		X	X	7/16/2014
F14A234046	CEE810100	23	385	8,855		X	X	7/16/2014
F14A234047	CEE810100	23	385	8,855		X	X	7/16/2014
F14A234048	CEE810100	23	385	8,855		X	X	7/16/2014
F14A234049	CEE810100	23	385	8,855		X	X	7/16/2014
F14A234050	CEE810100	23	385	8,855		X	X	7/22/2014
F14A234051	CEE810100	23	385	8,855		X	X	7/22/2014
F14A234052	CEE810100	23	385	8,855	X	X	X	7/22/2014
F14A234053	CEE810100	23	385	8,855		X	X	7/22/2014
F14A234054	CEE810100	23	385	8,855		X	X	7/22/2014
F14A234055	CEE810100	23	385	8,855		X	X	7/22/2014
F14A234056	CEE810100	23	385	8,855		X	X	7/22/2014
F14A234057	CEE810100	23	385	8,855		X	X	7/22/2014
F14A234058	CEE810100	23	385	8,855		X	X	7/22/2014
F14A235059	CEE810100	23	385	8,855		X	X	7/22/2014
F14A235060	CEE810100	23	385	8,855		X	X	7/22/2014
F14A235061	CEE810100	23	385	8,855		X	X	7/22/2014
F14A235063	CEE810100	23	385	8,855		X	X	7/28/2014
F14A235064	CEE810100	23	385	8,855		X	X	7/28/2014
F14A235065	CEE810100	23	385	8,855		X	X	7/28/2014
F14A235066	CEE810100	23	385	8,855		X	X	7/28/2014
F14A235067	CEE810100	23	385	8,855		X	X	7/28/2014
F14A235068	CEE810100	23	385	8,855		X	X	7/28/2014
F14A235069	CEE810100	23	385	8,855		X	X	7/28/2014
F14A235070	CEE810100	23	385	8,855	X	X	X	7/28/2014
F14A235071	CEE810100	23	385	8,855		X	X	7/28/2014
F14A235072	CEE810100	23	385	8,855		X	X	7/28/2014
F14A236073	CEE810100	23	385	8,855		X	X	7/28/2014
F14A236074	CEE810100	23	385	8,855		X	X	7/28/2014
F14A236075	CEE810100	23	385	8,855		X	X	8/7/2014
F14A236076	CEE810100	23	385	8,855		X	X	8/7/2014
F14A236077	CEE810100	23	385	8,855		X	X	8/7/2014
F14A236078	CEE810100	23	385	8,855		X	X	8/7/2014
F14A236079	CEE810100	23	385	8,855		X	X	8/7/2014
F14A236080	CEE810100	23	385	8,855		X	X	8/7/2014

Note:
Grey text indicates rolls of liner not used between the
9,450' & 9,550' benches

**Cripple Creek Victor Mining Company
Squaw Gulch Vally Leach Facility-Phase 1
(9,450' Bench to 9,550 Bench)
80-mil LLDPE DSMS Geomembrane
Site Inventory Control**



Roll Number	Resin Lot	Width (feet)	Length (feet)	Area (feet ²)	Conformance Test	Agru QC Cert	Resin Cert	Recv'd Onsite
F14A236081	CEE810100	23	385	8,855		X	X	8/7/2014
F14A236082	CEE810100	23	385	8,855		X	X	8/7/2014
F14A236083	CEE810100	23	385	8,855		X	X	8/7/2014
F14A236084	CEE810100	23	385	8,855		X	X	8/7/2014
F14A236085	CEE810100	23	385	8,855		X	X	8/7/2014
F14A236086	CEE810100	23	385	8,855		X	X	8/7/2014
F14A236087	CEE810100	23	385	8,855	X	X	X	8/7/2014
F14A237088	CEE810100	23	385	8,855		X	X	8/7/2014
F14A237089	CEE810100	23	385	8,855		X	X	8/7/2014
F14A237090	CEE810100	23	385	8,855		X	X	8/7/2014
F14A237091	CEE810100	23	385	8,855		X	X	8/7/2014
F14A237092	CEE810100	23	385	8,855		X	X	8/7/2014
F14A237093	CEE810100	23	385	8,855		X	X	8/7/2014
F14A237094	CEE810100	23	385	8,855		X	X	8/7/2014
F14A237095	CEE810100	23	385	8,855		X	X	8/7/2014
F14A237096	CEE810100	23	385	8,855		X	X	8/7/2014
F14A237097	CEE810100	23	385	8,855		X	X	8/7/2014
F14A237098	CEE810100	23	385	8,855		X	X	8/7/2014
F14A237099	CEE810100	23	385	8,855		X	X	8/8/2014
F14A237100	CEE810100	23	385	8,855		X	X	8/8/2014
F14A237101	CEE810120	23	385	8,855		X	X	8/8/2014
F14A241001	CEE810120	23	385	8,855		X	X	8/8/2014
F14A241002	CEE810120	23	385	8,855		X	X	8/8/2014
F14A241003	CEE810120	23	385	8,855	X	X	X	8/8/2014
F14A241004	CEE810120	23	385	8,855		X	X	8/8/2014
F14A241005	CEE810120	23	385	8,855		X	X	8/8/2014
F14A241006	CEE810120	23	385	8,855		X	X	8/8/2014
F14A241007	CEE810120	23	385	8,855		X	X	8/8/2014
F14A241008	CEE810120	23	385	8,855		X	X	8/8/2014
F14A241009	CEE810120	23	385	8,855		X	X	8/8/2014
F14A241010	CEE810120	23	385	8,855		X	X	8/8/2014
F14A241011	CEE810120	23	385	8,855		X	X	8/8/2014
F14A241012	CEE810120	23	385	8,855		X	X	8/8/2014
F14A241013	CEE810120	23	385	8,855		X	X	8/8/2014
F14A241014	CEE810120	23	385	8,855		X	X	8/8/2014
F14A241015	CEE810120	23	385	8,855		X	X	8/8/2014
F14A242016	CEE810120	23	385	8,855		X	X	8/8/2014
F14A242017	CEE810120	23	385	8,855		X	X	8/8/2014
F14A242018	CEE810120	23	385	8,855		X	X	8/8/2014

Note:
Grey text indicates rolls of liner not used between the
9,450' & 9,550' benches

**Cripple Creek Victor Mining Company
Squaw Gulch Vally Leach Facility-Phase 1
(9,450' Bench to 9,550 Bench)
80-mil LLDPE DSMS Geomembrane
Site Inventory Control**



Roll Number	Resin Lot	Width (feet)	Length (feet)	Area (feet ²)	Conformance Test	Agru QC Cert	Resin Cert	Recv'd Onsite
F14A242019	CEE810120	23	385	8,855		X	X	8/8/2014
F14A242020	CEE810120	23	385	8,855	X	X	X	8/8/2014
F14A242021	CEE810120	23	385	8,855		X	X	8/8/2014
F14A242022	CEE810120	23	385	8,855		X	X	8/8/2014
F14A242023	CEE810120	23	385	8,855		X	X	8/8/2014
F14A242024	CEE810120	23	385	8,855		X	X	8/8/2014
F14A242025	CEE810120	23	385	8,855		X	X	8/8/2014
F14A242026	CEE810120	23	385	8,855		X	X	8/8/2014
F14A242027	CEE810120	23	385	8,855		X	X	8/8/2014
F14A242028	CEE810120	23	385	8,855		X	X	8/8/2014
F14A242029	CEE810120	23	385	8,855		X	X	8/8/2014
F14A243030	CEE810120	23	385	8,855		X	X	8/8/2014
F14A243031	CEE810120	23	385	8,855		X	X	8/8/2014
F14A243032	CEE810120	23	385	8,855		X	X	8/8/2014
F14A243033	CEE810120	23	385	8,855		X	X	8/8/2014
F14A243034	CEE810120	23	385	8,855		X	X	8/18/2014
F14A243035	CEE810120	23	385	8,855		X	X	8/18/2014
F14A243036	CEE810120	23	385	8,855		X	X	8/18/2014
F14A243037	CEE810120	23	385	8,855	X	X	X	8/18/2014
F14A243038	CEE810120	23	385	8,855		X	X	8/18/2014
F14A243039	CEE810120	23	385	8,855		X	X	8/18/2014
F14A243040	CEE810120	23	385	8,855		X	X	8/18/2014
F14A243041	CEE810120	23	385	8,855		X	X	8/18/2014
F14A243042	CEE810120	23	385	8,855		X	X	8/18/2014
F14A243043	CEE810120	23	385	8,855		X	X	8/18/2014
F14A243044	CEE810120	23	385	8,855		X	X	8/18/2014
F14A244045	CEE810120	23	385	8,855		X	X	8/18/2014
F14A244046	CEE810120	23	385	8,855		X	X	8/25/2014
F14A244047	CEE810120	23	385	8,855		X	X	8/25/2014
F14A244048	CEE810120	23	385	8,855		X	X	8/25/2014
F14A244049	CEE810120	23	385	8,855		X	X	8/25/2014
F14A244050	CEE810120	23	385	8,855		X	X	8/25/2014
F14A244051	CEE810120	23	385	8,855		X	X	8/25/2014
F14A244052	CEE810120	23	385	8,855		X	X	8/25/2014
F14A244053	CEE810120	23	385	8,855		X	X	8/25/2014
F14A244054	CEE810120	23	385	8,855	X	X	X	8/25/2014
F14A244055	CEE810120	23	385	8,855		X	X	8/25/2014
F14A244056	CEE810120	23	385	8,855		X	X	8/25/2014
F14A244057	CEE810120	23	385	8,855		X	X	8/25/2014

Note:
Grey text indicates rolls of liner not used between the
9,450' & 9,550' benches

**Cripple Creek Victor Mining Company
Squaw Gulch Vally Leach Facility-Phase 1
(9,450' Bench to 9,550' Bench)
80-mil LLDPE DSMS Geomembrane
Site Inventory Control**



Roll Number	Resin Lot	Width (feet)	Length (feet)	Area (feet ²)	Conformance Test	Aggr QC Cert	Resin Cert	Recv'd Onsite
F14A244058	CEE810120	23	385	8,855		X	X	8/20/2014
F14A245059	CEE810120	23	385	8,855		X	X	8/20/2014
F14A245060	CEE810120	23	385	8,855		X	X	8/20/2014
F14A245061	CEE810120	23	385	8,855		X	X	8/20/2014
F14A245062	CEE810120	23	385	8,855		X	X	8/20/2014
F14A245063	CEE810120	23	385	8,855		X	X	8/20/2014
F14A245064	CEE810120	23	385	8,855		X	X	8/20/2014
F14A245065	CEE810120	23	385	8,855		X	X	8/20/2014
F14A245066	CEE810120	23	385	8,855		X	X	8/20/2014
F14A245067	CEE810120	23	385	8,855		X	X	8/20/2014
F14A245068	CEE810120	23	385	8,855		X	X	8/20/2014
F14A245069	CEE810120	23	385	8,855		X	X	8/20/2014
F14A245070	CEE810120	23	385	8,855		X	X	8/20/2014
F14A245071	CEE810120	23	385	8,855	X	X	X	8/20/2014
F14A245072	CEE810120	23	385	8,855		X	X	8/20/2014
F14A245073	CEE810120	23	385	8,855		X	X	8/20/2014
F14A246074	CEE810120	23	385	8,855		X	X	8/20/2014
F14A246075	CEE810120	23	385	8,855		X	X	8/20/2014
F14A246076	CEE810120	23	385	8,855		X	X	8/20/2014
F14A246077	CEE810120	23	385	8,855		X	X	8/20/2014
F14A246078	CEE810120	23	385	8,855		X	X	8/20/2014
F14A246079	CEE810120	23	385	8,855		X	X	8/20/2014
F14A246080	CEE810120	23	385	8,855		X	X	8/20/2014
F14A246081	CEE810110	23	385	8,855		X	X	8/20/2014
F14A246082	CEE810110	23	385	8,855		X	X	8/27/2014
F14A246083	CEE810110	23	385	8,855		X	X	8/27/2014
F14A246084	CEE810110	23	385	8,855		X	X	8/27/2014
F14A246085	CEE810110	23	385	8,855		X	X	8/27/2014
F14A246086	CEE810110	23	385	8,855		X	X	8/27/2014
F14A246087	CEE810110	23	385	8,855		X	X	8/27/2014
F14A247088	CEE810110	23	385	8,855	X	X	X	8/27/2014
F14A247089	CEE810110	23	385	8,855		X	X	8/27/2014
F14A247090	CEE810110	23	385	8,855		X	X	8/27/2014
F14A247091	CEE810110	23	385	8,855		X	X	8/27/2014
F14A247092	CEE810110	23	385	8,855		X	X	8/27/2014
F14A247093	CEE810110	23	385	8,855		X	X	8/27/2014
F14A247094	CEE810110	23	385	8,855		X	X	9/2/2014
F14A247095	CEE810110	23	385	8,855		X	X	9/2/2014
F14A247096	CEE810110	23	385	8,855		X	X	9/2/2014

Note:
Grey text indicates rolls of liner not used between the
9,450' & 9,550' benches

**Cripple Creek Victor Mining Company
Squaw Gulch Vally Leach Facility-Phase 1
(9,450' Bench to 9,550 Bench)
80-mil LLDPE DSMS Geomembrane
Site Inventory Control**



Roll Number	Resin Lot	Width (feet)	Length (feet)	Area (feet ²)	Conformance Test	Aggr QC Cert	Resin Cert	Recv'd Onsite
F14A247097	CEE810110	23	385	8,855		X	X	9/2/2014
F14A247098	CEE810110	23	385	8,855		X	X	9/2/2014
F14A247099	CEE810110	23	385	8,855		X	X	9/2/2014
F14A247100	CEE810110	23	385	8,855		X	X	9/2/2014
F14A247101	CEE810110	23	385	8,855		X	X	9/2/2014
F14A251001	CEE810110	23	385	8,855		X	X	9/2/2014
F14A251002	CEE810110	23	385	8,855		X	X	9/2/2014
F14A251003	CEE810110	23	385	8,855		X	X	9/2/2014
F14A251004	CEE810110	23	385	8,855	X	X	X	9/2/2014
F14A251005	CEE810110	23	385	8,855		X	X	9/2/2014
F14A251006	CEE810110	23	385	8,855		X	X	9/2/2014
F14A251007	CEE810110	23	385	8,855		X	X	9/2/2014
F14A251008	CEE810110	23	385	8,855		X	X	9/2/2014
F14A251009	CEE810110	23	385	8,855		X	X	9/2/2014
F14A251010	CEE810110	23	385	8,855		X	X	9/2/2014
F14A251011	CEE810110	23	385	8,855		X	X	9/2/2014
F14A251012	CEE810110	23	385	8,855		X	X	9/2/2014
F14A251013	CEE810110	23	385	8,855		X	X	9/2/2014
F14A251014	CEE810110	23	385	8,855		X	X	9/2/2014
F14A252017	CEE810110	23	385	8,855		X	X	9/2/2014
F14A252018	CEE810110	23	385	8,855		X	X	9/2/2014
F14A252019	CEE810110	23	385	8,855		X	X	9/3/2014
F14A252020	CEE810110	23	385	8,855		X	X	9/3/2014
F14A252021	CEE810110	23	385	8,855		X	X	9/3/2014
F14A252022	CEE810110	23	385	8,855		X	X	9/3/2014
F14A252023	CEE810110	23	385	8,855	X	X	X	9/3/2014
F14A252024	CEE810110	23	385	8,855		X	X	9/3/2014
F14A252025	CEE810110	23	385	8,855		X	X	9/3/2014
F14A252026	CEE810110	23	385	8,855		X	X	9/3/2014
F14A252027	CEE810110	23	385	8,855		X	X	9/3/2014
F14A252028	CEE810110	23	385	8,855		X	X	9/3/2014
F14A252029	CEE810110	23	385	8,855		X	X	9/3/2014
F14A253030	CEE810110	23	385	8,855		X	X	9/3/2014
F14A253031	CEE810110	23	385	8,855		X	X	9/5/2014
F14A253032	CEE810110	23	385	8,855		X	X	9/5/2014
F14A253033	CEE810110	23	385	8,855		X	X	9/5/2014
F14A253034	CEE810110	23	385	8,855		X	X	9/5/2014
F14A253035	CEE810110	23	385	8,855		X	X	9/5/2014
F14A253036	CEE810110	23	385	8,855		X	X	9/5/2014

Note:
Grey text indicates rolls of liner not used between the
9,450' & 9,550' benches

**Cripple Creek Victor Mining Company
Squaw Gulch Vally Leach Facility-Phase 1
(9,450' Bench to 9,550 Bench)
80-mil LLDPE DSMS Geomembrane
Site Inventory Control**



Roll Number	Resin Lot	Width (feet)	Length (feet)	Area (feet ²)	Conformance Test	Agru QC Cert	Resin Cert	Recv'd Onsite
F14A253037	CEE810110	23	385	8,855		X	X	9/5/2014
F14A253038	CEE810110	23	385	8,855		X	X	9/5/2014
F14A253039	CEE810110	23	385	8,855		X	X	9/5/2014
F14A253040	CEE810110	23	385	8,855	X	X	X	9/5/2014
F14A253041	CEE810110	23	385	8,855		X	X	9/5/2014
F14A253042	CEE810110	23	385	8,855		X	X	9/5/2014
F14A253043	CEE810110	23	385	8,855		X	X	9/13/2014
F14A253044	CEE810110	23	385	8,855		X	X	9/13/2014
F14A254045	CEE810110	23	385	8,855		X	X	9/13/2014
F14A254046	CEE810110	23	385	8,855		X	X	9/13/2014
F14A254047	CEE810110	23	385	8,855		X	X	9/13/2014
F14A254048	CEE810110	23	385	8,855		X	X	9/13/2014
F14A254049	CEE810110	23	385	8,855		X	X	9/13/2014
F14A254050	CEE810110	23	385	8,855		X	X	9/13/2014
F14A254051	CEE810110	23	385	8,855		X	X	9/13/2014
F14A254052	CEE810110	23	385	8,855		X	X	9/13/2014
F14A254053	CEE810110	23	385	8,855		X	X	9/13/2014
F14A254054	CEE810110	23	385	8,855	X	X	X	9/13/2014
F15B062010	CEK810150	23	385	8,855		X	X	4/2/2015
F15B062011	CEK810150	23	385	8,855		X	X	4/2/2015
F15B062012	CEK810150	23	385	8,855		X	X	4/2/2015
F15B062013	CEK810150	23	385	8,855		X	X	4/2/2015
F15B062014	CEK810150	23	385	8,855		X	X	4/2/2015
F15B062015	CEK810150	23	385	8,855		X	X	4/2/2015
F15B062016	CEK810150	23	385	8,855		X	X	4/2/2015
F15B063017	CEK810150	23	385	8,855		X	X	4/2/2015
F15B063018	CEK810150	23	385	8,855		X	X	4/2/2015
F15B063019	CEK810150	23	385	8,855		X	X	4/2/2015
F15B063020	CEK810150	23	385	8,855		X	X	4/2/2015
F15B063021	CEK810150	23	385	8,855		X	X	4/2/2015
F15B063022	CEK810150	23	385	8,855		X	X	4/2/2015
F15B063023	CEK810150	23	385	8,855		X	X	4/2/2015
F15B063024	CEK810150	23	385	8,855		X	X	4/2/2015
F15B063025	CEK810150	23	385	8,855		X	X	4/2/2015
F15B063026	CEK810150	23	385	8,855		X	X	4/2/2015
F15B063027	CEK810150	23	385	8,855		X	X	4/2/2015
F15B063028	CEK810150	23	385	8,855		X	X	4/2/2015
F15B063029	CEK810150	23	385	8,855	X	X	X	4/2/2015
F15B063030	CEK810150	23	385	8,855		X	X	4/2/2015

Note:
Grey text indicates rolls of liner not used between the
9,450' & 9,550' benches

**Cripple Creek Victor Mining Company
Squaw Gulch Vally Leach Facility-Phase 1
(9,450' Bench to 9,550' Bench)
80-mil LLDPE DSMS Geomembrane
Site Inventory Control**



Roll Number	Resin Lot	Width (feet)	Length (feet)	Area (feet ²)	Conformance Test	Aggr QC Cert	Resin Cert	Recv'd Onsite
F15B063031	CEK810150	23	385	8,855		X	X	4/2/2015
F15B063032	CEK810150	23	385	8,855		X	X	4/2/2015
F15B064033	CEK810150	23	385	8,855		X	X	4/2/2015
F15B064034	CEK810150	23	385	8,855		X	X	4/2/2015
F15B064035	CEK810150	23	385	8,855		X	X	4/2/2015
F15B064036	CEK810150	23	385	8,855		X	X	4/2/2015
F15B064037	CEK810150	23	385	8,855		X	X	4/2/2015
F15B064040	CEK810150	23	385	8,855		X	X	4/2/2015
F15B064041	CEK810150	23	385	8,855		X	X	4/2/2015
F15B064042	CEK810150	23	385	8,855		X	X	4/2/2015
F15B064043	CEK810150	23	385	8,855		X	X	4/2/2015
F15B065044	CEK810150	23	385	8,855		X	X	4/2/2015
F15B065045	CEK810150	23	385	8,855		X	X	4/2/2015
F15B065046	CEK810150	23	385	8,855		X	X	4/2/2015
F15B065047	CEK810150	23	385	8,855	X	X	X	4/2/2015
F15B065048	CEK810150	23	385	8,855		X	X	4/2/2015
F15B065049	CEK810150	23	385	8,855		X	X	4/2/2015
F15B065050	CEK810150	23	385	8,855		X	X	4/2/2015
F15B065051	CEK810150	23	385	8,855		X	X	4/2/2015
F15B065052	CEK810150	23	385	8,855		X	X	4/2/2015
F15B065053	CEK810150	23	385	8,855		X	X	4/2/2015
F15B065054	CEK810150	23	385	8,855		X	X	4/2/2015
F15B065055	CEK810150	23	385	8,855		X	X	4/2/2015
F15B065056	CEK810150	23	385	8,855		X	X	4/2/2015
F15B065057	CEK810150	23	385	8,855		X	X	4/2/2015
F15B065058	CEK810150	23	385	8,855		X	X	4/2/2015
F15B065059	CEK810150	23	385	8,855		X	X	4/2/2015
F15B066060	CEK810150	23	385	8,855		X	X	4/2/2015
F15B066061	CEK810150	23	385	8,855		X	X	4/2/2015
F15B066062	CEK810150	23	385	8,855		X	X	4/2/2015
F15B066063	CEK810150	23	385	8,855		X	X	4/2/2015
F15B066064	CEK810150	23	385	8,855	X	X	X	4/2/2015
F15B066065	CEK810150	23	385	8,855		X	X	4/2/2015
F15B066066	CEK810150	23	385	8,855		X	X	4/2/2015
F15B066067	CEK810150	23	385	8,855		X	X	4/2/2015
F15B066068	CEK810150	23	385	8,855		X	X	4/2/2015
F15B066069	CEK810150	23	385	8,855		X	X	4/2/2015
F15B066070	CEK810150	23	385	8,855		X	X	4/2/2015
F15B066071	CEK810150	23	385	8,855		X	X	4/2/2015

Note:
Grey text indicates rolls of liner not used between the
9,450' & 9,550' benches

**Cripple Creek Victor Mining Company
Squaw Gulch Vally Leach Facility-Phase 1
(9,450' Bench to 9,550 Bench)
80-mil LLDPE DSMS Geomembrane
Site Inventory Control**



Roll Number	Resin Lot	Width (feet)	Length (feet)	Area (feet ²)	Conformance Test	Agru QC Cert	Resin Cert	Recv'd Onsite
F15B066072	CEK810150	23	385	8,855		X	X	4/2/2015
F15B066073	CEK810150	23	385	8,855		X	X	4/2/2015
F15B066074	CEK810150	23	385	8,855		X	X	4/2/2015
F15B066075	CEK810150	23	385	8,855		X	X	4/2/2015
F15B067076	CEK810150	23	385	8,855		X	X	4/2/2015
F15B067077	CEK810150	23	385	8,855		X	X	4/2/2015
F15B067078	CEK810150	23	385	8,855		X	X	4/2/2015
F15B067079	CEK810150	23	385	8,855		X	X	4/2/2015
F15B067080	CEK810150	23	385	8,855		X	X	4/2/2015
F15B067081	CEK810150	23	385	8,855	X	X	X	4/2/2015
F15B067082	CEK810150	23	385	8,855		X	X	4/2/2015
F15B067083	CEK810150	23	385	8,855		X	X	4/2/2015
F15B067084	CEK810150	23	385	8,855		X	X	4/3/2015
F15B067085	CEK810140	23	385	8,855		X	X	4/3/2015
F15B067086	CEK810140	23	385	8,855		X	X	4/3/2015
F15B067087	CEK810140	23	385	8,855		X	X	4/3/2015
F15B067088	CEK810140	23	385	8,855		X	X	4/3/2015
F15B067089	CEK810140	23	385	8,855		X	X	4/3/2015
F15B067090	CEK810140	23	385	8,855		X	X	4/3/2015
F15B067091	CEK810140	23	385	8,855		X	X	4/3/2015
F15B071001	CEK810140	23	385	8,855		X	X	4/3/2015
F15B071002	CEK810140	23	385	8,855		X	X	4/3/2015
F15B071003	CEK810140	23	385	8,855		X	X	4/3/2015
F15B071004	CEK810140	23	385	8,855		X	X	4/3/2015
F15B071005	CEK810140	23	385	8,855		X	X	4/3/2015
F15B071006	CEK810140	23	385	8,855		X	X	4/3/2015
F15B071007	CEK810140	23	385	8,855	X	X	X	4/3/2015
F15B071008	CEK810140	23	385	8,855		X	X	4/3/2015
F15B071009	CEK810140	23	385	8,855		X	X	4/3/2015
F15B071010	CEK810140	23	385	8,855		X	X	4/3/2015
F15B071011	CEK810140	23	385	8,855		X	X	4/3/2015
F15B071012	CEK810140	23	385	8,855		X	X	4/3/2015
F15B071013	CEK810140	23	385	8,855		X	X	4/3/2015
F15B071014	CEK810140	23	385	8,855		X	X	4/3/2015
F15B071015	CEK810140	23	385	8,855		X	X	4/3/2015
F15B071016	CEK810140	23	385	8,855		X	X	4/3/2015
F15B072017	CEK810140	23	385	8,855		X	X	4/3/2015
F15B072018	CEK810140	23	385	8,855		X	X	4/3/2015
F15B072019	CEK810140	23	385	8,855		X	X	4/3/2015

Note:
Grey text indicates rolls of liner not used between the
9,450' & 9,550' benches

**Cripple Creek Victor Mining Company
Squaw Gulch Vally Leach Facility-Phase 1
(9,450' Bench to 9,550 Bench)
80-mil LLDPE DSMS Geomembrane
Site Inventory Control**



Roll Number	Resin Lot	Width (feet)	Length (feet)	Area (feet ²)	Conformance Test	Agru QC Cert	Resin Cert	Recv'd Onsite
F15B072020	CEK810140	23	385	8,855		X	X	4/3/2015
F15B072021	CEK810140	23	385	8,855		X	X	4/3/2015
F15B072022	CEK810140	23	385	8,855		X	X	4/3/2015
F15B072023	CEK810140	23	385	8,855		X	X	4/3/2015
F15B072024	CEK810140	23	385	8,855	X	X	X	4/3/2015
F15B072025	CEK810140	23	385	8,855		X	X	4/3/2015
F15B072026	CEK810140	23	385	8,855		X	X	4/3/2015
F15B072027	CEK810140	23	385	8,855		X	X	4/3/2015
F15B072028	CEK810140	23	385	8,855		X	X	4/3/2015
F15B072029	CEK810140	23	385	8,855		X	X	4/3/2015
F15B072030	CEK810140	23	385	8,855		X	X	4/3/2015
F15B072031	CEK810140	23	385	8,855		X	X	4/3/2015
F15B073032	CEK810140	23	385	8,855		X	X	4/3/2015
F15B073033	CEK810140	23	385	8,855		X	X	4/3/2015
F15B073034	CEK810140	23	385	8,855		X	X	4/3/2015
F15B073035	CEK810140	23	385	8,855		X	X	4/3/2015
F15B073036	CEK810140	23	385	8,855		X	X	4/3/2015
F15B073037	CEK810140	23	385	8,855		X	X	4/3/2015
F15B073038	CEK810140	23	385	8,855		X	X	4/3/2015
F15B073039	CEK810140	23	385	8,855		X	X	4/3/2015
F15B073040	CEK810140	23	385	8,855		X	X	4/3/2015
F15B073041	CEK810140	23	385	8,855	X	X	X	4/6/2015
F15B073042	CEK810140	23	385	8,855		X	X	4/6/2015
F15B073043	CEK810140	23	385	8,855		X	X	4/6/2015
F15B073044	CEK810140	23	385	8,855		X	X	4/6/2015
F15B073045	CEK810140	23	385	8,855		X	X	4/6/2015
F15B073046	CEK810140	23	385	8,855		X	X	4/6/2015
F15B073047	CEK810140	23	385	8,855		X	X	4/6/2015
F15B074048	CEK810140	23	385	8,855		X	X	4/6/2015
F15B074049	CEK810140	23	385	8,855		X	X	4/6/2015
F15B074050	CEK810140	23	385	8,855		X	X	4/6/2015
F15B074051	CEK810140	23	385	8,855		X	X	4/6/2015
F15B074052	CEK810140	23	385	8,855		X	X	4/6/2015
F15B074053	CEK810140	23	385	8,855		X	X	4/6/2015
F15B074054	CEK810140	23	385	8,855		X	X	4/6/2015
F15B074055	CEK810140	23	385	8,855		X	X	4/6/2015
F15B074056	CEK810140	23	385	8,855		X	X	4/6/2015
F15B074057	CEK810140	23	385	8,855		X	X	4/6/2015
F15B074058	CEK810140	23	385	8,855	X	X	X	4/6/2015

Note:
Grey text indicates rolls of liner not used between the
9,450' & 9,550' benches

**Cripple Creek Victor Mining Company
Squaw Gulch Vally Leach Facility-Phase 1
(9,450' Bench to 9,550 Bench)
80-mil LLDPE DSMS Geomembrane
Site Inventory Control**



Roll Number	Resin Lot	Width (feet)	Length (feet)	Area (feet ²)	Conformance Test	Agru QC Cert	Resin Cert	Recv'd Onsite
F15B074059	CEK810140	23	385	8,855		X	X	4/6/2015
F15B074060	CEK810140	23	385	8,855		X	X	4/6/2015
F15B074061	CEK810140	23	385	8,855		X	X	4/6/2015
F15B074062	CEK810140	23	385	8,855		X	X	4/6/2015
F15B074063	CEK810140	23	385	8,855		X	X	4/6/2015
F15B075064	CEK810140	23	385	8,855		X	X	4/6/2015
F15B075065	CEK810140	23	385	8,855		X	X	4/6/2015
F15B075066	CEK810140	23	385	8,855		X	X	4/6/2015
F15B075067	CEK810140	23	385	8,855		X	X	4/6/2015
F15B075068	CEK810140	23	385	8,855		X	X	4/6/2015
F15B075069	CEK810140	23	385	8,855		X	X	4/6/2015
F15B075070	CEK810140	23	385	8,855		X	X	4/6/2015
F15B075071	CEK810140	23	385	8,855		X	X	4/6/2015
F15B075072	CEK810140	23	385	8,855		X	X	4/6/2015
F15B075073	CEK810140	23	385	8,855		X	X	4/6/2015
F15B075074	CEK810140	23	385	8,855		X	X	4/6/2015
F15B075075	CEK810140	23	385	8,855	X	X	X	4/6/2015
F15B075076	CEK810140	23	385	8,855		X	X	4/6/2015
F15B075077	CEK810140	23	385	8,855		X	X	4/7/2015
F15B075078	CEK810140	23	385	8,855		X	X	4/7/2015
F15B075079	CEK810140	23	385	8,855		X	X	4/7/2015
F15B076080	CEK810140	23	385	8,855		X	X	4/7/2015
F15B076081	CEK810140	23	385	8,855		X	X	4/7/2015
F15B076082	CEK810140	23	385	8,855		X	X	4/7/2015
F15B076083	CEK810140	23	385	8,855		X	X	4/7/2015
F15B076084	CEK810140	23	385	8,855		X	X	4/7/2015
F15B076085	CEK810140	23	385	8,855		X	X	4/7/2015
F15B076086	CEK810140	23	385	8,855		X	X	4/7/2015
F15B076087	CEK810140	23	385	8,855		X	X	4/7/2015
F15B076088	CEK810140	23	385	8,855		X	X	4/7/2015
F15B076089	CEK810140	23	385	8,855		X	X	4/7/2015
F15B076090	CEM810770	23	385	8,855		X	X	4/7/2015
F15B076091	CEM810770	23	385	8,855		X	X	4/7/2015
F15B076092	CEM810770	23	385	8,855	X	X	X	4/7/2015
F15B076093	CEM810770	23	385	8,855		X	X	4/7/2015
F15B076094	CEM810770	23	385	8,855		X	X	4/7/2015
F15B076095	CEM810770	23	385	8,855		X	X	4/7/2015
F15B077097	CEM810770	23	385	8,855		X	X	4/7/2015
F15B077098	CEM810770	23	385	8,855		X	X	4/7/2015

Note:
Grey text indicates rolls of liner not used between the
9,450' & 9,550' benches

**Cripple Creek Victor Mining Company
Squaw Gulch Vally Leach Facility-Phase 1
(9,450' Bench to 9,550 Bench)
80-mil LLDPE DSMS Geomembrane
Site Inventory Control**



Roll Number	Resin Lot	Width (feet)	Length (feet)	Area (feet ²)	Conformance Test	Agru QC Cert	Resin Cert	Recv'd Onsite
F15B077099	CEM810770	23	385	8,855		X	X	4/7/2015
F15B077100	CEM810770	23	385	8,855		X	X	4/7/2015
F15B077101	CEM810770	23	385	8,855		X	X	4/7/2015
F15B077102	CEM810770	23	385	8,855		X	X	4/6/2015
F15B077103	CEM810770	23	385	8,855		X	X	4/6/2015
F15B077104	CEM810770	23	385	8,855		X	X	4/6/2015
F15B077105	CEM810770	23	385	8,855		X	X	4/6/2015
F15B077106	CEM810770	23	385	8,855		X	X	4/6/2015
F15B077107	CEM810770	23	385	8,855		X	X	4/6/2015
F15B077108	CEM810770	23	385	8,855		X	X	4/6/2015
F15B077109	CEM810770	23	385	8,855		X	X	4/6/2015
F15B077110	CEM810770	23	385	8,855	X	X	X	4/6/2015
F15B081001	CEM810770	23	385	8,855		X	X	4/6/2015
F15B081002	CEM810770	23	385	8,855		X	X	4/6/2015
F15B081003	CEM810770	23	385	8,855		X	X	4/6/2015
F15B081004	CEM810770	23	385	8,855		X	X	4/8/2015
F15B081005	CEM810770	23	385	8,855		X	X	4/8/2015
F15B081006	CEM810770	23	385	8,855		X	X	4/8/2015
F15B081007	CEM810770	23	385	8,855		X	X	4/8/2015
F15B081008	CEM810770	23	385	8,855		X	X	4/8/2015
F15B081009	CEM810770	23	385	8,855		X	X	4/8/2015
F15B081010	CEM810770	23	385	8,855		X	X	4/8/2015
F15B081011	CEM810770	23	385	8,855		X	X	4/8/2015
F15B081012	CEM810770	23	385	8,855		X	X	4/8/2015
F15B081013	CEM810770	23	385	8,855		X	X	4/8/2015
F15B081014	CEM810770	23	385	8,855		X	X	4/8/2015
F15B081015	CEM810770	23	385	8,855		X	X	4/8/2015
F15B081016	CEM810770	23	385	8,855		X	X	4/8/2015
F15B081017	CEM810770	23	385	8,855	X	X	X	4/8/2015
F15B082018	CEM810770	23	385	8,855		X	X	4/8/2015
F15B082019	CEM810770	23	385	8,855		X	X	4/8/2015
F15B082020	CEM810770	23	385	8,855		X	X	4/8/2015
F15B082021	CEM810770	23	385	8,855		X	X	4/8/2015
F15B082022	CEM810770	23	385	8,855		X	X	4/8/2015
F15B082023	CEM810770	23	385	8,855		X	X	4/8/2015
F15B082024	CEM810770	23	385	8,855		X	X	4/8/2015
F15B082025	CEM810770	23	385	8,855		X	X	4/8/2015
F15B082026	CEM810770	23	385	8,855		X	X	4/8/2015
F15B082027	CEM810770	23	385	8,855		X	X	4/8/2015

Note:
Grey text indicates rolls of liner not used between the
9,450' & 9,550' benches

**Cripple Creek Victor Mining Company
Squaw Gulch Vally Leach Facility-Phase 1
(9,450' Bench to 9,550 Bench)
80-mil LLDPE DSMS Geomembrane
Site Inventory Control**



Roll Number	Resin Lot	Width (feet)	Length (feet)	Area (feet ²)	Conformance Test	Agru QC Cert	Resin Cert	Recv'd Onsite
F15B082028	CEM810770	23	385	8,855		X	X	4/8/2015
F15B082029	CEM810770	23	385	8,855		X	X	4/8/2015
F15B082030	CEM810770	23	385	8,855		X	X	4/8/2015
F15B082031	CEM810770	23	385	8,855		X	X	4/8/2015
F15B082032	CEM810770	23	385	8,855		X	X	4/8/2015
F15B082033	CEM810770	23	385	8,855		X	X	4/8/2015
F15B083034	CEM810770	23	385	8,855	X	X	X	4/8/2015
F15B083035	CEM810770	23	385	8,855		X	X	4/8/2015
F15B083036	CEM810770	23	385	8,855		X	X	4/8/2015
F15B083037	CEM810770	23	385	8,855		X	X	4/8/2015
F15B083038	CEM810770	23	385	8,855		X	X	4/8/2015
F15B083039	CEM810770	23	385	8,855		X	X	4/8/2015
F15B083040	CEM810770	23	385	8,855		X	X	4/9/2015
F15B083041	CEM810770	23	385	8,855		X	X	4/9/2015
F15B083042	CEM810770	23	385	8,855		X	X	4/9/2015
F15B083043	CEM810770	23	385	8,855		X	X	4/9/2015
F15B083044	CEM810770	23	385	8,855		X	X	4/9/2015
F15B083045	CEM810770	23	385	8,855		X	X	4/9/2015
F15B083046	CEM810770	23	385	8,855		X	X	4/9/2015
F15B083047	CEM810770	23	385	8,855		X	X	4/9/2015
F15B083048	CEM810770	23	385	8,855		X	X	4/9/2015
F15B083049	CEM810770	23	385	8,855		X	X	4/9/2015
F15B084050	CEM810770	23	385	8,855		X	X	4/9/2015
F15B084051	CEM810770	23	385	8,855	X	X	X	4/9/2015
F15B084052	CEM810770	23	385	8,855		X	X	4/8/2015
F15B084053	CEM810770	23	385	8,855		X	X	4/8/2015
F15B084054	CEM810770	23	385	8,855		X	X	4/8/2015
F15B084055	CEM810770	23	385	8,855		X	X	4/8/2015
F15B084056	CEM810770	23	385	8,855		X	X	4/8/2015
F15B084057	CEM810770	23	385	8,855		X	X	4/8/2015
F15B084058	CEM810770	23	385	8,855		X	X	4/8/2015
F15B084059	CEM810770	23	385	8,855		X	X	4/8/2015
F15B084060	CEM810770	23	385	8,855		X	X	4/8/2015
F15B084061	CEM810770	23	385	8,855		X	X	4/8/2015
F15B084062	CEM810770	23	385	8,855		X	X	4/8/2015
F15B084063	CEM810770	23	385	8,855		X	X	4/8/2015
F15B084064	CEM810770	23	385	8,855		X	X	4/13/2015
F15B085065	CEM810770	23	385	8,855		X	X	4/13/2015
F15B085066	CEM810770	23	385	8,855		X	X	4/13/2015

Note:
Grey text indicates rolls of liner not used between the
9,450' & 9,550' benches

**Cripple Creek Victor Mining Company
Squaw Gulch Vally Leach Facility-Phase 1
(9,450' Bench to 9,550 Bench)
80-mil LLDPE DSMS Geomembrane
Site Inventory Control**



Roll Number	Resin Lot	Width (feet)	Length (feet)	Area (feet ²)	Conformance Test	Agru QC Cert	Resin Cert	Recv'd Onsite
F15B085067	CEM810770	23	385	8,855		X	X	4/13/2015
F15B085068	CEM810770	23	385	8,855	X	X	X	4/13/2015
F15B085069	CEM810870	23	385	8,855		X	X	4/13/2015
F15B085070	CEM810870	23	385	8,855		X	X	4/13/2015
F15B085071	CEM810870	23	385	8,855		X	X	4/13/2015
F15B085072	CEM810870	23	385	8,855		X	X	4/13/2015
F15B085073	CEM810870	23	385	8,855		X	X	4/13/2015
F15B085074	CEM810870	23	385	8,855		X	X	4/13/2015
F15B085075	CEM810870	23	385	8,855		X	X	4/13/2015
F15B085076	CEM810870	23	385	8,855		X	X	4/7/2015
F15B085077	CEM810870	23	385	8,855		X	X	4/7/2015
F15B085078	CEM810870	23	385	8,855		X	X	4/7/2015
F15B085079	CEM810870	23	385	8,855		X	X	4/7/2015
F15B085080	CEM810870	23	385	8,855		X	X	4/7/2015
F15B085081	CEM810870	23	385	8,855		X	X	4/7/2015
F15B086082	CEM810870	23	385	8,855		X	X	4/7/2015
F15B086083	CEM810870	23	385	8,855		X	X	4/7/2015
F15B086084	CEM810870	23	385	8,855		X	X	4/7/2015
F15B086085	CEM810870	23	385	8,855	X	X	X	4/7/2015
F15B086086	CEM810870	23	385	8,855		X	X	4/7/2015
F15B086087	CEM810870	23	385	8,855		X	X	4/7/2015
F15B086088	CEM810870	23	385	8,855		X	X	4/10/2015
F15B086089	CEM810870	23	385	8,855		X	X	4/10/2015
F15B086090	CEM810870	23	385	8,855		X	X	4/10/2015
F15B086092	CEM810870	23	385	8,855		X	X	4/10/2015
F15B086093	CEM810870	23	385	8,855		X	X	4/10/2015
F15B086094	CEM810870	23	385	8,855		X	X	4/10/2015
F15B086095	CEM810870	23	385	8,855		X	X	4/10/2015
F15B086096	CEM810870	23	385	8,855		X	X	4/10/2015
F15B087097	CEM810870	23	385	8,855		X	X	4/10/2015
F15B087098	CEM810870	23	385	8,855		X	X	4/10/2015
F15B087099	CEM810870	23	385	8,855		X	X	4/10/2015
F15B087100	CEM810870	23	385	8,855		X	X	4/10/2015
F15B087101	CEM810870	23	385	8,855		X	X	4/10/2015
F15B087102	CEM810870	23	385	8,855		X	X	4/10/2015
F15B087103	CEM810870	23	385	8,855	X	X	X	4/10/2015
F15B087104	CEM810870	23	385	8,855		X	X	4/10/2015
F15B087105	CEM810870	23	385	8,855		X	X	4/10/2015
F15B087106	CEM810870	23	385	8,855		X	X	4/10/2015

Note:
Grey text indicates rolls of liner not used between the
9,450' & 9,550' benches

**Cripple Creek Victor Mining Company
Squaw Gulch Vally Leach Facility-Phase 1
(9,450' Bench to 9,550 Bench)
80-mil LLDPE DSMS Geomembrane
Site Inventory Control**



Roll Number	Resin Lot	Width (feet)	Length (feet)	Area (feet ²)	Conformance Test	Agru QC Cert	Resin Cert	Recv'd Onsite
F15B087107	CEM810870	23	385	8,855		X	X	4/10/2015
F15B087108	CEM810870	23	385	8,855		X	X	4/10/2015
F15B087109	CEM810870	23	385	8,855		X	X	4/10/2015
F15B087110	CEM810870	23	385	8,855		X	X	4/10/2015
F15B087111	CEM810870	23	385	8,855		X	X	4/10/2015
F15D094027	CEM810870	23	385	8,855		X	X	4/10/2015
F15A347079	CFF810320	23	385	8,855		X	X	9/9/2015
F15A347080	CFF810320	23	385	8,855		X	X	9/9/2015
F15A347081	CFF810320	23	385	8,855		X	X	9/9/2015
F15A347082	CFF810320	23	385	8,855		X	X	9/9/2015
F15A347083	CFF810320	23	385	8,855		X	X	9/9/2015
F15A347084	CFF810320	23	385	8,855		X	X	9/9/2015
F15A351001	CFF810320	23	385	8,855		X	X	9/9/2015
F15A351002	CFF810320	23	385	8,855	X	X	X	9/9/2015
F15A351003	CFF810320	23	385	8,855		X	X	9/9/2015
F15A351004	CFF810320	23	385	8,855		X	X	9/9/2015
F15A351005	CFF810320	23	385	8,855		X	X	9/9/2015
F15A351006	CFF810320	23	385	8,855		X	X	9/9/2015
F15A351007	CFF810320	23	385	8,855		X	X	9/10/2015
F15A351008	CFF810320	23	385	8,855		X	X	9/10/2015
F15A351009	CFF810320	23	385	8,855		X	X	9/10/2015
F15A351010	CFF810320	23	385	8,855		X	X	9/10/2015
F15A351011	CFF810320	23	385	8,855		X	X	9/10/2015
F15A351012	CFF810320	23	385	8,855		X	X	9/10/2015
F15A351013	CFF810320	23	385	8,855		X	X	9/10/2015
F15A351014	CFF810320	23	385	8,855		X	X	9/10/2015
F15A351015	CFD810250	23	385	8,855		X	X	9/10/2015
F15A352016	CFD810250	23	385	8,855		X	X	9/10/2015
F15A352017	CFD810250	23	385	8,855		X	X	9/10/2015
F15A352018	CFD810250	23	385	8,855	X	X	X	9/10/2015
F15A352019	CFD810250	23	385	8,855		X	X	9/10/2015
F15A352020	CFD810250	23	385	8,855		X	X	9/10/2015
F15A352021	CFD810250	23	385	8,855		X	X	9/10/2015
F15A352022	CFD810250	23	385	8,855		X	X	9/10/2015
F15A352023	CFD810250	23	385	8,855		X	X	9/10/2015
F15A352024	CFD810250	23	385	8,855		X	X	9/10/2015
F15A352025	CFD810250	23	385	8,855		X	X	9/10/2015
F15A352026	CFD810250	23	385	8,855		X	X	9/10/2015
F15A352027	CFD810250	23	385	8,855		X	X	9/10/2015

Note:
Grey text indicates rolls of liner not used between the
9,450' & 9,550' benches

**Cripple Creek Victor Mining Company
Squaw Gulch Vally Leach Facility-Phase 1
(9,450' Bench to 9,550' Bench)
80-mil LLDPE DSMS Geomembrane
Site Inventory Control**



Roll Number	Resin Lot	Width (feet)	Length (feet)	Area (feet ²)	Conformance Test	Agru QC Cert	Resin Cert	Recv'd Onsite
F15A352028	CFD810250	23	385	8,855		X	X	9/10/2015
F15A352029	CFD810250	23	385	8,855		X	X	9/10/2015
F15A352030	CFD810250	23	385	8,855		X	X	9/10/2015
F15A353031	CFD810250	23	385	8,855		X	X	9/11/2015
F15A353032	CFD810250	23	385	8,855		X	X	9/11/2015
F15A353033	CFD810250	23	385	8,855		X	X	9/11/2015
F15A353034	CFD810250	23	385	8,855		X	X	9/11/2015
F15A353035	CFD810250	23	385	8,855	X	X	X	9/11/2015
F15A353036	CFD810250	23	385	8,855		X	X	9/11/2015
F15A353037	CFD810250	23	385	8,855		X	X	9/11/2015
F15A353038	CFD810250	23	385	8,855		X	X	9/11/2015
F15A353039	CFD810250	23	385	8,855		X	X	9/11/2015
F15A353040	CFD810250	23	385	8,855		X	X	9/11/2015
F15A353041	CFD810250	23	385	8,855		X	X	9/11/2015
F15A353042	CFD810250	23	385	8,855		X	X	9/11/2015
F15A353043	CFD810250	23	385	8,855		X	X	9/14/2015
F15A353044	CFD810250	23	385	8,855		X	X	9/14/2015
F15A353045	CFD810250	23	385	8,855		X	X	9/14/2015
F15A354046	CFD810250	23	385	8,855		X	X	9/14/2015
F15A354047	CFD810250	23	385	8,855		X	X	9/14/2015
F15A354048	CFD810250	23	385	8,855		X	X	9/14/2015
F15A354049	CFD810250	23	385	8,855		X	X	9/14/2015
F15A354050	CFD810250	23	385	8,855		X	X	9/14/2015
F15A354051	CFD810250	23	385	8,855		X	X	9/14/2015
F15A354052	CFD810250	23	385	8,855	X	X	X	9/14/2015
F15A354053	CFD810250	23	385	8,855		X	X	9/14/2015
F15A354054	CFD810250	23	385	8,855		X	X	9/14/2015
F15A354055	CFD810250	23	385	8,855		X	X	9/21/2015
F15A354056	CFD810250	23	385	8,855		X	X	9/21/2015
F15A354057	CFG811540	23	385	8,855		X	X	9/21/2015
F15A354058	CFG811540	23	385	8,855		X	X	9/21/2015
F15A354059	CFG811540	23	385	8,855		X	X	9/21/2015
F15A354060	CFG811540	23	385	8,855		X	X	9/21/2015
F15A355061	CFG811540	23	385	8,855		X	X	9/21/2015
F15A355062	CFG811540	23	385	8,855		X	X	9/21/2015
F15A355063	CFG811540	23	385	8,855		X	X	9/21/2015
F15A355064	CFG811540	23	385	8,855		X	X	9/21/2015
F15A355065	CFG811540	23	385	8,855		X	X	9/21/2015
F15A355066	CFG811540	23	385	8,855		X	X	9/21/2015

Note:
Grey text indicates rolls of liner not used between the
9,450' & 9,550' benches

**Cripple Creek Victor Mining Company
Squaw Gulch Vally Leach Facility-Phase 1
(9,450' Bench to 9,550 Bench)
80-mil LLDPE DSMS Geomembrane
Site Inventory Control**



Roll Number	Resin Lot	Width (feet)	Length (feet)	Area (feet ²)	Conformance Test	Aggr QC Cert	Resin Cert	Recv'd Onsite
F15A355067	CFG811540	23	385	8,855		X	X	9/21/2015
F15A355068	CFG811540	23	385	8,855		X	X	9/21/2015
F15A355069	CFG811540	23	385	8,855	X	X	X	9/21/2015
F15A355070	CFG811540	23	385	8,855		X	X	9/21/2015
F15A355071	CFG811540	23	385	8,855		X	X	9/21/2015
F15A355072	CFG811540	23	385	8,855		X	X	9/21/2015
F15A355073	CFG811540	23	385	8,855		X	X	9/21/2015
F15A355074	CFG811540	23	385	8,855		X	X	9/21/2015
F15A355075	CFG811540	23	385	8,855		X	X	9/21/2015
F15A356076	CFG811540	23	385	8,855		X	X	9/21/2015
F15A356077	CFG811540	23	385	8,855		X	X	9/21/2015
F15A356078	CFG811540	23	385	8,855		X	X	9/21/2015
F15A356079	CFG811540	23	385	8,855		X	X	9/21/2015
F15A356080	CFG811540	23	385	8,855		X	X	9/21/2015
F15A356081	CFG811540	23	385	8,855		X	X	9/21/2015
F15A356082	CFG811540	23	385	8,855		X	X	9/21/2015
F15A356083	CFG811540	23	385	8,855		X	X	9/21/2015
F15A356084	CFG811540	23	385	8,855		X	X	9/21/2015
F15A356085	CFG811540	23	385	8,855		X	X	9/21/2015
F15A356086	CFG811540	23	385	8,855	X	X	X	9/21/2015
F15A356087	CFG811540	23	385	8,855		X	X	9/21/2015
F15A356088	CFG811540	23	385	8,855		X	X	9/21/2015
F15A356089	CFG811540	23	385	8,855		X	X	9/21/2015
F15A357090	CFG811540	23	385	8,855		X	X	9/21/2015
F15A357091	CFG811540	23	385	8,855		X	X	9/21/2015
F15A357092	CFG811540	23	385	8,855		X	X	9/21/2015
F15A357093	CFG811540	23	385	8,855		X	X	9/21/2015
F15A357094	CFG811540	23	385	8,855		X	X	9/21/2015
F15A357095	CFG811540	23	385	8,855		X	X	9/21/2015
F15A357096	CFG811540	23	385	8,855		X	X	9/21/2015
F15A357097	CFG811540	23	385	8,855		X	X	9/21/2015
F15A357098	CFG811540	23	385	8,855		X	X	9/21/2015
F15A357099	CFG811540	23	385	8,855		X	X	9/21/2015
F15A357100	CFG811540	23	385	8,855		X	X	9/21/2015
F15A357101	CFG811540	23	385	8,855		X	X	9/21/2015
F15A357102	CFG811540	23	385	8,855		X	X	9/21/2015
F15A357103	CFG811540	23	385	8,855	X	X	X	9/23/2015
F15A357104	CFG811540	23	385	8,855		X	X	9/23/2015
F15A361001	CFG811540	23	385	8,855		X	X	9/23/2015

Note:
Grey text indicates rolls of liner not used between the
9,450' & 9,550' benches

**Cripple Creek Victor Mining Company
Squaw Gulch Vally Leach Facility-Phase 1
(9,450' Bench to 9,550 Bench)
80-mil LLDPE DSMS Geomembrane
Site Inventory Control**



Roll Number	Resin Lot	Width (feet)	Length (feet)	Area (feet ²)	Conformance Test	Agru QC Cert	Resin Cert	Recv'd Onsite
F15A361002	CFG811540	23	385	8,855		X	X	9/23/2015
F15A361003	CFG811540	23	385	8,855		X	X	9/23/2015
F15A361004	CFG811540	23	385	8,855		X	X	9/23/2015
F15A361005	CFG811540	23	385	8,855		X	X	9/23/2015
F15A361006	CFG811540	23	385	8,855		X	X	9/23/2015
F15A361007	CFG811540	23	385	8,855		X	X	9/23/2015
F15A361008	CFG811540	23	385	8,855		X	X	9/23/2015
F15A361009	CFG811540	23	385	8,855		X	X	9/23/2015
F15A361010	CFG811540	23	385	8,855		X	X	9/23/2015
F15A361011	CFG811540	23	385	8,855		X	X	9/23/2015
F15A361012	CFG811540	23	385	8,855		X	X	9/23/2015
F15A361013	CFG811540	23	385	8,855		X	X	9/23/2015
F15A361014	CFG811540	23	385	8,855		X	X	9/23/2015
F15A361015	CFG811540	23	385	8,855		X	X	9/23/2015
F15A361016	CFG811540	23	385	8,855	X	X	X	9/23/2015
F15A362017	CFG811540	23	385	8,855		X	X	9/23/2015
F15A362018	CFG811540	23	385	8,855		X	X	9/23/2015
F15A362019	CFG811540	23	385	8,855		X	X	9/23/2015
F15A362020	CFG811540	23	385	8,855		X	X	9/23/2015
F15A362021	CFG811540	23	385	8,855		X	X	9/23/2015
F15A362022	CFG811540	23	385	8,855		X	X	9/23/2015
F15A362023	CFG811540	23	385	8,855		X	X	9/23/2015
F15A362024	CFG811540	23	385	8,855		X	X	9/23/2015
F15A362025	CFG811540	23	385	8,855		X	X	9/23/2015
F15A362026	CFG811540	23	385	8,855		X	X	9/23/2015
F15A362027	CFG811540	23	385	8,855		X	X	9/23/2015
F15A362028	CFG811540	23	385	8,855		X	X	9/23/2015
F15A362029	CFG811540	23	385	8,855		X	X	9/23/2015
F15A362030	CFG811540	23	385	8,855		X	X	9/23/2015
F15A363031	CFG811540	23	385	8,855		X	X	9/23/2015
F15A363032	CFG811540	23	385	8,855		X	X	9/23/2015
F15A363033	CFG811770	23	385	8,855	X	X	X	9/23/2015
F15A363034	CFG811770	23	385	8,855		X	X	9/23/2015
F15A363035	CFG811770	23	385	8,855		X	X	9/23/2015
F15A363036	CFG811770	23	385	8,855		X	X	9/23/2015
F15A363037	CFG811770	23	385	8,855		X	X	9/23/2015
F15A363038	CFG811770	23	385	8,855		X	X	9/23/2015
F15A363039	CFG811770	23	385	8,855		X	X	9/23/2015
F15A363040	CFG811770	23	385	8,855		X	X	9/23/2015

Note:
Grey text indicates rolls of liner not used between the
9,450' & 9,550' benches

**Cripple Creek Victor Mining Company
Squaw Gulch Vally Leach Facility-Phase 1
(9,450' Bench to 9,550 Bench)
80-mil LLDPE DSMS Geomembrane
Site Inventory Control**



Roll Number	Resin Lot	Width (feet)	Length (feet)	Area (feet ²)	Conformance Test	Agru QC Cert	Resin Cert	Recv'd Onsite
F15A363041	CFG811770	23	385	8,855		X	X	9/23/2015
F15A363042	CFG811770	23	385	8,855		X	X	9/23/2015
F15A363043	CFG811770	23	385	8,855		X	X	9/23/2015
F15A363044	CFG811770	23	385	8,855		X	X	9/23/2015
F15A363045	CFG811770	23	385	8,855		X	X	9/23/2015
F15A364046	CFG811770	23	385	8,855		X	X	9/23/2015
F15A364047	CFG811770	23	385	8,855		X	X	9/24/2015
F15A364048	CFG811770	23	385	8,855		X	X	9/24/2015
F15A364049	CFG811770	23	385	8,855		X	X	9/24/2015
F15A364050	CFG811770	23	385	8,855	X	X	X	9/24/2015
F15A364051	CFG811770	23	385	8,855		X	X	9/24/2015
F15A364052	CFG811770	23	385	8,855		X	X	9/24/2015
F15A364053	CFG811770	23	385	8,855		X	X	9/24/2015
F15A364054	CFG811770	23	385	8,855		X	X	9/24/2015
F15A364055	CFG811770	23	385	8,855		X	X	9/24/2015
F15A364056	CFG811770	23	385	8,855		X	X	9/24/2015
F15A364057	CFG811770	23	385	8,855		X	X	9/24/2015
F15A364058	CFG811770	23	385	8,855		X	X	9/24/2015
F15A364059	CFG811770	23	385	8,855		X	X	9/25/2015
F15A364060	CFG811770	23	385	8,855		X	X	9/25/2015
F15A365061	CFG811770	23	385	8,855		X	X	9/25/2015
F15A365062	CFG811770	23	385	8,855		X	X	9/25/2015
F15A365063	CFG811770	23	385	8,855		X	X	9/25/2015
F15A365064	CFG811770	23	385	8,855		X	X	9/25/2015
F15A365065	CFG811770	23	385	8,855		X	X	9/25/2015
F15A365066	CFG811770	23	385	8,855		X	X	9/25/2015
F15A365067	CFG811770	23	385	8,855	X	X	X	9/25/2015
F15A365068	CFG811770	23	385	8,855		X	X	9/25/2015
F15A365069	CFG811770	23	385	8,855		X	X	9/25/2015
F15A365070	CFG811770	23	385	8,855		X	X	9/25/2015
F15A365071	CFG811770	23	385	8,855		X	X	9/28/2015
F15A365072	CFG811770	23	385	8,855		X	X	9/28/2015
F15A365073	CFG811770	23	385	8,855		X	X	9/28/2015
F15A365074	CFG811770	23	385	8,855		X	X	9/28/2015
F15A365075	CFG811770	23	385	8,855		X	X	9/28/2015
F15A366076	CFG811770	23	385	8,855		X	X	9/28/2015
F15A366077	CFG811770	23	385	8,855		X	X	9/28/2015
F15A366078	CFG811770	23	385	8,855		X	X	9/28/2015
F15A366079	CFG811770	23	385	8,855		X	X	9/28/2015

Note:
Grey text indicates rolls of liner not used between the
9,450' & 9,550' benches

**Cripple Creek Victor Mining Company
Squaw Gulch Vally Leach Facility-Phase 1
(9,450' Bench to 9,550 Bench)
80-mil LLDPE DSMS Geomembrane
Site Inventory Control**



Roll Number	Resin Lot	Width (feet)	Length (feet)	Area (feet ²)	Conformance Test	Agru QC Cert	Resin Cert	Recv'd Onsite
F15B362012	CFG811770	23	385	8,855	X	X	X	9/28/2015
F15B362013	CFG811770	23	385	8,855		X	X	9/28/2015
F15B362014	CFG811770	23	385	8,855		X	X	9/28/2015
F15B362015	CFG811770	23	385	8,855		X	X	
F15B362016	CFG811770	23	385	8,855		X	X	

Note:
Grey text indicates rolls of liner not used between the
9,450' & 9,550' benches

Appendix I.3

40-mil LLDPE Smooth Geomembrane

Site Inventory Control

**Cripple Creek Victor Mining Company
Squaw Gulch Valley Leach Facility-Phase 1
(9,450' Bench to 9,550 Bench)
40-mil LLDPE Smooth Geomembrane
Site Inventory Control**



Roll Number	Resin Lot	Width (feet)	Length (feet)	Area (feet ²)	Conformance Test	Agru QC Cert	Resin Cert	Recv'd Onsite
F14D402025	CEH810040	23	835	19,205	X	X	X	10/26/2014
F14D402026	CEH810040	23	835	19,205		X	X	10/26/2014
F14D402027	CEH810040	23	835	19,205		X	X	10/26/2014
F14D402028	CEH810040	23	835	19,205		X	X	10/26/2014
F14D402030	CEH810040	23	835	19,205		X	X	10/26/2014
F14D402031	CEH810040	23	835	19,205		X	X	10/26/2014
F14D402032	CEH810040	23	835	19,205		X	X	10/26/2014

Appendix I.4

80-mil LLDPE DSMS Geomembrane Roll Quality Control Certificates



quality certificate

ROLL # **F14A231002** Lot #: **CEE810230** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.93 mm	76 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.08 mm	82 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **31/31** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.02** mm **80** mil

OIT(Standard) ASTM D3895 minutes **207** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.933
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.35
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Carbon Black Content ASTM D4218	Range	%	2.31
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	44 N/mm	249 ppi	3,125 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	554.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.70
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	289.1 N	65.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	693.9 N	156 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/2/14**

Signature: 
Quality Control Department

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12/23/05



quality certificate

ROLL # **F14A231003** Lot #: **CEE810230** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.91 mm	75 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.11 mm	83 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **38/27** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.05** mm **81** mil

OIT(Standard) ASTM D3895 minutes **207** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.933
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.35
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Carbon Black Content ASTM D4218	Range	%	2.31
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Carbon Black Dispersion ASTM D5596	Category	10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	44 N/mm	252 ppi	3,125 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	554.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.70
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	289.1 N	65.000 lbs
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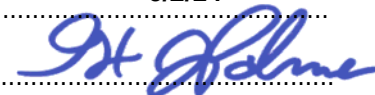
Puncture Resistance FTMS 101 Method 2065 (Modified)	CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	693.9 N	156 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/2/14**

Signature: 
Quality Control Department

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12/23/05



quality certificate

ROLL # **F14A231004** Lot #: **CEE810230** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.92 mm	76 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.19 mm	86 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **38/32** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.04** mm **80** mil

OIT(Standard) ASTM D3895 minutes **207** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.933
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.35
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Carbon Black Content ASTM D4218	Range	%	2.15
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Carbon Black Dispersion ASTM D5596	Category	10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	44 N/mm	251 ppi	3,125 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	554.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.70
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	289.1 N	65.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	693.9 N	156 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/2/14**

Signature: 
Quality Control Department

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12/23/05



quality certificate

ROLL # **F14A231005** Lot #: **CEE810230** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.96 mm	77 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.08 mm	82 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **31/26** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.02** mm **80** mil

OIT(Standard) ASTM D3895 minutes **207** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.933
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.35
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Carbon Black Content ASTM D4218	Range	%	2.15
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	44 N/mm	249 ppi	3,125 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	554.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.70
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	289.1 N	65.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	693.9 N	156 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/2/14**

Signature: 
Quality Control Department

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ROLL # **F14A232027** Lot #: **CEE810230** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.95 mm	77 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.12 mm	83 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **38/28** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.07** mm **81** mil

OIT(Standard) ASTM D3895 minutes **207** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.35
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Carbon Black Content ASTM D4218	Range	%	2.23
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Carbon Black Dispersion ASTM D5596	Category	10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	45 N/mm	256 ppi	3,140 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	472.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.70
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	280.2 N	63.000 lbs
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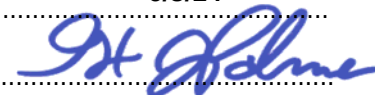
Puncture Resistance FTMS 101 Method 2065 (Modified)	CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	707.2 N	159 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/3/14**

Signature: 
Quality Control Department

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ROLL # **F14A233032** Lot #: **CEE810230** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.00 mm	79 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.16 mm	85 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **30/31** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.06** mm **81** mil

OIT(Standard) ASTM D3895 minutes **207** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.934
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.35
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Carbon Black Content ASTM D4218	Range	%	2.15
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	42 N/mm	240 ppi	2,964 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	518.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.70
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	289.1 N	65.000 lbs
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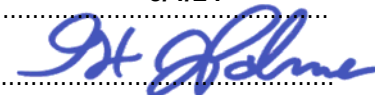
Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	689.4 N	155 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/4/14**

Signature: 
Quality Control Department

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quality certificate

ROLL # **F14A233033** Lot #: **CEE810230** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.00 mm	79 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	22.16 mm	872 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **32/27** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.07** mm **81** mil

OIT(Standard) ASTM D3895 minutes **207** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.934
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.35
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Carbon Black Content ASTM D4218	Range	%	2.15
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	42 N/mm	242 ppi	2,964 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	518.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.70
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	289.1 N	65.000 lbs
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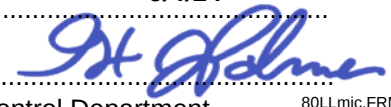
Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	689.4 N	155 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/4/14**

Signature: 
Quality Control Department

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REV 02
12/23/05



quality certificate

ROLL # **F14A233035** Lot #: **CEE810230** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.96 mm	77 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.18 mm	86 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **32/25** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.06** mm **81** mil

OIT(Standard) ASTM D3895 minutes **207** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.934
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.35
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Carbon Black Content ASTM D4218	Range	%	2.35
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Carbon Black Dispersion ASTM D5596	Category	10 In Cat 1
---------------------------------------	----------	--------------------

Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	42 N/mm	240 ppi	2,964 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	518.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.70
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	289.1 N	65.000 lbs
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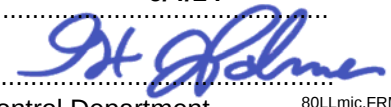
Puncture Resistance FTMS 101 Method 2065 (Modified)	CERTIFIED
--	------------------

Puncture Resistance ASTM D4833 (Modified)	Load	689.4 N	155 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
--------------------	--------------------------	----------	------------------

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/4/14**

Signature: 
Quality Control Department

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REV 02
12/23/05



quality certificate

ROLL # **F14A233036**Lot #: **CEE810230**Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.03 mm	80 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.18 mm	86 mil	Width.....	7.01 m;	23.0 feet
Asperity GRI GM12:	27/34 mil	AVE:	2.08 mm	82 mil	TEST RESULTS	
ODD # : TOP EVEN #: BOTTOM						
OIT(Standard) ASTM D3895					minutes	207

Specific Gravity	Density	g/cc	.934
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.35
COND. E			
GRADE: 7104			

Carbon Black Content	Range	%	2.29
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength					
ASTM D6693					
ASTM D638 (Modified)	Average Strength @ Break	47 N/mm	269 ppi	3,284 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		579.0	
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.70
ASTM D1204 (Modified)			

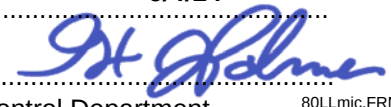
Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	289.1 N		65.000 lbs	

Puncture Resistance				CERTIFIED	
FTMS 101 Method 2065 (Modified)					

Puncture Resistance	Load	689.4 N		155 lbs	
ASTM D4833 (Modified)					

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED		
ASTM D1693					

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/4/14**Signature: 
Quality Control Department80LLmic.FRM
REV 02
12/23/05



quality certificate

ROLL # **F14A233037** Lot #: **CEE810100** Liner Type: **MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)	MIN:	METRIC 2.01 mm	ENGLISH 79 mil	Thickness.....	2.0 mm	80 mil
	MAX:	2.07 mm	81 mil	Length.....	117.349 m	385.0 feet
	AVE:	2.04 mm	80 mil	Width.....	7.01 m;	23.0 feet
Asperity GRI GM12: 28/27 mil ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	193	TEST RESULTS
Specific Gravity ASTM D792	Density			g/cc		.934
MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g			g/10 min		.40
Carbon Black Content ASTM D4218	Range			%		2.29
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			46 N/mm	264 ppi	3,284 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		579.0
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%		-.51
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance			289.1 N		65.000 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)						CERTIFIED
Puncture Resistance ASTM D4833 (Modified)	Load			689.4 N		155 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures			1500 hrs		CERTIFIED

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date:.....**6/4/14**.....

Signature.....*[Signature]*.....
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ROLL # **F14A233038** Lot #: **CEE810100** Liner Type: **MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)	MIN:	METRIC 2.03 mm	ENGLISH 80 mil	Thickness.....	2.0 mm	80 mil
	MAX:	2.25 mm	89 mil	Length.....	117.349 m	385.0 feet
	AVE:	2.10 mm	83 mil	Width.....	7.01 m;	23.0 feet
Asperity GRI GM12: 28/27 mil ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895	minutes 193	TEST RESULTS
Specific Gravity ASTM D792	Density			g/cc		.934
MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g			g/10 min		.40
Carbon Black Content ASTM D4218	Range			%		2.29
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			48 N/mm	271 ppi	3,284 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		579.0
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%		-.51
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance			289.1 N		65.000 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)						CERTIFIED
Puncture Resistance ASTM D4833 (Modified)	Load			689.4 N		155 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures			1500 hrs		CERTIFIED

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date:..... **6/4/14**

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ROLL # **F14A233040**Lot #: **CEE810100**Liner Type: **MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)	MIN:	METRIC 1.98 mm	ENGLISH 78 mil	Thickness.....	2.0 mm	80 mil
	MAX:	2.13 mm	84 mil	Length.....	117.349 m	385.0 feet
	AVE:	2.05 mm	81 mil	Width.....	7.01 m;	23.0 feet
Asperity GRI GM12: 28/27 mil ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895	minutes 193	TEST RESULTS
Specific Gravity ASTM D792	Density			g/cc		.934
MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g			g/10 min		.40
Carbon Black Content ASTM D4218	Range			%		2.27
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			46 N/mm	265 ppi	3,284 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		579.0
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%		-.51
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance			289.1 N		65.000 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)						CERTIFIED
Puncture Resistance ASTM D4833 (Modified)	Load			689.4 N		155 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures			1500 hrs		CERTIFIED

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date:..... **6/4/14**Signature.....
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ROLL # **F14A233041** Lot #: **CEE810100** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.02 mm	80 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.17 mm	85 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **26/25** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.08** mm **82** mil

OIT(Standard) ASTM D3895 minutes **193** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.934
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.40
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Carbon Black Content ASTM D4218	Range	%	2.20
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	45 N/mm	258 ppi	3,156 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	552.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.51
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	291.3 N	65.500 lbs
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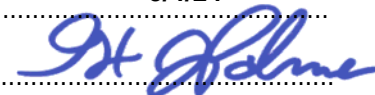
Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	711.7 N	160 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/4/14**

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ROLL # **F14A233042** Lot #: **CEE810100** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.98 mm	78 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.13 mm	84 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **32/26** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.05** mm **81** mil

OIT(Standard) ASTM D3895 minutes **193** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.934
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.40
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Carbon Black Content ASTM D4218	Range	%	2.20
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	45 N/mm	255 ppi	3,156 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	552.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.51
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	291.3 N	65.500 lbs
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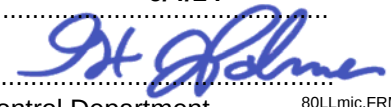
Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	711.7 N	160 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/4/14**

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ROLL # **F14A234044** Lot #: **CEE810100** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.96 mm	77 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.15 mm	85 mil	Width.....	7.01 m	23.0 feet
Asperity GRI GM12:	AVE:	2.08 mm	82 mil			
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes	193

TEST RESULTS

Specific Gravity	Density	g/cc	.934
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.40
COND. E			
GRADE:	7104		

Carbon Black Content	Range	%	2.20
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength					
ASTM D6693					
ASTM D638 (Modified)	Average Strength @ Break	45 N/mm	258 ppi	3,156 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%	552.5		
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.51
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	291.3 N	65.500 lbs		

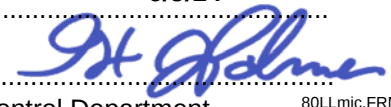
Puncture Resistance					
FTMS 101 Method 2065 (Modified)					CERTIFIED

Puncture Resistance	Load	711.7 N	160 lbs
ASTM D4833 (Modified)			

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
ASTM D1693			

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/5/14**

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ROLL # **F14A234045** Lot #: **CEE810100** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.96 mm	77 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.09 mm	82 mil	Width.....	7.01 m	23.0 feet
Asperity GRI GM12:	AVE:	2.02 mm	80 mil			
ODD #: TOP	EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	193

TEST RESULTS

Specific Gravity	Density	g/cc	.934
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.40
COND. E			
GRADE:	7104		

Carbon Black Content	Range	%	2.20
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength					
ASTM D6693					
ASTM D638 (Modified)	Average Strength @ Break	44 N/mm	251 ppi	3,156 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		552.5	
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.51
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	291.3 N		65.500 lbs	

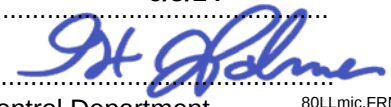
Puncture Resistance					
FTMS 101 Method 2065 (Modified)				CERTIFIED	

Puncture Resistance	Load	711.7 N		160 lbs	
ASTM D4833 (Modified)					

ESCR	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED	
ASTM D1693					

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/5/14**

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ROLL # **F14A234047** Lot #: **CEE810100** Liner Type: **MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)	MIN:	METRIC 1.98 mm	ENGLISH 78 mil	Thickness.....	2.0 mm	80 mil
	MAX:	2.15 mm	85 mil	Length.....	117.349 m	385.0 feet
	AVE:	2.06 mm	81 mil	Width.....	7.01 m;	23.0 feet
Asperity GRI GM12: 33/26 mil ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	193	TEST RESULTS
Specific Gravity ASTM D792	Density			g/cc		.934
MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g			g/10 min		.40
Carbon Black Content ASTM D4218	Range			%		2.18
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			45 N/mm	256 ppi	3,151 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		544.5
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%		-.51
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance			291.3 N		65.500 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)						CERTIFIED
Puncture Resistance ASTM D4833 (Modified)	Load			711.7 N		160 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures			1500 hrs		CERTIFIED

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date:..... **6/5/14**

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ROLL # **F14A234048**

Lot #:

CEE810100Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.96 mm	77 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.16 mm	85 mil	Width.....	7.01 m;	23.0 feet
Asperity GRI GM12:32/28 mil	AVE:	2.05 mm	81 mil	TEST		
ODD # : TOP	EVEN #:	OIT(Standard) ASTM D3895 minutes 193				
BOTTOM		RESULTS				

Specific Gravity ASTM D792	Density	g/cc		.934	
MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min		.40	
Carbon Black Content ASTM D4218	Range	%		2.18	
Carbon Black Dispersion ASTM D5596	Category	10 In Cat 1			
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	45 N/mm	254 ppi	3,151	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%		544.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-.51	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	291.3 N	65.500 lbs		
Puncture Resistance FTMS 101 Method 2065 (Modified)	CERTIFIED				
Puncture Resistance ASTM D4833 (Modified)	Load	711.7 N	160 lbs		
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED	

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date:..... **6/5/14**Signature.....
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ROLL # **F14A234049** Lot #: **CEE810100** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.02 mm	80 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.25 mm	89 mil	Width.....	7.01 m	23.0 feet
Asperity GRI GM12:29/26 mil	AVE:	2.11 mm	83 mil			
ODD #: TOP	EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	193

TEST RESULTS

Specific Gravity	Density	g/cc	.934
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.40
COND. E			
GRADE: 7104			

Carbon Black Content	Range	%	2.34
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength					
ASTM D6693					
ASTM D638 (Modified)	Average Strength @ Break	46 N/mm	262 ppi	3,151 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%	544.5		
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.51
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	291.3 N	65.500 lbs		

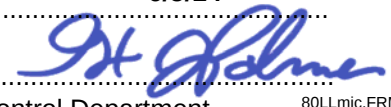
Puncture Resistance					
FTMS 101 Method 2065 (Modified)					CERTIFIED

Puncture Resistance	Load	711.7 N	160 lbs
ASTM D4833 (Modified)			

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
ASTM D1693			

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/5/14**

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ROLL # **F14A234051** Lot #: **CEE810100** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.93 mm	76 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.15 mm	85 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **25/25** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.04** mm **80** mil

OIT(Standard) ASTM D3895 minutes **193** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.934
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.40
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Carbon Black Content ASTM D4218	Range	%	2.30
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	41 N/mm	235 ppi	2,925 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	533.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.51
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	280.2 N	63.000 lbs
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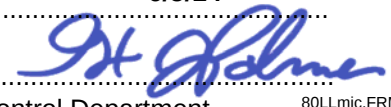
Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	698.3 N	157 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

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ROLL # **F14A234052** Lot #: **CEE810100** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.95 mm	77 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.18 mm	86 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **32/26** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.06** mm **81** mil

OIT(Standard) ASTM D3895 minutes **193** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.934
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.40
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Carbon Black Content ASTM D4218	Range	%	2.30
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	42 N/mm	237 ppi	2,925 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	533.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.51
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	280.2 N	63.000 lbs
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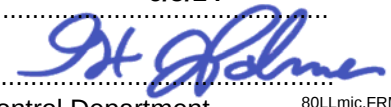
Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	698.3 N	157 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/5/14**

Signature: 
Quality Control Department

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ROLL # **F14A234054** Lot #: **CEE810100** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.94 mm	76 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.17 mm	85 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **28/27** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.05** mm **81** mil

OIT(Standard) ASTM D3895 minutes **193** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.934
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.40
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Carbon Black Content ASTM D4218	Range	%	2.30
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	41 N/mm	236 ppi	2,925 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	533.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.51
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	280.2 N	63.000 lbs
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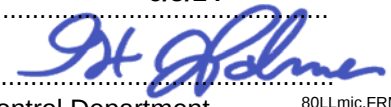
Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	698.3 N	157 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/5/14**

Signature: 
Quality Control Department

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ROLL # **F14A234055** Lot #: **CEE810100** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.04 mm	80 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.22 mm	87 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **33/26** mil AVE: **2.10** mm **83** mil OIT(Standard) ASTM D3895 minutes **193** **TEST RESULTS**
ODD #: TOP EVEN #: BOTTOM

Specific Gravity	Density	g/cc	.934
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.40
COND. E			
GRADE: 7104			

Carbon Black Content	Range	%	2.30
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength					
ASTM D6693					
ASTM D638 (Modified)	Average Strength @ Break	42 N/mm	242 ppi	2,925 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		533.5	
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.51
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	280.2 N		63.000 lbs	

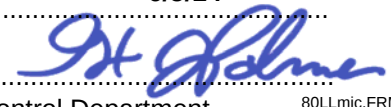
Puncture Resistance				CERTIFIED	
FTMS 101 Method 2065 (Modified)					

Puncture Resistance	Load	698.3 N		157 lbs	
ASTM D4833 (Modified)					

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED		
ASTM D1693					

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/5/14**

Signature: 
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ROLL # **F14A234056** Lot #: **CEE810100** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.91 mm	75 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.13 mm	84 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **27/36** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.03** mm **80** mil

OIT(Standard) ASTM D3895 minutes **193** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.934
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.40
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Carbon Black Content ASTM D4218	Range	%	2.22
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Carbon Black Dispersion ASTM D5596	Category	10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	43 N/mm	245 ppi	3,065 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	538.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.51
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	280.2 N	63.000 lbs
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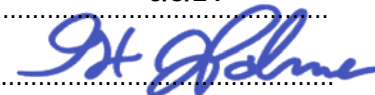
Puncture Resistance FTMS 101 Method 2065 (Modified)	CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	698.3 N	157 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/5/14**

Signature: 
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ROLL # **F14A234057** Lot #: **CEE810100** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.92 mm	76 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.14 mm	84 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **27/27** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.04** mm **80** mil

OIT(Standard) ASTM D3895 minutes **193** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.934
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.40
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Carbon Black Content ASTM D4218	Range	%	2.22
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	43 N/mm	246 ppi	3,065 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	538.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.51
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	280.2 N	63.000 lbs
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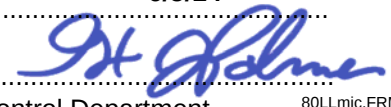
Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	698.3 N	157 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/5/14**

Signature: 
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ROLL # **F14A234058** Lot #: **CEE810100** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.01 mm	79 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.14 mm	84 mil	Width.....	7.01 m;	23.0 feet

Asperity GRI GM12: **35/30** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.07** mm **81** mil

OIT(Standard) ASTM D3895 minutes **193** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.934
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.40
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Carbon Black Content ASTM D4218	Range	%	2.22
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Carbon Black Dispersion ASTM D5596	Category	10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	44 N/mm	250 ppi	3,065 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	538.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.51
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	280.2 N	63.000 lbs
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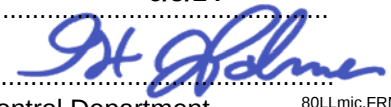
Puncture Resistance FTMS 101 Method 2065 (Modified)	CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	698.3 N	157 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/5/14**

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ROLL # **F14A235059** Lot #: **CEE810100** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.99 mm	78 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.09 mm	82 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **35/26** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.03** mm **80** mil

OIT(Standard) ASTM D3895 minutes **193** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.934
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.40
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Carbon Black Content ASTM D4218	Range	%	2.29
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Carbon Black Dispersion ASTM D5596	Category	10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	43 N/mm	245 ppi	3,065 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	538.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.51
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	280.2 N	63.000 lbs
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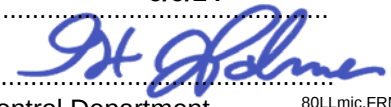
Puncture Resistance FTMS 101 Method 2065 (Modified)	CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	698.3 N	157 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/6/14**

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ROLL # **F14A235060** Lot #: **CEE810100** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.97 mm	78 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.18 mm	86 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **36/26** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.07** mm **81** mil

OIT(Standard) ASTM D3895 minutes **193** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.934
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.40
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Carbon Black Content ASTM D4218	Range	%	2.29
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	44 N/mm	250 ppi	3,065 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	538.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.51
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	280.2 N	63.000 lbs
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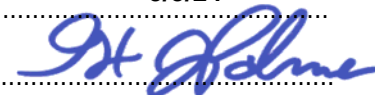
Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	698.3 N	157 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/6/14**

Signature: 
Quality Control Department

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ROLL # **F14A235061** Lot #: **CEE810100** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.96 mm	77 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.10 mm	83 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **29/27** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.04** mm **80** mil
OIT(Standard) ASTM D3895 minutes **193** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.934
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.40
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Carbon Black Content ASTM D4218	Range	%	2.35
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	44 N/mm	251 ppi	3,131 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	547.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.51
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	284.7 N	64.000 lbs
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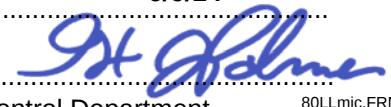
Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	693.9 N	156 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/6/14**

Signature: 
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ROLL # **F14A235064** Lot #: **CEE810100** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.02 mm	80 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.09 mm	82 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **37/26** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.06** mm **81** mil

OIT(Standard) ASTM D3895 minutes **193** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.934
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.40
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Carbon Black Content ASTM D4218	Range	%	2.24
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	44 N/mm	254 ppi	3,131 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	547.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.51
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	284.7 N	64.000 lbs
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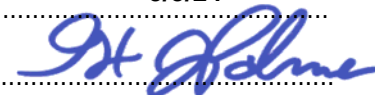
Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	693.9 N	156 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/6/14**

Signature: 
Quality Control Department

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ROLL # **F14A235065** Lot #: **CEE810100** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.97 mm	78 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.23 mm	88 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **31/29** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.08** mm **82** mil

OIT(Standard) ASTM D3895 minutes **193** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.934
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.40
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Carbon Black Content ASTM D4218	Range	%	2.24
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	45 N/mm	256 ppi	3,131 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	547.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.51
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	284.7 N	64.000 lbs
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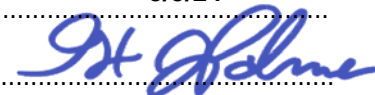
Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	693.9 N	156 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/6/14**

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ROLL # **F14A235066** Lot #: **CEE810100** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.02 mm	80 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.15 mm	85 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **31/28** mil AVE: **2.08** mm **82** mil OIT(Standard) ASTM D3895 minutes **193** **TEST RESULTS**
ODD #: TOP EVEN #: BOTTOM

Specific Gravity	Density	g/cc	.934
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.40
COND. E			
GRADE: 7104			

Carbon Black Content	Range	%	2.49
ASTM D4218			

Carbon Black Dispersion	Category		10 In Cat 1
ASTM D5596			

Tensile Strength					
ASTM D6693					
ASTM D638 (Modified)	Average Strength @ Break	47 N/mm	267 ppi	3,255 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		570.5	
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.51
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	284.7 N		64.000 lbs	

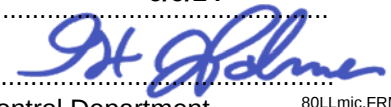
Puncture Resistance				CERTIFIED	
FTMS 101 Method 2065 (Modified)					

Puncture Resistance	Load	693.9 N		156 lbs	
ASTM D4833 (Modified)					

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED		
ASTM D1693					

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/6/14**

Signature: 
Quality Control Department

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ROLL # **F14A235067** Lot #: **CEE810100** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.97 mm	78 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.14 mm	84 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **37/27** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.05** mm **81** mil
OIT(Standard) ASTM D3895 minutes **193** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.934
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.40
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Carbon Black Content ASTM D4218	Range	%	2.49
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	46 N/mm	263 ppi	3,255 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	570.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.51
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	284.7 N	64.000 lbs
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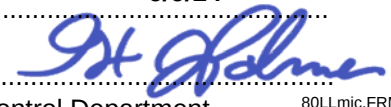
Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	693.9 N	156 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/6/14**

Signature: 
Quality Control Department

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ROLL # **F14A235068** Lot #: **CEE810100** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.03 mm	80 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.16 mm	85 mil	Width.....	7.01 m	23.0 feet
Asperity GRI GM12:	AVE:	2.06 mm	81 mil			
ODD #: TOP	EVEN #: BOTTOM					

OIT(Standard) ASTM D3895 minutes **193** **TEST RESULTS**

Specific Gravity	Density	g/cc	.934
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.40
COND. E			
GRADE: 7104			

Carbon Black Content	Range	%	2.49
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength					
ASTM D6693					
ASTM D638 (Modified)	Average Strength @ Break	46 N/mm	264 ppi	3,255 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%	570.5		
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.51
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	284.7 N	64.000 lbs		

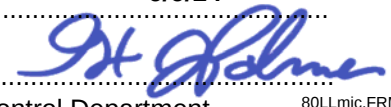
Puncture Resistance					
FTMS 101 Method 2065 (Modified)			CERTIFIED		

Puncture Resistance	Load	693.9 N	156 lbs
ASTM D4833 (Modified)			

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
ASTM D1693			

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/6/14**

Signature: 
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ROLL # **F14A235069** Lot #: **CEE810100** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.00 mm	79 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.13 mm	84 mil	Width.....	7.01 m	23.0 feet
Asperity GRI GM12: 41/27 mil	AVE:	2.07 mm	81 mil			
ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	193	TEST RESULTS

Specific Gravity	Density	g/cc	.934
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.40
COND. E			
GRADE: 7104			

Carbon Black Content	Range	%	2.33
ASTM D4218			

Carbon Black Dispersion	Category		10 In Cat 1
ASTM D5596			

Tensile Strength					
ASTM D6693					
ASTM D638 (Modified)	Average Strength @ Break	46 N/mm	265 ppi	3,255 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		570.5	
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.51
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	284.7 N		64.000 lbs	

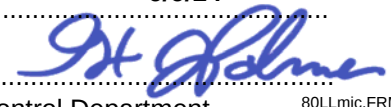
Puncture Resistance				CERTIFIED	
FTMS 101 Method 2065 (Modified)					

Puncture Resistance	Load	693.9 N		156 lbs	
ASTM D4833 (Modified)					

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED		
ASTM D1693					

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/6/14**

Signature: 
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ROLL # **F14A235070** Lot #: **CEE810100** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.05 mm	81 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.26 mm	89 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **38/27** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.12** mm **83** mil

OIT(Standard) ASTM D3895 minutes **193** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.934
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.40
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Carbon Black Content ASTM D4218	Range	%	2.33
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	48 N/mm	272 ppi	3,255 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	570.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.51
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	284.7 N	64.000 lbs
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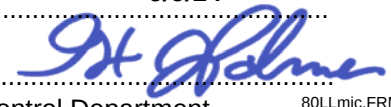
Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	693.9 N	156 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/6/14**

Signature: 
Quality Control Department

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ROLL # **F14A235071** Lot #: **CEE810100** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.97 mm	78 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.11 mm	83 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **33/26** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.05** mm **81** mil
OIT(Standard) ASTM D3895 minutes **193** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.40
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Carbon Black Content ASTM D4218	Range	%	2.25
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	42 N/mm	237 ppi	2,937 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	530.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.51
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	295.8 N	66.500 lbs
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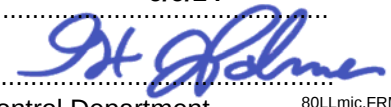
Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	707.2 N	159 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/6/14**

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ROLL # **F14A235072** Lot #: **CEE810100** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.02 mm	80 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.25 mm	89 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **33/24** mil AVE: **2.09** mm **82** mil OIT(Standard) ASTM D3895 minutes **193** **TEST RESULTS**
ODD #: TOP EVEN #: BOTTOM

Specific Gravity	Density	g/cc	.935
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.40
COND. E			
GRADE: 7104			

Carbon Black Content	Range	%	2.25
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength					
ASTM D6693					
ASTM D638 (Modified)	Average Strength @ Break	42 N/mm	242 ppi	2,937 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		530.5	
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.51
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	295.8 N		66.500 lbs	

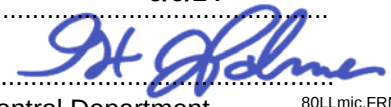
Puncture Resistance				CERTIFIED	
FTMS 101 Method 2065 (Modified)					

Puncture Resistance	Load	707.2 N		159 lbs	
ASTM D4833 (Modified)					

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED		
ASTM D1693					

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/6/14**

Signature: 
Quality Control Department

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ROLL # **F14A236073** Lot #: **CEE810100** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.02 mm	80 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.15 mm	85 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **33/25** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.07** mm **81** mil

OIT(Standard) ASTM D3895 minutes **193** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.40
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Carbon Black Content ASTM D4218	Range	%	2.25
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	42 N/mm	239 ppi	2,937 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	530.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.51
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	295.8 N	66.500 lbs
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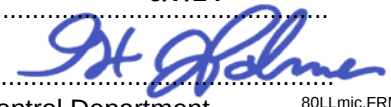
Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	707.2 N	159 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/7/14**

Signature: 
Quality Control Department

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ROLL # **F14A236074** Lot #: **CEE810100** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.02 mm	80 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.14 mm	84 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **35/26** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.07** mm **81** mil

OIT(Standard) ASTM D3895 minutes **193** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.40
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Carbon Black Content ASTM D4218	Range	%	2.45
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	42 N/mm	239 ppi	2,937 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	530.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.51
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	295.8 N	66.500 lbs
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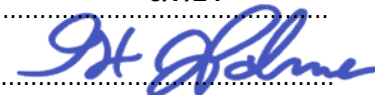
Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	707.2 N	159 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/7/14**

Signature: 
Quality Control Department

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ROLL # **F14A236075**Lot #: **CEE810100**Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.02 mm	80 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.15 mm	85 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **29/21** mil
ODD #: TOP EVEN #: BOTTOMAVE: **2.08** mm **82** milOIT(Standard) ASTM D3895 minutes **193****TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.40
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Carbon Black Content ASTM D4218	Range	%	2.45
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	42 N/mm	241 ppi	2,937 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	530.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.51
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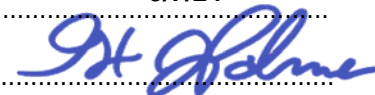
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	295.8 N	66.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	707.2 N	159 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/7/14**Signature: 
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ROLL # **F14A236076**Lot #: **CEE810100**Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.03 mm	80 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.14 mm	84 mil	Width.....	7.01 m	23.0 feet
Asperity GRI GM12:	AVE:	2.09 mm	82 mil	TEST RESULTS		
ODD #: TOP EVEN #: BOTTOM						

OIT(Standard) ASTM D3895 minutes **193**

Specific Gravity ASTM D792	Density	g/cc	.935
MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.40
Carbon Black Content ASTM D4218	Range	%	2.16
Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	46 N/mm	262 ppi 3,184 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	562.0
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.51
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	295.8 N	66.500 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
Puncture Resistance ASTM D4833 (Modified)	Load	707.2 N	159 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date:..... **6/7/14**Signature.....
Quality Control Department

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ROLL # **F14A236077** Lot #: **CEE810100** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.01 mm	79 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.13 mm	84 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **32/26** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.08** mm **82** mil

OIT(Standard) ASTM D3895 minutes **193** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.40
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Carbon Black Content ASTM D4218	Range	%	2.16
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Carbon Black Dispersion ASTM D5596	Category	10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	46 N/mm	261 ppi	3,184 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	562.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.51
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	295.8 N	66.500 lbs
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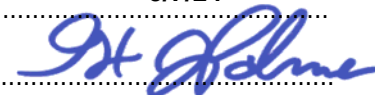
Puncture Resistance FTMS 101 Method 2065 (Modified)	CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	707.2 N	159 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/7/14**

Signature: 
Quality Control Department

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ROLL # **F14A236079** Lot #: **CEE810100** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.97 mm	78 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.23 mm	88 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **32/25** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.08** mm **82** mil

OIT(Standard) ASTM D3895 minutes **193** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.40
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Carbon Black Content ASTM D4218	Range	%	2.25
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	46 N/mm	261 ppi	3,184 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	562.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.51
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	295.8 N	66.500 lbs
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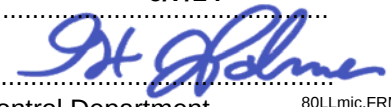
Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	707.2 N	159 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/7/14**

Signature: 
Quality Control Department

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ROLL # **F14A236080** Lot #: **CEE810100** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.01 mm	79 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.21 mm	87 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **32/26** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.09** mm **82** mil

OIT(Standard) ASTM D3895 minutes **193** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.40
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Carbon Black Content ASTM D4218	Range	%	2.25
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	46 N/mm	262 ppi	3,184 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	562.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.51
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	295.8 N	66.500 lbs
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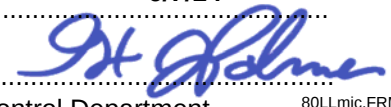
Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	707.2 N	159 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/7/14**

Signature: 
Quality Control Department

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ROLL # **F14A236081** Lot #: **CEE810100** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.96 mm	77 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.24 mm	88 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **34/25** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.04** mm **80** mil

OIT(Standard) ASTM D3895 minutes **193** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.40
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Carbon Black Content ASTM D4218	Range	%	2.27
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	47 N/mm	266 ppi	3,307 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	574.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.51
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	291.3 N	65.500 lbs
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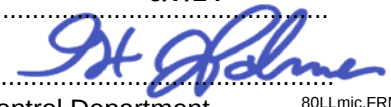
Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	680.5 N	153 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/7/14**

Signature: 
Quality Control Department

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ROLL # **F14A236082** Lot #: **CEE810100** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.03 mm	80 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.22 mm	87 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **37/26** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.11** mm **83** mil

OIT(Standard) ASTM D3895 minutes **193** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.40
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Carbon Black Content ASTM D4218	Range	%	2.27
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	48 N/mm	275 ppi	3,307 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	574.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.51
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	291.3 N	65.500 lbs
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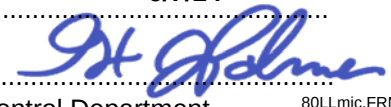
Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	680.5 N	153 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/7/14**

Signature: 
Quality Control Department

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ROLL # **F14A236083** Lot #: **CEE810100** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.04 mm	80 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.22 mm	87 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **38/27** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.10** mm **83** mil

OIT(Standard) ASTM D3895 minutes **193** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.40
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Carbon Black Content ASTM D4218	Range	%	2.27
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	48 N/mm	273 ppi	3,307 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	574.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.51
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	291.3 N	65.500 lbs
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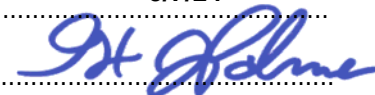
Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	680.5 N	153 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/7/14**

Signature: 
Quality Control Department

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ROLL # **F14A236084** Lot #: **CEE810100** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.97 mm	78 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.10 mm	83 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **29/26** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.05** mm **81** mil

OIT(Standard) ASTM D3895 minutes **193** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.40
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Carbon Black Content ASTM D4218	Range	%	2.27
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	47 N/mm	267 ppi	3,307 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	574.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.51
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	291.3 N	65.500 lbs
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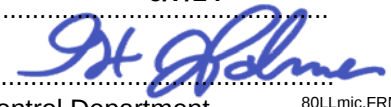
Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	680.5 N	153 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/7/14**

Signature: 
Quality Control Department

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ROLL # **F14A236085** Lot #: **CEE810100** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.00 mm	79 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.14 mm	84 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **29/26** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.06** mm **81** mil

OIT(Standard) ASTM D3895 minutes **193** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.40
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Carbon Black Content ASTM D4218	Range	%	2.27
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Carbon Black Dispersion ASTM D5596	Category	10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	47 N/mm	268 ppi	3,307 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	574.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.51
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	291.3 N	65.500 lbs
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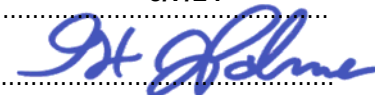
Puncture Resistance FTMS 101 Method 2065 (Modified)	CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	680.5 N	153 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/7/14**

Signature: 
Quality Control Department

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ROLL # **F14A236086** Lot #: **CEE810100** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.97 mm	78 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.18 mm	86 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **26/26** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.08** mm **82** mil

OIT(Standard) ASTM D3895 minutes **193** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.40
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Carbon Black Content ASTM D4218	Range	%	2.37
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	43 N/mm	247 ppi	3,019 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	535.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.51
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	291.3 N	65.500 lbs
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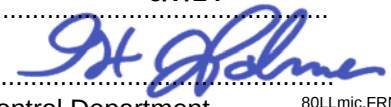
Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	680.5 N	153 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/7/14**

Signature: 
Quality Control Department

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ROLL # **F14A236087** Lot #: **CEE810100** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.94 mm	76 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.14 mm	84 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **29/27** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.05** mm **81** mil

OIT(Standard) ASTM D3895 minutes **193** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.40
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Carbon Black Content ASTM D4218	Range	%	2.37
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Carbon Black Dispersion ASTM D5596	Category	10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	43 N/mm	244 ppi	3,019 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	535.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.51
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	291.3 N	65.500 lbs
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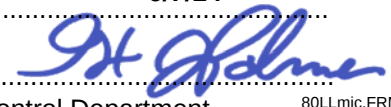
Puncture Resistance FTMS 101 Method 2065 (Modified)	CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	680.5 N	153 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/7/14**

Signature: 
Quality Control Department

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12/23/05



quality certificate

ROLL # **F14A237088** Lot #: **CEE810100** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.96 mm	77 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.15 mm	85 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **26/23** mil AVE: **2.04** mm **80** mil OIT(Standard) ASTM D3895 minutes **193** **TEST RESULTS**
ODD #: TOP EVEN #: BOTTOM

Specific Gravity	Density	g/cc	.935
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.40
COND. E			
GRADE: 7104			

Carbon Black Content	Range	%	2.37
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength					
ASTM D6693					
ASTM D638 (Modified)	Average Strength @ Break	42 N/mm	242 ppi	3,019 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		535.5	
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.51
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	291.3 N		65.500 lbs	

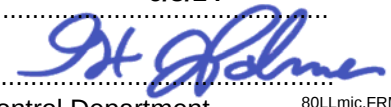
Puncture Resistance				CERTIFIED	
FTMS 101 Method 2065 (Modified)					

Puncture Resistance	Load	680.5 N		153 lbs	
ASTM D4833 (Modified)					

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED		
ASTM D1693					

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/8/14**

Signature: 
Quality Control Department

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12/23/05



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ROLL # **F14A237089** Lot #: **CEE810100** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.96 mm	77 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.20 mm	87 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **25/22** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.08** mm **82** mil

OIT(Standard) ASTM D3895 minutes **193** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.40
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Carbon Black Content ASTM D4218	Range	%	2.40
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	43 N/mm	247 ppi	3,019 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	535.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.51
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	291.3 N	65.500 lbs
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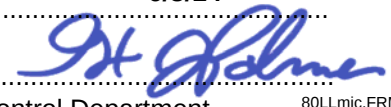
Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	680.5 N	153 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/8/14**

Signature: 
Quality Control Department

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ROLL # **F14A237090**Lot #: **CEE810100**Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.03 mm	80 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.19 mm	86 mil	Width.....	7.01 m;	23.0 feet
Asperity GRI GM12:30/24 mil	AVE:	2.09 mm	82 mil			
ODD # : TOP	EVEN #:				OIT(Standard) ASTM D3895 minutes	193
BOTTOM						
						TEST RESULTS

Specific Gravity	Density	g/cc	.935
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.40
COND. E			
GRADE: 7104			

Carbon Black Content	Range	%	2.40
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength					
ASTM D6693					
ASTM D638 (Modified)	Average Strength @ Break	44 N/mm	248 ppi	3,019 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		535.5	
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.51
ASTM D1204 (Modified)			

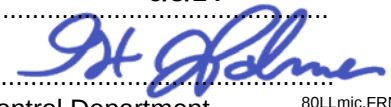
Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	291.3 N		65.500 lbs	

Puncture Resistance					
FTMS 101 Method 2065 (Modified)					CERTIFIED

Puncture Resistance	Load	680.5 N		153 lbs	
ASTM D4833 (Modified)					

ESCR	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED	
ASTM D1693					

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date:.....**6/8/14**.....Signature.....
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ROLL # **F14A237091** Lot #: **CEE810100** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.99 mm	78 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.19 mm	86 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **26/23** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.08** mm **82** mil

OIT(Standard) ASTM D3895 minutes **193** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.40
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Carbon Black Content ASTM D4218	Range	%	2.33
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	45 N/mm	256 ppi	3,126 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	541.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.51
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	295.8 N	66.500 lbs
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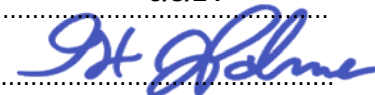
Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	720.6 N	162 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/8/14**

Signature: 
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ROLL # **F14A237092** Lot #: **CEE810100** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.98 mm	78 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.18 mm	86 mil	Width.....	7.01 m	23.0 feet
Asperity GRI GM12: 29/25 mil	AVE:	2.07 mm	81 mil			
ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	193	TEST RESULTS

Specific Gravity	Density	g/cc	.935
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.40
COND. E			
GRADE: 7104			

Carbon Black Content	Range	%	2.33
ASTM D4218			

Carbon Black Dispersion	Category		10 In Cat 1
ASTM D5596			

Tensile Strength					
ASTM D6693					
ASTM D638 (Modified)	Average Strength @ Break	45 N/mm	255 ppi	3,126	psi
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		541.0	
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.51
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	295.8 N		66.500	lbs

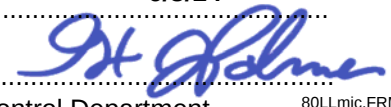
Puncture Resistance					
FTMS 101 Method 2065 (Modified)					CERTIFIED

Puncture Resistance	Load	720.6 N		162	lbs
ASTM D4833 (Modified)					

ESCR	Minimum Hrs w/o Failures	1500 hrs			CERTIFIED
ASTM D1693					

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/8/14**

Signature: 
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ROLL # **F14A237093** Lot #: **CEE810100** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.97 mm	78 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.18 mm	86 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **30/25** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.05** mm **81** mil

OIT(Standard) ASTM D3895 minutes **193** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.40
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Carbon Black Content ASTM D4218	Range	%	2.33
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	44 N/mm	252 ppi	3,126 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	541.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.51
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	295.8 N	66.500 lbs
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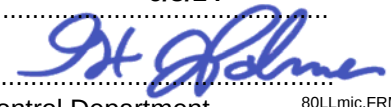
Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	720.6 N	162 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/8/14**

Signature: 
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ROLL # **F14A237094** Lot #: **CEE810100** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.03 mm	80 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.10 mm	83 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **35/26** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.08** mm **82** mil

OIT(Standard) ASTM D3895 minutes **193** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.40
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Carbon Black Content ASTM D4218	Range	%	2.33
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Carbon Black Dispersion ASTM D5596	Category	10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	45 N/mm	256 ppi	3,126 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	541.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.51
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	295.8 N	66.500 lbs
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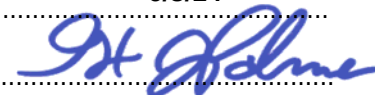
Puncture Resistance FTMS 101 Method 2065 (Modified)	CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	720.6 N	162 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/8/14**

Signature: 
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ROLL # **F14A237095** Lot #: **CEE810100** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.99 mm	78 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.19 mm	86 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **38/26** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.07** mm **81** mil

OIT(Standard) ASTM D3895 minutes **193** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.40
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Carbon Black Content ASTM D4218	Range	%	2.33
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Carbon Black Dispersion ASTM D5596	Category	10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	45 N/mm	255 ppi	3,126 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	541.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.51
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	295.8 N	66.500 lbs
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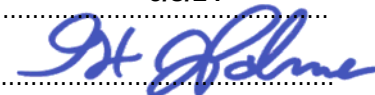
Puncture Resistance FTMS 101 Method 2065 (Modified)	CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	720.6 N	162 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/8/14**

Signature: 
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ROLL # **F14A237096** Lot #: **CEE810100** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.05 mm	81 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.26 mm	89 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **33/26** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.11** mm **83** mil

OIT(Standard) ASTM D3895 minutes **193** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.40
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Carbon Black Content ASTM D4218	Range	%	2.37
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Carbon Black Dispersion ASTM D5596	Category	10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	47 N/mm	266 ppi	3,203 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	558.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.51
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	295.8 N	66.500 lbs
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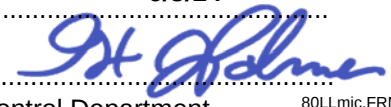
Puncture Resistance FTMS 101 Method 2065 (Modified)	CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	720.6 N	162 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/8/14**

Signature: 
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ROLL # **F14A237097** Lot #: **CEE810100** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.98 mm	78 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.15 mm	85 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **37/27** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.06** mm **81** mil

OIT(Standard) ASTM D3895 minutes **193** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.40
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Carbon Black Content ASTM D4218	Range	%	2.37
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	45 N/mm	260 ppi	3,203 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	558.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.51
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	295.8 N	66.500 lbs
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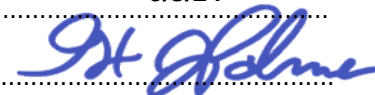
Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	720.6 N	162 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/8/14**

Signature: 
Quality Control Department

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ROLL # **F14A237098** Lot #: **CEE810100** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.02 mm	80 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.16 mm	85 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **33/26** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.08** mm **82** mil

OIT(Standard) ASTM D3895 minutes **193** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.40
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Carbon Black Content ASTM D4218	Range	%	2.37
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	46 N/mm	262 ppi	3,203 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	558.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.51
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	295.8 N	66.500 lbs
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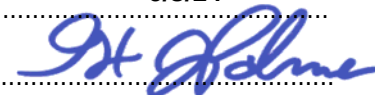
Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	720.6 N	162 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/8/14**

Signature: 
Quality Control Department

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ROLL # **F14A237100**Lot #: **CEE810100**Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.01 mm	79 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.08 mm	82 mil	Width.....	7.01 m;	23.0 feet

Asperity GRI GM12: **30/24** mil
ODD #: TOP EVEN #: BOTTOMAVE: **2.05** mm **81** milOIT(Standard) ASTM D3895 minutes **193****TEST RESULTS**

Specific Gravity	Density	g/cc	.935
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.40
COND. E			
GRADE: 7104			

Carbon Black Content	Range	%	2.24
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength					
ASTM D6693					
ASTM D638 (Modified)	Average Strength @ Break	45 N/mm	258 ppi	3,203 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		558.0	
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.51
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	295.8 N		66.500 lbs	

Puncture Resistance				CERTIFIED	
FTMS 101 Method 2065 (Modified)					

Puncture Resistance	Load	720.6 N		162 lbs	
ASTM D4833 (Modified)					

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED		
ASTM D1693					

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/8/14**Signature:
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ROLL # **F14A237101** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.01 mm	79 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.11 mm	83 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **27/34** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.06** mm **81** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.36
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Carbon Black Content ASTM D4218	Range	%	2.42
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Carbon Black Dispersion ASTM D5596	Category	10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	41 N/mm	237 ppi	2,922 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	511.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	293.6 N	66.000 lbs
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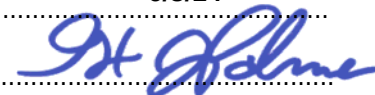
Puncture Resistance FTMS 101 Method 2065 (Modified)	CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	711.7 N	160 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/8/14**

Signature: 
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ROLL # **F14A241001** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.01 mm	79 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.08 mm	82 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **26/23** mil AVE: **2.05** mm **81** mil OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**
ODD #: TOP EVEN #: BOTTOM

Specific Gravity	Density	g/cc	.935
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.36
COND. E			
GRADE: 7104			

Carbon Black Content	Range	%	2.42
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength					
ASTM D6693					
ASTM D638 (Modified)	Average Strength @ Break	41 N/mm	236 ppi	2,922 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		511.5	
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.34
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	293.6 N	66.000 lbs		

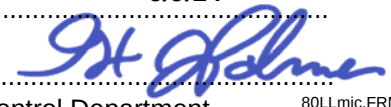
Puncture Resistance			CERTIFIED
FTMS 101 Method 2065 (Modified)			

Puncture Resistance	Load	711.7 N	160 lbs
ASTM D4833 (Modified)			

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
ASTM D1693			

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/9/14**

Signature: 
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ROLL # **F14A241002** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.97 mm	78 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.10 mm	83 mil	Width.....	7.01 m	23.0 feet
Asperity GRI GM12:	AVE:	2.05 mm	81 mil			
ODD #: TOP	EVEN #: BOTTOM					

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity	Density	g/cc	.935
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.36
COND. E			
GRADE: 7104			

Carbon Black Content	Range	%	2.42
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength					
ASTM D6693					
ASTM D638 (Modified)	Average Strength @ Break	41 N/mm	236 ppi	2,922 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		511.5	
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.34
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	293.6 N	66.000 lbs		

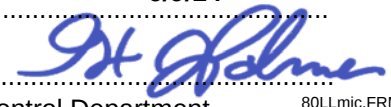
Puncture Resistance				CERTIFIED	
FTMS 101 Method 2065 (Modified)					

Puncture Resistance	Load	711.7 N	160 lbs
ASTM D4833 (Modified)			

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
ASTM D1693			

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/9/14**

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ROLL # **F14A241003** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil	
ASTM D5994	MIN:	1.95 mm	77 mil	Length.....	117.349 m	385.0 feet	
(Modified)	MAX:	2.16 mm	85 mil	Width.....	7.01 m;	23.0 feet	
Asperity GRI GM12:26/26 mil	AVE:	2.07 mm	81 mil	TEST			
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895 minutes				205	RESULTS

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.36
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Carbon Black Content ASTM D4218	Range	%	2.42
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	42 N/mm	238 ppi	2,922 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	511.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	293.6 N	66.000 lbs
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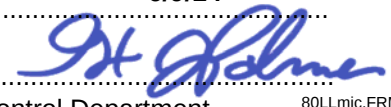
Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	711.7 N	160 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/9/14**

Signature: 
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ROLL # **F14A241004** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.97 mm	78 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.18 mm	86 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **26/26** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.08** mm **82** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.36
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Carbon Black Content ASTM D4218	Range	%	2.42
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Carbon Black Dispersion ASTM D5596	Category	10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	42 N/mm	239 ppi	2,922 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	511.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	293.6 N	66.000 lbs
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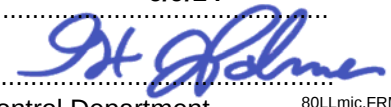
Puncture Resistance FTMS 101 Method 2065 (Modified)	CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	711.7 N	160 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/9/14**

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ROLL # **F14A241005**Lot #: **CEE810120**Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.99 mm	78 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.12 mm	83 mil	Width.....	7.01 m;	23.0 feet
Asperity GRI GM12:24/23 mil	AVE:	2.05 mm	81 mil	TEST RESULTS		
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895 minutes			205	

Specific Gravity	Density	g/cc	.935
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.36
COND. E			
GRADE: 7104			

Carbon Black Content	Range	%	2.29
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength					
ASTM D6693					
ASTM D638 (Modified)	Average Strength @ Break	47 N/mm	268 ppi	3,316 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		501.0	
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.34
ASTM D1204 (Modified)			

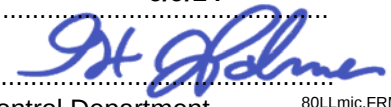
Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	293.6 N		66.000 lbs	

Puncture Resistance					
FTMS 101 Method 2065 (Modified)				CERTIFIED	

Puncture Resistance	Load	711.7 N		160 lbs	
ASTM D4833 (Modified)					

ESCR	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED	
ASTM D1693					

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date:.....**6/9/14**.....Signature.....
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ROLL # **F14A241006** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.98 mm	78 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.14 mm	84 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **34/27** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.09** mm **82** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.36
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Carbon Black Content ASTM D4218	Range	%	2.29
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	48 N/mm	273 ppi	3,316 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	501.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	293.6 N	66.000 lbs
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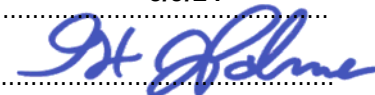
Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	711.7 N	160 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/9/14**

Signature: 
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ROLL # **F14A241007** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.96 mm	77 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.17 mm	85 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **28/26** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.07** mm **81** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.36
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Carbon Black Content ASTM D4218	Range	%	2.29
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	47 N/mm	270 ppi	3,316 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	501.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	293.6 N	66.000 lbs
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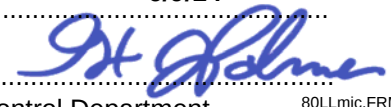
Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	711.7 N	160 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/9/14**

Signature: 
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ROLL # **F14A241008** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.02 mm	80 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.13 mm	84 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **35/27** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.08** mm **82** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.36
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Carbon Black Content ASTM D4218	Range	%	2.29
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	48 N/mm	272 ppi	3,316 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	501.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	293.6 N	66.000 lbs
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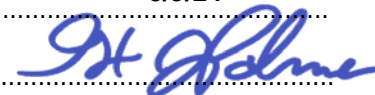
Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	711.7 N	160 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/9/14**

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ROLL # **F14A241009** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.04 mm	80 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.16 mm	85 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **34/26** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.09** mm **82** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.36
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Carbon Black Content ASTM D4218	Range	%	2.29
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Carbon Black Dispersion ASTM D5596	Category	10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	48 N/mm	273 ppi	3,316 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	501.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	293.6 N	66.000 lbs
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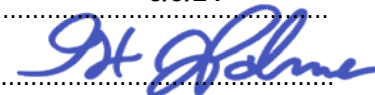
Puncture Resistance FTMS 101 Method 2065 (Modified)	CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	711.7 N	160 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/9/14**

Signature: 
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ROLL # **F14A241010**

Lot #:

CEE810120Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.95 mm	77 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.15 mm	85 mil	Width.....	7.01 m;	23.0 feet
Asperity GRI GM12:	AVE:	2.07 mm	81 mil			
ODD # : TOP	EVEN #:				OIT(Standard) ASTM D3895 minutes	205
BOTTOM						
						TEST RESULTS

Specific Gravity	Density	g/cc	.935
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.36
COND. E			
GRADE: 7104			

Carbon Black Content	Range	%	2.33
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength					
ASTM D6693					
ASTM D638 (Modified)	Average Strength @ Break	46 N/mm	262 ppi	3,221 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		564.0	
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.34
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	304.7 N		68.500 lbs	

Puncture Resistance					
FTMS 101 Method 2065 (Modified)					CERTIFIED

Puncture Resistance	Load	707.2 N		159 lbs	
ASTM D4833 (Modified)					

ESCR	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED	
ASTM D1693					

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date:.....**6/9/14**.....Signature.....
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ROLL # **F14A241012** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.00 mm	79 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.09 mm	82 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **36/26** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.06** mm **81** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.36
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Carbon Black Content ASTM D4218	Range	%	2.33
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Carbon Black Dispersion ASTM D5596	Category	10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	46 N/mm	261 ppi	3,221 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	564.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	304.7 N	68.500 lbs
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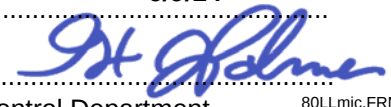
Puncture Resistance FTMS 101 Method 2065 (Modified)	CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	707.2 N	159 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/9/14**

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ROLL # **F14A241013** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.99 mm	78 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.18 mm	86 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **27/25** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.05** mm **81** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.36
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Carbon Black Content ASTM D4218	Range	%	2.38
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	46 N/mm	260 ppi	3,221 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	564.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	304.7 N	68.500 lbs
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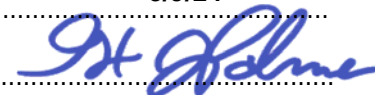
Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	707.2 N	159 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/9/14**

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ROLL # **F14A241014** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.99 mm	78 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.17 mm	85 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **26/21** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.10** mm **83** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.36
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Carbon Black Content ASTM D4218	Range	%	2.38
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	47 N/mm	266 ppi	3,221 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	564.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	304.7 N	68.500 lbs
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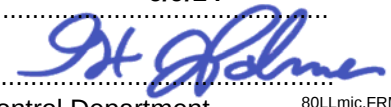
Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	707.2 N	159 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/9/14**

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ROLL # **F14A241015** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.00 mm	79 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.21 mm	87 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **26/23** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.10** mm **83** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.36
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Carbon Black Content ASTM D4218	Range	%	2.19
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	45 N/mm	255 ppi	3,090 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	550.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	304.7 N	68.500 lbs
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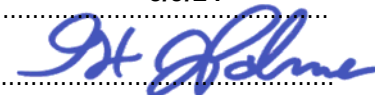
Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	707.2 N	159 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

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ROLL # **F14A242016** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)	MIN: MAX: AVE:	METRIC 2.04 mm 2.19 mm 2.11 mm	ENGLISH 80 mil 86 mil 83 mil	Thickness..... Length..... Width.....	2.0 mm 117.349 m 7.01 m;	80 mil 385.0 feet 23.0 feet
Asperity GRI GM12: 26/23 mil ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895	minutes 205	TEST RESULTS
Specific Gravity ASTM D792	Density			g/cc		.935
MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g			g/10 min		.36
Carbon Black Content ASTM D4218	Range			%		2.19
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			45 N/mm	257 ppi	3,090 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		550.5
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%		-.34
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance			304.7 N		68.500 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)						CERTIFIED
Puncture Resistance ASTM D4833 (Modified)	Load			707.2 N		159 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures			1500 hrs		CERTIFIED

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

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ROLL # **F14A242017** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)	MIN:	METRIC 2.05 mm	ENGLISH 81 mil	Thickness.....	2.0 mm	80 mil
	MAX:	2.13 mm	84 mil	Length.....	117.349 m	385.0 feet
	AVE:	2.10 mm	83 mil	Width.....	7.01 m;	23.0 feet
Asperity GRI GM12: 30/26 mil ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895	minutes 205	TEST RESULTS
Specific Gravity ASTM D792	Density			g/cc		.935
MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g			g/10 min		.36
Carbon Black Content ASTM D4218	Range			%		2.19
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			45 N/mm	255 ppi	3,090 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		550.5
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%		-.34
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance			304.7 N		68.500 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)						CERTIFIED
Puncture Resistance ASTM D4833 (Modified)	Load			707.2 N		159 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures			1500 hrs		CERTIFIED

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date:.....**6/10/14**.....

Signature.....*[Signature]*.....
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ROLL # **F14A242018** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)	MIN:	METRIC 2.03 mm	ENGLISH 80 mil	Thickness.....	2.0 mm	80 mil
	MAX:	2.17 mm	85 mil	Length.....	117.349 m	385.0 feet
	AVE:	2.10 mm	83 mil	Width.....	7.01 m;	23.0 feet
Asperity GRI GM12: 30/28 mil ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895	minutes 205	TEST RESULTS
Specific Gravity ASTM D792	Density			g/cc		.935
MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g			g/10 min		.36
Carbon Black Content ASTM D4218	Range			%		2.19
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			45 N/mm	255 ppi	3,090 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		550.5
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%		-.34
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance			304.7 N		68.500 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)						CERTIFIED
Puncture Resistance ASTM D4833 (Modified)	Load			707.2 N		159 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures			1500 hrs		CERTIFIED

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date:.....**6/10/14**.....

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ROLL # **F14A242019** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.04 mm	80 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.17 mm	85 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **31/27** mil AVE: **2.10** mm **83** mil OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**
ODD #: TOP EVEN #: BOTTOM

Specific Gravity	Density	g/cc	.935
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.36
COND. E			
GRADE: 7104			

Carbon Black Content	Range	%	2.19
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength					
ASTM D6693					
ASTM D638 (Modified)	Average Strength @ Break	45 N/mm	255 ppi	3,090 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		550.5	
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.34
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	304.7 N		68.500 lbs	

Puncture Resistance				CERTIFIED	
FTMS 101 Method 2065 (Modified)					

Puncture Resistance	Load	707.2 N		159 lbs	
ASTM D4833 (Modified)					

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED		
ASTM D1693					

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/10/14**

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ROLL # **F14A242020** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.00 mm	79 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.18 mm	86 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **25/24** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.08** mm **82** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.36
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Carbon Black Content ASTM D4218	Range	%	2.36
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	46 N/mm	263 ppi	3,207 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	568.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	295.8 N	66.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	698.3 N	157 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/10/14**

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ROLL # **F14A242021** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.01 mm	79 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.19 mm	86 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **33/26** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.08** mm **82** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.36
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Carbon Black Content ASTM D4218	Range	%	2.36
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Carbon Black Dispersion ASTM D5596	Category	10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	46 N/mm	263 ppi	3,207 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	568.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	295.8 N	66.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	698.3 N	157 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/10/14**

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ROLL # **F14A242022** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)	MIN:	METRIC 1.98 mm	ENGLISH 78 mil	Thickness.....	2.0 mm	80 mil
	MAX:	2.15 mm	85 mil	Length.....	117.349 m	385.0 feet
	AVE:	2.07 mm	81 mil	Width.....	7.01 m;	23.0 feet
Asperity GRI GM12: 33/26 mil ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895	minutes 205	TEST RESULTS
Specific Gravity ASTM D792	Density			g/cc		.935
MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g			g/10 min		.36
Carbon Black Content ASTM D4218	Range			%		2.36
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			46 N/mm	261 ppi	3,207 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		568.5
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%		-.34
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance			295.8 N		66.500 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)						CERTIFIED
Puncture Resistance ASTM D4833 (Modified)	Load			698.3 N		157 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures			1500 hrs		CERTIFIED

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date:..... **6/10/14**

Signature.....
Quality Control Department

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ROLL # **F14A242023** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.03 mm	80 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.16 mm	85 mil	Width.....	7.01 m;	23.0 feet

Asperity GRI GM12: **32/28** mil AVE: **2.08** mm **82** mil OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**
ODD #: TOP EVEN #: BOTTOM

Specific Gravity	Density	g/cc	.935
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.36
COND. E			
GRADE: 7104			

Carbon Black Content	Range	%	2.27
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength					
ASTM D6693					
ASTM D638 (Modified)	Average Strength @ Break	46 N/mm	263 ppi	3,207 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		568.5	
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.34
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	295.8 N	66.500 lbs		

Puncture Resistance				CERTIFIED	
FTMS 101 Method 2065 (Modified)					

Puncture Resistance	Load	698.3 N	157 lbs
ASTM D4833 (Modified)			

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
ASTM D1693			

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/10/14**

Signature: 
Quality Control Department

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ROLL # **F14A242024** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.98 mm	78 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.12 mm	83 mil	Width.....	7.01 m	23.0 feet
Asperity GRI GM12:	AVE:	2.07 mm	81 mil			
ODD #: TOP	EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	205

TEST RESULTS

Specific Gravity	Density	g/cc	.935
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.36
COND. E			
GRADE:	7104		

Carbon Black Content	Range	%	2.27
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength					
ASTM D6693					
ASTM D638 (Modified)	Average Strength @ Break	46 N/mm	261 ppi	3,207 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%	568.5		
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.34
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	295.8 N	66.500 lbs		

Puncture Resistance					
FTMS 101 Method 2065 (Modified)					CERTIFIED

Puncture Resistance	Load	698.3 N	157 lbs
ASTM D4833 (Modified)			

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
ASTM D1693			

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/10/14**

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ROLL # **F14A242025** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.96 mm	77 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.12 mm	83 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **31/28** mil AVE: **2.06** mm **81** mil OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**
ODD #: TOP EVEN #: BOTTOM

Specific Gravity	Density	g/cc	.935
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.36
COND. E			
GRADE: 7104			

Carbon Black Content	Range	%	2.19
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength					
ASTM D6693					
ASTM D638 (Modified)	Average Strength @ Break	46 N/mm	260 ppi	3,210 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		522.5	
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.34
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	295.8 N		66.500 lbs	

Puncture Resistance				CERTIFIED	
FTMS 101 Method 2065 (Modified)					

Puncture Resistance	Load	698.3 N		157 lbs	
ASTM D4833 (Modified)					

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED		
ASTM D1693					

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/10/14**

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ROLL # **F14A242026** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.00 mm	79 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.09 mm	82 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **34/25** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.04** mm **80** mil
OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.36
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Carbon Black Content ASTM D4218	Range	%	2.19
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	45 N/mm	258 ppi	3,210 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	522.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	295.8 N	66.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	698.3 N	157 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/10/14**

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ROLL # **F14A242027** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.96 mm	77 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.09 mm	82 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **32/28** mil AVE: **2.03** mm **80** mil OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**
ODD #: TOP EVEN #: BOTTOM

Specific Gravity	Density	g/cc	.935
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.36
COND. E			
GRADE: 7104			

Carbon Black Content	Range	%	2.19
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength					
ASTM D6693					
ASTM D638 (Modified)	Average Strength @ Break	45 N/mm	257 ppi	3,210 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		522.5	
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.34
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	295.8 N		66.500 lbs	

Puncture Resistance				CERTIFIED	
FTMS 101 Method 2065 (Modified)					

Puncture Resistance	Load	698.3 N		157 lbs	
ASTM D4833 (Modified)					

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED		
ASTM D1693					

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/10/14**

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ROLL # **F14A242028** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.90 mm	75 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.13 mm	84 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **35/39** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.05** mm **81** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.36
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Carbon Black Content ASTM D4218	Range	%	2.19
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	45 N/mm	259 ppi	3,210 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	522.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	295.8 N	66.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	698.3 N	157 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

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ROLL # **F14A242029** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.97 mm	78 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.13 mm	84 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **25/25** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.02** mm **80** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.36
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Carbon Black Content ASTM D4218	Range	%	2.19
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Carbon Black Dispersion ASTM D5596	Category	10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	45 N/mm	255 ppi	3,210 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	522.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	295.8 N	66.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	698.3 N	157 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/10/14**

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ROLL # **F14A243030** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.05 mm	81 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.20 mm	87 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **25/25** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.09** mm **82** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.36
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Carbon Black Content ASTM D4218	Range	%	2.40
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	45 N/mm	258 ppi	3,130 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	552.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	295.8 N	66.500 lbs
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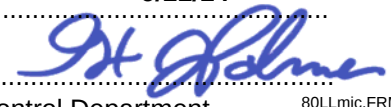
Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	698.3 N	157 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/11/14**

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ROLL # **F14A243031** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.98 mm	78 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.17 mm	85 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **24/27** mil AVE: **2.07** mm **81** mil OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**
ODD #: TOP EVEN #: BOTTOM

Specific Gravity	Density	g/cc	.935
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.36
COND. E			
GRADE: 7104			

Carbon Black Content	Range	%	2.40
ASTM D4218			

Carbon Black Dispersion	Category		10 In Cat 1
ASTM D5596			

Tensile Strength					
ASTM D6693					
ASTM D638 (Modified)	Average Strength @ Break	45 N/mm	255 ppi	3,130 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		552.0	
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.34
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	295.8 N		66.500 lbs	

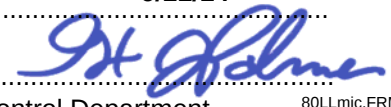
Puncture Resistance				CERTIFIED	
FTMS 101 Method 2065 (Modified)					

Puncture Resistance	Load	698.3 N		157 lbs	
ASTM D4833 (Modified)					

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED		
ASTM D1693					

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/11/14**

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ROLL # **F14A243032** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.02 mm	80 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.21 mm	87 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **29/25** mil AVE: **2.10** mm **83** mil OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**
ODD #: TOP EVEN #: BOTTOM

Specific Gravity	Density	g/cc	.935
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.36
COND. E			
GRADE: 7104			

Carbon Black Content	Range	%	2.40
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength					
ASTM D6693					
ASTM D638 (Modified)	Average Strength @ Break	45 N/mm	259 ppi	3,130 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		552.0	
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.34
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	295.8 N	66.500 lbs		

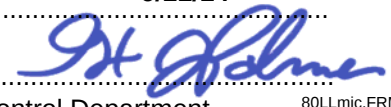
Puncture Resistance				CERTIFIED	
FTMS 101 Method 2065 (Modified)					

Puncture Resistance	Load	698.3 N	157 lbs
ASTM D4833 (Modified)			

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
ASTM D1693			

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/11/14**

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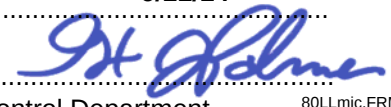


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ROLL # **F14A243033**Lot #: **CEE810120**Liner Type: **MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)	MIN:	METRIC 2.01 mm	ENGLISH 79 mil	Thickness.....	2.0 mm	80 mil
	MAX:	2.17 mm	85 mil	Length.....	117.349 m	385.0 feet
	AVE:	2.08 mm	82 mil	Width.....	7.01 m;	23.0 feet
Asperity GRI GM12: 26/24 mil ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895	minutes 205	TEST RESULTS
Specific Gravity ASTM D792	Density			g/cc		.935
MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g			g/10 min		.36
Carbon Black Content ASTM D4218	Range			%		2.33
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			45 N/mm	256 ppi	3,130 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		552.0
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%		-.34
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance			295.8 N		66.500 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)						CERTIFIED
Puncture Resistance ASTM D4833 (Modified)	Load			698.3 N		157 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures			1500 hrs		CERTIFIED

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date:.....**6/11/14**.....Signature.....
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ROLL # **F14A243034** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)	METRIC MIN: 1.98 mm MAX: 2.14 mm AVE: 2.07 mm	ENGLISH 78 mil 84 mil 81 mil	Thickness..... Length..... Width.....	2.0 mm 117.349 m 7.01 m;	80 mil 385.0 feet 23.0 feet
Asperity GRI GM12: 26/25 mil ODD #: TOP EVEN #: BOTTOM	OIT(Standard) ASTM D3895 minutes 205				
Specific Gravity ASTM D792	Density		g/cc		.935
MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g		g/10 min		.36
Carbon Black Content ASTM D4218	Range		%		2.33
Carbon Black Dispersion ASTM D5596	Category				10 In Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break		45 N/mm	255 ppi	3,130 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break		%		552.0
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%		-.34
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance		295.8 N		66.500 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)					CERTIFIED
Puncture Resistance ASTM D4833 (Modified)	Load		698.3 N		157 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs			CERTIFIED

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date:.....**6/11/14**.....

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ROLL # **F14A243035** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.98 mm	78 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.15 mm	85 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **30/27** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.06** mm **81** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.933
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.36
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Carbon Black Content ASTM D4218	Range	%	2.23
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	43 N/mm	243 ppi	2,994 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	543.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	295.8 N	66.500 lbs
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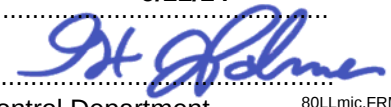
Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	702.8 N	158 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/11/14**

Signature: 
Quality Control Department

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ROLL # **F14A243036** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.00 mm	79 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.11 mm	83 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12:**31/27** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.06** mm **81** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.933
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.36
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Carbon Black Content ASTM D4218	Range	%	2.23
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	43 N/mm	243 ppi	2,994 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	543.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	295.8 N	66.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	702.8 N	158 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date:.....**6/11/14**.....

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ROLL # **F14A243037**

Lot #:

CEE810120Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.01 mm	79 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.12 mm	83 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **31/28** mil
ODD #: TOP EVEN #: BOTTOMAVE: **2.06** mm **81** milOIT(Standard) ASTM D3895 minutes **205****TEST RESULTS**

Specific Gravity	Density	g/cc	.933
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.36
COND. E			
GRADE: 7104			

Carbon Black Content	Range	%	2.23
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength					
ASTM D6693					
ASTM D638 (Modified)	Average Strength @ Break	43 N/mm	243 ppi	2,994 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		543.0	
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.34
ASTM D1204 (Modified)			

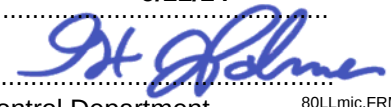
Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	295.8 N		66.500 lbs	

Puncture Resistance				CERTIFIED	
FTMS 101 Method 2065 (Modified)					

Puncture Resistance	Load	702.8 N		158 lbs	
ASTM D4833 (Modified)					

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED		
ASTM D1693					

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/11/14**Signature: 
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ROLL # **F14A243038**Lot #: **CEE810120**Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.99 mm	78 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.12 mm	83 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **30/29** mil
ODD #: TOP EVEN #: BOTTOMAVE: **2.06** mm **81** milOIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity	Density	g/cc	.933
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.36
COND. E			
GRADE: 7104			

Carbon Black Content	Range	%	2.23
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength					
ASTM D6693					
ASTM D638 (Modified)	Average Strength @ Break	43 N/mm	243 ppi	2,994 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		543.0	
Lo = 1.3" Yield					
Lo = 2.0" Break					

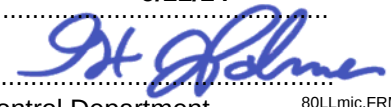
Dimensional Stability	Average Dimensional change	%	-.34
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	295.8 N		66.500 lbs	

Puncture Resistance				CERTIFIED	
FTMS 101 Method 2065 (Modified)					

Puncture Resistance	Load	702.8 N		158 lbs	
ASTM D4833 (Modified)					

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED		
ASTM D1693					

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**Date: **6/11/14**Signature: 
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ROLL # **F14A243039** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.99 mm	78 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.13 mm	84 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **29/27** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.05** mm **81** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.933
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.36
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Carbon Black Content ASTM D4218	Range	%	2.23
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	42 N/mm	242 ppi	2,994 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	543.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	295.8 N	66.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	702.8 N	158 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/11/14**

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ROLL # **F14A243040** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.00 mm	79 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.11 mm	83 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **28/27** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.05** mm **81** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.933
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.36
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Carbon Black Content ASTM D4218	Range	%	2.26
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	42 N/mm	239 ppi	2,966 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	521.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	295.8 N	66.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	702.8 N	158 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/11/14**

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ROLL # **F14A243041** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.98 mm	78 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.14 mm	84 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **29/27** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.05** mm **81** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.933
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.36
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Carbon Black Content ASTM D4218	Range	%	2.26
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	42 N/mm	239 ppi	2,966 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	521.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	295.8 N	66.500 lbs
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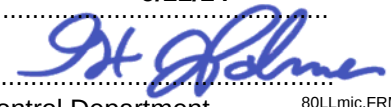
Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	702.8 N	158 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/11/14**

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ROLL # **F14A243042** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.96 mm	77 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.15 mm	85 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **32/25** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.08** mm **82** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.933
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.36
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Carbon Black Content ASTM D4218	Range	%	2.26
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	43 N/mm	243 ppi	2,966 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	521.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	295.8 N	66.500 lbs
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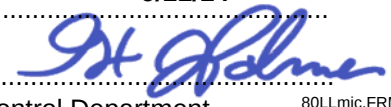
Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	702.8 N	158 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/11/14**

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Quality Control Department

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ROLL # **F14A243043** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.02 mm	80 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.23 mm	88 mil	Width.....	7.01 m;	23.0 feet
Asperity GRI GM12:	AVE:	2.10 mm	83 mil			
ODD #: TOP	EVEN #: BOTTOM					

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity	Density	g/cc	.933
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.36
COND. E			
GRADE: 7104			

Carbon Black Content	Range	%	2.28
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength					
ASTM D6693					
ASTM D638 (Modified)	Average Strength @ Break	43 N/mm	245 ppi	2,966 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		521.0	
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.34
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	295.8 N	66.500 lbs		

Puncture Resistance				CERTIFIED	
FTMS 101 Method 2065 (Modified)					

Puncture Resistance	Load	702.8 N	158 lbs
ASTM D4833 (Modified)			

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
ASTM D1693			

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/11/14**

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ROLL # **F14A243044** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.99 mm	78 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.17 mm	85 mil	Width.....	7.01 m	23.0 feet
Asperity GRI GM12: 27/26 mil	AVE:	2.09 mm	82 mil			
ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	205	TEST RESULTS

Specific Gravity	Density	g/cc	.933
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.36
COND. E			
GRADE: 7104			

Carbon Black Content	Range	%	2.28
ASTM D4218			

Carbon Black Dispersion	Category		10 In Cat 1
ASTM D5596			

Tensile Strength					
ASTM D6693					
ASTM D638 (Modified)	Average Strength @ Break	43 N/mm	244 ppi	2,966	psi
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		521.0	
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.34
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	295.8 N		66.500	lbs

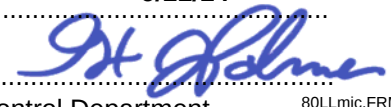
Puncture Resistance				CERTIFIED	
FTMS 101 Method 2065 (Modified)					

Puncture Resistance	Load	702.8 N		158	lbs
ASTM D4833 (Modified)					

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED		
ASTM D1693					

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/11/14**

Signature: 
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ROLL # **F14A244045** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.00 mm	79 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.15 mm	85 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **28/24** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.07** mm **81** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.934
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.36
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Carbon Black Content ASTM D4218	Range	%	2.37
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Carbon Black Dispersion ASTM D5596	Category	10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	46 N/mm	263 ppi	3,228 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	569.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	293.6 N	66.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	698.3 N	157 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **06/12/14**

Signature: 
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ROLL # **F14A244046** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)	MIN: MAX: AVE:	METRIC 2.00 mm 2.22 mm 2.11 mm	ENGLISH 79 mil 87 mil 83 mil	Thickness..... Length..... Width.....	2.0 mm 117.349 m 7.01 m;	80 mil 385.0 feet 23.0 feet
Asperity GRI GM12: 26/27 mil ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895	minutes 205	TEST RESULTS
Specific Gravity ASTM D792	Density			g/cc		.934
MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g			g/10 min		.36
Carbon Black Content ASTM D4218	Range			%		2.37
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			47 N/mm	268 ppi	3,228 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		569.0
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%		-.34
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance			293.6 N		66.000 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)						CERTIFIED
Puncture Resistance ASTM D4833 (Modified)	Load			698.3 N		157 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures			1500 hrs		CERTIFIED

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

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ROLL # **F14A244047** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)	MIN:	METRIC 2.01 mm	ENGLISH 79 mil	Thickness.....	2.0 mm	80 mil
	MAX:	2.10 mm	83 mil	Length.....	117.349 m	385.0 feet
	AVE:	2.06 mm	81 mil	Width.....	7.01 m;	23.0 feet
Asperity GRI GM12: 43/28 mil ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	205	TEST RESULTS
Specific Gravity ASTM D792	Density			g/cc		.934
MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g			g/10 min		.36
Carbon Black Content ASTM D4218	Range			%		2.37
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			46 N/mm	262 ppi	3,228 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		569.0
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%		-.34
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance			293.6 N		66.000 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)						CERTIFIED
Puncture Resistance ASTM D4833 (Modified)	Load			698.3 N		157 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures			1500 hrs		CERTIFIED

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

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ROLL # **F14A244048** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)	MIN: MAX: AVE:	METRIC 2.01 mm 2.20 mm 2.09 mm	ENGLISH 79 mil 87 mil 82 mil	Thickness..... Length..... Width.....	2.0 mm 117.349 m 7.01 m;	80 mil 385.0 feet 23.0 feet
Asperity GRI GM12: 32/26 mil ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895	minutes 205	TEST RESULTS
Specific Gravity ASTM D792	Density			g/cc		.934
MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g			g/10 min		.36
Carbon Black Content ASTM D4218	Range			%		2.26
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			47 N/mm	266 ppi	3,228 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		569.0
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%		-.34
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance			293.6 N		66.000 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)						CERTIFIED
Puncture Resistance ASTM D4833 (Modified)	Load			698.3 N		157 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures			1500 hrs		CERTIFIED

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

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ROLL # **F14A244049** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.01 mm	79 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.12 mm	83 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **35/26** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.07** mm **81** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.934
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.36
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Carbon Black Content ASTM D4218	Range	%	2.26
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Carbon Black Dispersion ASTM D5596	Category	10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	46 N/mm	263 ppi	3,228 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	569.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	293.6 N	66.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	698.3 N	157 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

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ROLL # **F14A244050**Lot #: **CEE810120**Liner Type: **MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)	MIN:	METRIC 2.02 mm	ENGLISH 80 mil	Thickness.....	2.0 mm	80 mil
	MAX:	2.14 mm	84 mil	Length.....	117.349 m	385.0 feet
	AVE:	2.09 mm	82 mil	Width.....	7.01 m;	23.0 feet
Asperity GRI GM12: 34/26 mil ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895	minutes 205	TEST RESULTS
Specific Gravity ASTM D792	Density			g/cc		.934
MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g			g/10 min		.36
Carbon Black Content ASTM D4218	Range			%		2.18
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			46 N/mm	261 ppi	3,172 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		551.0
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%		-.34
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance			293.6 N		66.000 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)						CERTIFIED
Puncture Resistance ASTM D4833 (Modified)	Load			698.3 N		157 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures			1500 hrs		CERTIFIED

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

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ROLL # **F14A244051** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.05 mm	81 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.17 mm	85 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **33/26** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.10** mm **83** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.934
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.36
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Carbon Black Content ASTM D4218	Range	%	2.18
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	46 N/mm	262 ppi	3,172 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	551.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	293.6 N	66.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	698.3 N	157 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

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ROLL # **F14A244052** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.02 mm	80 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.17 mm	85 mil	Width.....	7.01 m	23.0 feet
Asperity GRI GM12:	AVE:	2.09 mm	82 mil			
ODD #: TOP	EVEN #: BOTTOM					

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity	Density	g/cc	.934
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.36
COND. E			
GRADE: 7104			

Carbon Black Content	Range	%	2.18
ASTM D4218			

Carbon Black Dispersion	Category		10 In Cat 1
ASTM D5596			

Tensile Strength					
ASTM D6693					
ASTM D638 (Modified)	Average Strength @ Break	46 N/mm	261 ppi	3,172	psi
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		551.0	
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.34
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	293.6 N		66.000	lbs

Puncture Resistance				CERTIFIED	
FTMS 101 Method 2065 (Modified)					

Puncture Resistance	Load	698.3 N		157	lbs
ASTM D4833 (Modified)					

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED		
ASTM D1693					

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

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ROLL # **F14A244053** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.95 mm	77 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.11 mm	83 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **36/26** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.05** mm **81** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.934
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.36
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Carbon Black Content ASTM D4218	Range	%	2.51
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	45 N/mm	256 ppi	3,172 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	551.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	293.6 N	66.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	698.3 N	157 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **06/12/14**

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ROLL # **F14A244054** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.02 mm	80 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.13 mm	84 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **31/28** mil AVE: **2.07** mm **81** mil OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**
ODD #: TOP EVEN #: BOTTOM

Specific Gravity	Density	g/cc	.934
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.36
COND. E			
GRADE: 7104			

Carbon Black Content	Range	%	2.51
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength					
ASTM D6693					
ASTM D638 (Modified)	Average Strength @ Break	45 N/mm	259 ppi	3,172 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%	551.0		
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.34
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	293.6 N	66.000 lbs		

Puncture Resistance			CERTIFIED
FTMS 101 Method 2065 (Modified)			

Puncture Resistance	Load	698.3 N	157 lbs
ASTM D4833 (Modified)			

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
ASTM D1693			

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **06/12/14**

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ROLL # **F14A244055** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.97 mm	78 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.14 mm	84 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **34/24** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.05** mm **81** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.934
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.36
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Carbon Black Content ASTM D4218	Range	%	2.25
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	44 N/mm	250 ppi	3,102 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	537.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	291.3 N	65.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	716.1 N	161 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

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ROLL # **F14A244056** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.00 mm	79 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.17 mm	85 mil	Width.....	7.01 m;	23.0 feet
Asperity GRI GM12: 29/24 mil	AVE:	2.08 mm	82 mil	TEST RESULTS		
ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895	minutes	205

Specific Gravity	Density	g/cc	.934
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.36
COND. E			
GRADE: 7104			

Carbon Black Content	Range	%	2.25
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength					
ASTM D6693					
ASTM D638 (Modified)	Average Strength @ Break	44 N/mm	254 ppi	3,102	psi
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		537.5	
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.34
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	291.3 N		65.500	lbs

Puncture Resistance					
FTMS 101 Method 2065 (Modified)				CERTIFIED	

Puncture Resistance	Load	716.1 N		161	lbs
ASTM D4833 (Modified)					

ESCR	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED	
ASTM D1693					

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **06/12/14**

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ROLL # **F14A244057** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.99 mm	78 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.11 mm	83 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **39/26** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.07** mm **81** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.934
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.36
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Carbon Black Content ASTM D4218	Range	%	2.25
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	44 N/mm	253 ppi	3,102 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	537.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	291.3 N	65.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	716.1 N	161 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

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ROLL # **F14A244058** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.02 mm	80 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.18 mm	86 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **38/26** mil AVE: **2.08** mm **82** mil OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**
ODD #: TOP EVEN #: BOTTOM

Specific Gravity	Density	g/cc	.934
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.36
COND. E			
GRADE: 7104			

Carbon Black Content	Range	%	2.40
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength					
ASTM D6693					
ASTM D638 (Modified)	Average Strength @ Break	44 N/mm	254 ppi	3,102 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		537.5	
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.34
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	291.3 N	65.500 lbs		

Puncture Resistance				CERTIFIED	
FTMS 101 Method 2065 (Modified)					

Puncture Resistance	Load	716.1 N	161 lbs
ASTM D4833 (Modified)			

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
ASTM D1693			

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

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ROLL # **F14A245059** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.00 mm	79 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.19 mm	86 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **27/25** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.08** mm **82** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.934
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.36
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Carbon Black Content ASTM D4218	Range	%	2.40
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	44 N/mm	254 ppi	3,102 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	537.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	291.3 N	65.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	716.1 N	161 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **06/13/14**

Signature: 
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ROLL # **F14A245060** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.03 mm	80 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.10 mm	83 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **36/26** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.06** mm **81** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.934
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.36
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Carbon Black Content ASTM D4218	Range	%	2.45
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	46 N/mm	260 ppi	3,207 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	565.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	291.3 N	65.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	716.1 N	161 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **06/13/14**

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ROLL # **F14A245061** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.04 mm	80 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.12 mm	83 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **29/28** mil AVE: **2.08** mm **82** mil OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**
ODD #: TOP EVEN #: BOTTOM

Specific Gravity ASTM D792	Density	g/cc	.934
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.36
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Carbon Black Content ASTM D4218	Range	%	2.45
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	46 N/mm	263 ppi	3,207 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	565.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	291.3 N	65.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	716.1 N	161 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **06/13/14**

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ROLL # **F14A245062** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.02 mm	80 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.16 mm	85 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **29/26** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.08** mm **82** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.934
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.36
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Carbon Black Content ASTM D4218	Range	%	2.45
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	46 N/mm	263 ppi	3,207 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	565.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	291.3 N	65.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	716.1 N	161 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **06/13/14**

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ROLL # **F14A245063** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.05 mm	81 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.26 mm	89 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **29/26** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.12** mm **83** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.934
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.36
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Carbon Black Content ASTM D4218	Range	%	2.44
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	47 N/mm	268 ppi	3,207 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	565.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	291.3 N	65.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	716.1 N	161 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **06/13/14**

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ROLL # **F14A245064** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)	MIN: MAX: AVE:	METRIC 2.04 mm 2.18 mm 2.10 mm	ENGLISH 80 mil 86 mil 83 mil	Thickness..... Length..... Width.....	2.0 mm 117.349 m 7.01 m;	80 mil 385.0 feet 23.0 feet
Asperity GRI GM12: 32/26 mil ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895	minutes 205	TEST RESULTS
Specific Gravity ASTM D792	Density			g/cc		.934
MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g			g/10 min		.36
Carbon Black Content ASTM D4218	Range			%		2.44
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			46 N/mm	265 ppi	3,207 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		565.5
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%		-.34
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance			291.3 N		65.500 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)						CERTIFIED
Puncture Resistance ASTM D4833 (Modified)	Load			716.1 N		161 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures			1500 hrs		CERTIFIED

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date:.....**06/13/14**.....

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ROLL # **F14A245065** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.03 mm	80 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.20 mm	87 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **33/26** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.09** mm **82** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.36
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Carbon Black Content ASTM D4218	Range	%	2.45
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	46 N/mm	262 ppi	3,189 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	558.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	295.8 N	66.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	685.0 N	154 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **06/13/14**

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ROLL # **F14A245066** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.99 mm	78 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.26 mm	89 mil	Width.....	7.01 m	23.0 feet
Asperity GRI GM12:32/27 mil	AVE:	2.10 mm	83 mil	TEST RESULTS		
ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	205	

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.36
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Carbon Black Content ASTM D4218	Range	%	2.45
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Carbon Black Dispersion ASTM D5596	Category	10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	46 N/mm	264 ppi	3,189 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	558.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	295.8 N	66.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	685.0 N	154 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: 06/13/14

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ROLL # **F14A245067** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.98 mm	78 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.22 mm	87 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **33/28** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.09** mm **82** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.36
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Carbon Black Content ASTM D4218	Range	%	2.45
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	46 N/mm	262 ppi	3,189 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	558.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	295.8 N	66.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	685.0 N	154 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **06/13/14**

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ROLL # **F14A245068** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)	MIN:	METRIC 2.03 mm	ENGLISH 80 mil	Thickness.....	2.0 mm	80 mil
	MAX:	2.15 mm	85 mil	Length.....	117.349 m	385.0 feet
	AVE:	2.09 mm	82 mil	Width.....	7.01 m;	23.0 feet
Asperity GRI GM12: 32/26 mil ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895	minutes 205	TEST RESULTS
Specific Gravity ASTM D792	Density			g/cc		.935
MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g			g/10 min		.36
Carbon Black Content ASTM D4218	Range			%		2.47
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			46 N/mm	262 ppi	3,189 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		558.0
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%		-.34
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance			295.8 N		66.500 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)						CERTIFIED
Puncture Resistance ASTM D4833 (Modified)	Load			685.0 N		154 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures			1500 hrs		CERTIFIED

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date:..... **06/13/14**

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ROLL # **F14A245069** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.03 mm	80 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.14 mm	84 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **32/26** mil AVE: **2.09** mm **82** mil OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**
ODD #: TOP EVEN #: BOTTOM

Specific Gravity	Density	g/cc	.935
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.36
COND. E			
GRADE: 7104			

Carbon Black Content	Range	%	2.47
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength					
ASTM D6693					
ASTM D638 (Modified)	Average Strength @ Break	46 N/mm	262 ppi	3,189 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%	558.0		
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.34
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	295.8 N	66.500 lbs		

Puncture Resistance				CERTIFIED	
FTMS 101 Method 2065 (Modified)					

Puncture Resistance	Load	685.0 N	154 lbs
ASTM D4833 (Modified)			

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
ASTM D1693			

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **06/13/14**

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ROLL # **F14A245070** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.96 mm	77 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.22 mm	87 mil	Width.....	7.01 m;	23.0 feet

Asperity GRI GM12:**32/26** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.11** mm **83** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.36
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Carbon Black Content ASTM D4218	Range	%	2.26
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	45 N/mm	255 ppi	3,075 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	542.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	295.8 N	66.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	685.0 N	154 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date:..... **06/13/14**

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ROLL # **F14A245071**Lot #: **CEE810120**Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.98 mm	78 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.19 mm	86 mil	Width.....	7.01 m;	23.0 feet
Asperity GRI GM12:24/26 mil	AVE:	2.07 mm	81 mil	TEST RESULTS		
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895 minutes			205	

Specific Gravity ASTM D792	Density	g/cc		.935	
MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min		.36	
Carbon Black Content ASTM D4218	Range	%		2.26	
Carbon Black Dispersion ASTM D5596	Category	10 In Cat 1			
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	44 N/mm	251 ppi	3,075	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%		542.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-.34	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	295.8 N	66.500 lbs		
Puncture Resistance FTMS 101 Method 2065 (Modified)	CERTIFIED				
Puncture Resistance ASTM D4833 (Modified)	Load	685.0 N	154 lbs		
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED		

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: 06/13/14

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ROLL # **F14A245072** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.03 mm	80 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.16 mm	85 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **31/29** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.10** mm **83** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.36
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Carbon Black Content ASTM D4218	Range	%	2.26
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	45 N/mm	254 ppi	3,075 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	542.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	295.8 N	66.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	685.0 N	154 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

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ROLL # **F14A245073** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.99 mm	78 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.14 mm	84 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **30/28** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.08** mm **82** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.36
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Carbon Black Content ASTM D4218	Range	%	2.21
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Carbon Black Dispersion ASTM D5596	Category	10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	44 N/mm	252 ppi	3,075 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	542.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	295.8 N	66.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	685.0 N	154 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

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ROLL # **F14A246074** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)	MIN:	METRIC 2.04 mm	ENGLISH 80 mil	Thickness.....	2.0 mm	80 mil
	MAX:	2.16 mm	85 mil	Length.....	117.349 m	385.0 feet
	AVE:	2.10 mm	83 mil	Width.....	7.01 m;	23.0 feet
Asperity GRI GM12: 30/28 mil ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895	minutes 205	TEST RESULTS
Specific Gravity ASTM D792	Density			g/cc		.935
MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g			g/10 min		.36
Carbon Black Content ASTM D4218	Range			%		2.21
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			45 N/mm	254 ppi	3,075 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		542.5
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%		-.34
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance			295.8 N		66.500 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)						CERTIFIED
Puncture Resistance ASTM D4833 (Modified)	Load			685.0 N		154 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures			1500 hrs		CERTIFIED

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

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ROLL # **F14A246075** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)	MIN: MAX: AVE:	METRIC 1.97 mm 2.16 mm 2.07 mm	ENGLISH 78 mil 85 mil 81 mil	Thickness..... Length..... Width.....	2.0 mm 117.349 m 7.01 m;	80 mil 385.0 feet 23.0 feet
Asperity GRI GM12: 28/26 mil ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895	minutes 205	TEST RESULTS
Specific Gravity ASTM D792	Density			g/cc		.936
MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g			g/10 min		.36
Carbon Black Content ASTM D4218	Range			%		2.44
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			48 N/mm	274 ppi	3,358 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		566.0
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%		-.34
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance			304.7 N		68.500 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)						CERTIFIED
Puncture Resistance ASTM D4833 (Modified)	Load			702.8 N		158 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures			1500 hrs		CERTIFIED

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

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ROLL # **F14A246076** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.96 mm	77 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.18 mm	86 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **33/27** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.06** mm **81** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.936
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.36
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Carbon Black Content ASTM D4218	Range	%	2.44
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	48 N/mm	272 ppi	3,358 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	566.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	304.7 N	68.500 lbs
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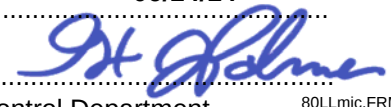
Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	702.8 N	158 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
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ROLL # **F14A246077** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.99 mm	78 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.13 mm	84 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **32/27** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.05** mm **81** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.936
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.36
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Carbon Black Content ASTM D4218	Range	%	2.44
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Carbon Black Dispersion ASTM D5596	Category	10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	47 N/mm	271 ppi	3,358 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	566.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	304.7 N	68.500 lbs
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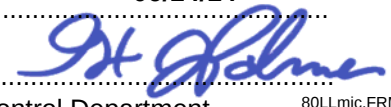
Puncture Resistance FTMS 101 Method 2065 (Modified)	CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	702.8 N	158 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **06/14/14**

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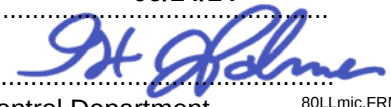
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ROLL # **F14A246078** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)	MIN:	METRIC 1.99 mm	ENGLISH 78 mil	Thickness.....	2.0 mm	80 mil
	MAX:	2.14 mm	84 mil	Length.....	117.349 m	385.0 feet
	AVE:	2.07 mm	81 mil	Width.....	7.01 m;	23.0 feet
Asperity GRI GM12: 27/27 mil ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895	minutes 205	TEST RESULTS
Specific Gravity ASTM D792	Density			g/cc		.936
MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g			g/10 min		.36
Carbon Black Content ASTM D4218	Range			%		2.39
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			48 N/mm	274 ppi	3,358 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		566.0
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%		-.34
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance			304.7 N		68.500 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)						CERTIFIED
Puncture Resistance ASTM D4833 (Modified)	Load			702.8 N		158 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures			1500 hrs		CERTIFIED

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

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ROLL # **F14A246079** Lot #: **CEE810120** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.00 mm	79 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.13 mm	84 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12:**31/27** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.06** mm **81** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.936
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.36
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Carbon Black Content ASTM D4218	Range	%	2.39
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	48 N/mm	272 ppi	3,358 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	566.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	304.7 N	68.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	702.8 N	158 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date:..... **06/14/14**

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12/23/05

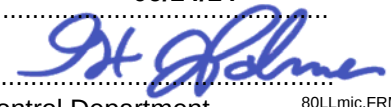


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ROLL # **F14A246080**Lot #: **CEE810120**Liner Type: **MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)	MIN:	METRIC 1.97 mm	ENGLISH 78 mil	Thickness.....	2.0 mm	80 mil
	MAX:	2.16 mm	85 mil	Length.....	117.349 m	385.0 feet
	AVE:	2.07 mm	81 mil	Width.....	7.01 m;	23.0 feet
Asperity GRI GM12: 30/25 mil ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895	minutes 205	TEST RESULTS
Specific Gravity ASTM D792	Density			g/cc		.936
MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g			g/10 min		.36
Carbon Black Content ASTM D4218	Range			%		2.37
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			44 N/mm	253 ppi	3,107 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		558.5
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%		-.34
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance			304.7 N		68.500 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)						CERTIFIED
Puncture Resistance ASTM D4833 (Modified)	Load			702.8 N		158 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures			1500 hrs		CERTIFIED

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
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ROLL # **F14A246081** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)	MIN:	METRIC 2.02 mm	ENGLISH 80 mil	Thickness.....	2.0 mm	80 mil
	MAX:	2.15 mm	85 mil	Length.....	117.349 m	385.0 feet
	AVE:	2.07 mm	81 mil	Width.....	7.01 m;	23.0 feet
Asperity GRI GM12: 31/26 mil ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895	minutes 205	TEST RESULTS
Specific Gravity ASTM D792	Density			g/cc		.936
MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g			g/10 min		.38
Carbon Black Content ASTM D4218	Range			%		2.37
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			44 N/mm	253 ppi	3,107 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		558.5
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%		-.34
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance			304.7 N		68.500 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)						CERTIFIED
Puncture Resistance ASTM D4833 (Modified)	Load			702.8 N		158 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures			1500 hrs		CERTIFIED

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
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ROLL # **F14A246082** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)	METRIC MIN: 2.01 mm MAX: 2.17 mm AVE: 2.08 mm	ENGLISH 79 mil 85 mil 82 mil	Thickness..... Length..... Width.....	2.0 mm 117.349 m 7.01 m;	80 mil 385.0 feet 23.0 feet
Asperity GRI GM12: 26/25 mil ODD #: TOP EVEN #: BOTTOM	OIT(Standard) ASTM D3895 minutes 205				
Specific Gravity ASTM D792	Density		g/cc		.936
MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g		g/10 min		.38
Carbon Black Content ASTM D4218	Range		%		2.37
Carbon Black Dispersion ASTM D5596	Category				10 In Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break		45 N/mm	254 ppi	3,107 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break		%		558.5
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%		-.34
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance		304.7 N		68.500 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)					CERTIFIED
Puncture Resistance ASTM D4833 (Modified)	Load		702.8 N		158 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs			CERTIFIED

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

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ROLL # **F14A246083** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)	MIN:	METRIC 2.03 mm	ENGLISH 80 mil	Thickness.....	2.0 mm	80 mil
	MAX:	2.15 mm	85 mil	Length.....	117.349 m	385.0 feet
	AVE:	2.09 mm	82 mil	Width.....	7.01 m;	23.0 feet
Asperity GRI GM12: 26/23 mil ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895	minutes 205	TEST RESULTS
Specific Gravity ASTM D792	Density			g/cc		.936
MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g			g/10 min		.38
Carbon Black Content ASTM D4218	Range			%		2.60
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			45 N/mm	256 ppi	3,107 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		558.5
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%		-.34
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance			304.7 N		68.500 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)						CERTIFIED
Puncture Resistance ASTM D4833 (Modified)	Load			702.8 N		158 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures			1500 hrs		CERTIFIED

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date:..... **06/14/14**

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ROLL # **F14A246084** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)	MIN:	METRIC 2.00 mm	ENGLISH 79 mil	Thickness.....	2.0 mm	80 mil
	MAX:	2.16 mm	85 mil	Length.....	117.349 m	385.0 feet
	AVE:	2.09 mm	82 mil	Width.....	7.01 m;	23.0 feet
Asperity GRI GM12: 26/25 mil ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895	minutes 205	TEST RESULTS
Specific Gravity ASTM D792	Density			g/cc		.936
MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g			g/10 min		.38
Carbon Black Content ASTM D4218	Range			%		2.60
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			45 N/mm	256 ppi	3,107 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		558.5
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%		-.34
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance			304.7 N		68.500 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)						CERTIFIED
Puncture Resistance ASTM D4833 (Modified)	Load			702.8 N		158 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures			1500 hrs		CERTIFIED

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date:..... **06/14/14**

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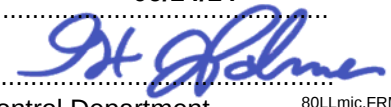


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ROLL # **F14A246085**Lot #: **CEE810110**Liner Type: **MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)	MIN:	METRIC 2.04 mm	ENGLISH 80 mil	Thickness.....	2.0 mm	80 mil
	MAX:	2.14 mm	84 mil	Length.....	117.349 m	385.0 feet
	AVE:	2.09 mm	82 mil	Width.....	7.01 m;	23.0 feet
Asperity GRI GM12: 34/25 mil ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	205	TEST RESULTS
Specific Gravity ASTM D792	Density			g/cc		.935
MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g			g/10 min		.38
Carbon Black Content ASTM D4218	Range			%		2.40
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			45 N/mm	255 ppi	3,104 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		555.0
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%		-.34
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance			300.2 N		67.500 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)						CERTIFIED
Puncture Resistance ASTM D4833 (Modified)	Load			725.0 N		163 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures			1500 hrs		CERTIFIED

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

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ROLL # **F14A246086** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.99 mm	78 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.19 mm	86 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **29/28** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.11** mm **83** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.38
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Carbon Black Content ASTM D4218	Range	%	2.40
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	45 N/mm	258 ppi	3,104 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	555.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	300.2 N	67.500 lbs
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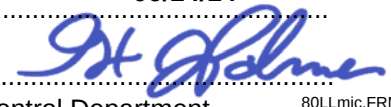
Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	725.0 N	163 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

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ROLL # **F14A246087** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.00 mm	79 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.18 mm	86 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **28/27** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.08** mm **82** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.38
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Carbon Black Content ASTM D4218	Range	%	2.40
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	45 N/mm	254 ppi	3,104 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	555.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	300.2 N	67.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	725.0 N	163 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **06/14/14**

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ROLL # **F14A247088** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.05 mm	81 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.16 mm	85 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **26/34** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.10** mm **83** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.38
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Carbon Black Content ASTM D4218	Range	%	2.40
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	45 N/mm	257 ppi	3,104 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	555.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	300.2 N	67.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	725.0 N	163 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/15/14**

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ROLL # **F14A247089** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.03 mm	80 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.19 mm	86 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **25/25** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.11** mm **83** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.38
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Carbon Black Content ASTM D4218	Range	%	2.40
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	45 N/mm	258 ppi	3,104 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	555.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	300.2 N	67.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	725.0 N	163 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/15/14**

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ROLL # **F14A247090** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.01 mm	79 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.17 mm	85 mil	Width.....	7.01 m;	23.0 feet
Asperity GRI GM12:33/27 mil	AVE:	2.11 mm	83 mil			
ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	205	TEST RESULTS

Specific Gravity	Density	g/cc	.935
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.38
COND. E			
GRADE: 7104			

Carbon Black Content	Range	%	2.36
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength					
ASTM D6693					
ASTM D638 (Modified)	Average Strength @ Break	44 N/mm	253 ppi	3,040 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%	564.5		
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.34
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	300.2 N	67.500 lbs		

Puncture Resistance					
FTMS 101 Method 2065 (Modified)					CERTIFIED

Puncture Resistance	Load	725.0 N	163 lbs
ASTM D4833 (Modified)			

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
ASTM D1693			

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/15/14**

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ROLL # **F14A247091** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.00 mm	79 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.16 mm	85 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **33/26** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.10** mm **83** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.38
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Carbon Black Content ASTM D4218	Range	%	2.36
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Carbon Black Dispersion ASTM D5596	Category	10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	44 N/mm	251 ppi	3,040 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	564.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	300.2 N	67.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	725.0 N	163 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/15/14**

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ROLL # **F14A247092** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.00 mm	79 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.37 mm	93 mil	Width.....	7.01 m;	23.0 feet

Asperity GRI GM12: **26/24** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.09** mm **82** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.38
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Carbon Black Content ASTM D4218	Range	%	2.36
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	44 N/mm	250 ppi	3,040 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	564.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	300.2 N	67.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	725.0 N	163 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/15/14**

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ROLL # **F14A247093** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.95 mm	77 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.18 mm	86 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **26/26** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.07** mm **81** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.38
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Carbon Black Content ASTM D4218	Range	%	2.50
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	43 N/mm	248 ppi	3,040 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	564.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	300.2 N	67.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	725.0 N	163 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/15/14**

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ROLL # **F14A247094** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.06 mm	81 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.26 mm	89 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **31/25** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.12** mm **83** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.38
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Carbon Black Content ASTM D4218	Range	%	2.50
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Carbon Black Dispersion ASTM D5596	Category	10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	44 N/mm	254 ppi	3,040 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	564.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	300.2 N	67.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	725.0 N	163 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/15/14**

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ROLL # **F14A247095** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.03 mm	80 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.22 mm	87 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **28/24** mil AVE: **2.09** mm **82** mil OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**
ODD #: TOP EVEN #: BOTTOM

Specific Gravity	Density	g/cc	.933
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.38
COND. E			
GRADE: 7104			

Carbon Black Content	Range	%	2.41
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength					
ASTM D6693					
ASTM D638 (Modified)	Average Strength @ Break	44 N/mm	249 ppi	3,025 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		560.5	
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.34
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	298.0 N		67.000 lbs	

Puncture Resistance				CERTIFIED	
FTMS 101 Method 2065 (Modified)					

Puncture Resistance	Load	707.2 N		159 lbs	
ASTM D4833 (Modified)					

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED		
ASTM D1693					

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/15/14**

Signature: 
Quality Control Department

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ROLL # **F14A247096** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.96 mm	77 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.14 mm	84 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **27/27** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.05** mm **81** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.933
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.38
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Carbon Black Content ASTM D4218	Range	%	2.41
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	43 N/mm	244 ppi	3,025 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	560.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	298.0 N	67.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	707.2 N	159 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/15/14**

Signature: 
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ROLL # **F14A247097** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.00 mm	79 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.16 mm	85 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **26/24** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.07** mm **81** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.933
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.38
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Carbon Black Content ASTM D4218	Range	%	2.41
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	43 N/mm	246 ppi	3,025 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	560.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	298.0 N	67.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	707.2 N	159 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/15/14**

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ROLL # **F14A247098** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.02 mm	80 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.20 mm	87 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **26/27** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.08** mm **82** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.933
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.38
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Carbon Black Content ASTM D4218	Range	%	2.49
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	43 N/mm	248 ppi	3,025 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	560.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	298.0 N	67.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	707.2 N	159 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/15/14**

Signature: 
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ROLL # **F14A247099** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.98 mm	78 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.15 mm	85 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **31/26** mil AVE: **2.07** mm **81** mil OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**
ODD #: TOP EVEN #: BOTTOM

Specific Gravity	Density	g/cc	.933
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.38
COND. E			
GRADE: 7104			

Carbon Black Content	Range	%	2.49
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength					
ASTM D6693					
ASTM D638 (Modified)	Average Strength @ Break	43 N/mm	246 ppi	3,025 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		560.5	
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.34
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	298.0 N		67.000 lbs	

Puncture Resistance				CERTIFIED	
FTMS 101 Method 2065 (Modified)					

Puncture Resistance	Load	707.2 N		159 lbs	
ASTM D4833 (Modified)					

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED		
ASTM D1693					

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/15/14**

Signature: 
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ROLL # **F14A247100** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.02 mm	80 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.14 mm	84 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **36/25** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.07** mm **81** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.933
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.38
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Carbon Black Content ASTM D4218	Range	%	2.33
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Carbon Black Dispersion ASTM D5596	Category	10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	45 N/mm	257 ppi	3,160 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	527.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	298.0 N	67.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	707.2 N	159 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/15/14**

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ROLL # **F14A247101** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.02 mm	80 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.14 mm	84 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **34/25** mil AVE: **2.07** mm **81** mil OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**
ODD #: TOP EVEN #: BOTTOM

Specific Gravity	Density	g/cc	.933
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.38
COND. E			
GRADE: 7104			

Carbon Black Content	Range	%	2.33
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength					
ASTM D6693					
ASTM D638 (Modified)	Average Strength @ Break	45 N/mm	257 ppi	3,160 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		527.5	
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.34
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	298.0 N		67.000 lbs	

Puncture Resistance				CERTIFIED	
FTMS 101 Method 2065 (Modified)					

Puncture Resistance	Load	707.2 N		159 lbs	
ASTM D4833 (Modified)					

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED		
ASTM D1693					

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/15/14**

Signature: 
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ROLL # **F14A251001** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.92 mm	76 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.22 mm	87 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **33/29** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.09** mm **82** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.933
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.38
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Carbon Black Content ASTM D4218	Range	%	2.33
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Carbon Black Dispersion ASTM D5596	Category	10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	46 N/mm	260 ppi	3,160 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	527.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	298.0 N	67.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	707.2 N	159 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/16/14**

Signature: 
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ROLL # **F14A251002** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.96 mm	77 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.19 mm	86 mil	Width.....	7.01 m	23.0 feet
Asperity GRI GM12:32/27 mil	AVE:	2.09 mm	82 mil			
ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	205	TEST RESULTS

Specific Gravity	Density	g/cc	.933
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.38
COND. E			
GRADE: 7104			

Carbon Black Content	Range	%	2.29
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength					
ASTM D6693					
ASTM D638 (Modified)	Average Strength @ Break	46 N/mm	260 ppi	3,160 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%	527.5		
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.34
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	298.0 N	67.000 lbs		

Puncture Resistance					
FTMS 101 Method 2065 (Modified)					CERTIFIED

Puncture Resistance	Load	707.2 N	159 lbs
ASTM D4833 (Modified)			

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
ASTM D1693			

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/16/14**

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ROLL # **F14A251003** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.96 mm	77 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.19 mm	86 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **31/37** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.07** mm **81** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.933
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.38
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Carbon Black Content ASTM D4218	Range	%	2.29
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Carbon Black Dispersion ASTM D5596	Category	10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	45 N/mm	257 ppi	3,160 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	527.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	298.0 N	67.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	707.2 N	159 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/16/14**

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ROLL # **F14A251004** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.97 mm	78 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.15 mm	85 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **31/26** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.07** mm **81** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.934
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.38
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Carbon Black Content ASTM D4218	Range	%	2.43
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	46 N/mm	262 ppi	3,215 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	558.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	295.8 N	66.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	693.9 N	156 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/16/14**

Signature: 
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ROLL # **F14A251005**Lot #: **CEE810110**Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.98 mm	78 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.16 mm	85 mil	Width.....	7.01 m	23.0 feet
Asperity GRI GM12:	AVE:	2.07 mm	81 mil	TEST RESULTS		
ODD #: TOP EVEN #: BOTTOM						

OIT(Standard) ASTM D3895 minutes **205**

Specific Gravity	Density	g/cc	.934
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.38
COND. E			
GRADE: 7104			

Carbon Black Content	Range	%	2.43
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength					
ASTM D6693					
ASTM D638 (Modified)	Average Strength @ Break	46 N/mm	262 ppi	3,215 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		558.5	
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.34
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	295.8 N	66.500 lbs		

Puncture Resistance				CERTIFIED	
FTMS 101 Method 2065 (Modified)					

Puncture Resistance	Load	693.9 N	156 lbs		
ASTM D4833 (Modified)					

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED		
ASTM D1693					

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date:.....**6/16/14**.....Signature.....
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ROLL # **F14A251006** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.98 mm	78 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.18 mm	86 mil	Width.....	7.01 m	23.0 feet
Asperity GRI GM12: 26/23 mil	AVE:	2.06 mm	81 mil			
ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	205	TEST RESULTS

Specific Gravity	Density	g/cc	.934
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.38
COND. E			
GRADE: 7104			

Carbon Black Content	Range	%	2.43
ASTM D4218			

Carbon Black Dispersion	Category		10 In Cat 1
ASTM D5596			

Tensile Strength					
ASTM D6693					
ASTM D638 (Modified)	Average Strength @ Break	46 N/mm	261 ppi	3,215	psi
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		558.5	
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.34
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	295.8 N		66.500	lbs

Puncture Resistance					
FTMS 101 Method 2065 (Modified)					CERTIFIED

Puncture Resistance	Load	693.9 N		156	lbs
ASTM D4833 (Modified)					

ESCR	Minimum Hrs w/o Failures	1500 hrs			CERTIFIED
ASTM D1693					

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/16/14**

Signature: 
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ROLL # **F14A251007** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.02 mm	80 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.19 mm	86 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **30/27** mil AVE: **2.08** mm **82** mil OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**
ODD #: TOP EVEN #: BOTTOM

Specific Gravity	Density	g/cc	.934
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.38
COND. E			
GRADE: 7104			

Carbon Black Content	Range	%	2.43
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength					
ASTM D6693					
ASTM D638 (Modified)	Average Strength @ Break	46 N/mm	263 ppi	3,215 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		558.5	
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.34
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	295.8 N		66.500 lbs	

Puncture Resistance				CERTIFIED	
FTMS 101 Method 2065 (Modified)					

Puncture Resistance	Load	693.9 N		156 lbs	
ASTM D4833 (Modified)					

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED		
ASTM D1693					

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/16/14**

Signature: 
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ROLL # **F14A251008** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.99 mm	78 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.11 mm	83 mil	Width.....	7.01 m;	23.0 feet

Asperity GRI GM12: **25/24** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.03** mm **80** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.934
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.38
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Carbon Black Content ASTM D4218	Range	%	2.43
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	45 N/mm	257 ppi	3,215 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	558.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	295.8 N	66.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	693.9 N	156 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/16/14**

Signature: 
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ROLL # **F14A251009** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.99 mm	78 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.15 mm	85 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **29/26** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.06** mm **81** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.934
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.38
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Carbon Black Content ASTM D4218	Range	%	2.32
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Carbon Black Dispersion ASTM D5596	Category	10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	44 N/mm	252 ppi	3,108 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	554.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	295.8 N	66.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	693.9 N	156 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/16/14**

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ROLL # **F14A251010** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.96 mm	77 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.19 mm	86 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **26/25** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.06** mm **81** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.934
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.38
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Carbon Black Content ASTM D4218	Range	%	2.32
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	44 N/mm	252 ppi	3,108 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	554.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	295.8 N	66.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	693.9 N	156 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/16/14**

Signature: 
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ROLL # **F14A251011** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.96 mm	77 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.18 mm	86 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **29/27** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.04** mm **80** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.934
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.38
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Carbon Black Content ASTM D4218	Range	%	2.32
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	44 N/mm	250 ppi	3,108 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	554.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	295.8 N	66.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	693.9 N	156 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/16/14**

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ROLL # **F14A251012** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.00 mm	79 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.09 mm	82 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **30/27** mil AVE: **2.05** mm **81** mil OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**
ODD #: TOP EVEN #: BOTTOM

Specific Gravity	Density	g/cc	.934
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.38
COND. E			
GRADE: 7104			

Carbon Black Content	Range	%	2.29
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength					
ASTM D6693					
ASTM D638 (Modified)	Average Strength @ Break	44 N/mm	251 ppi	3,108 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		554.0	
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.34
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	295.8 N		66.500 lbs	

Puncture Resistance				CERTIFIED	
FTMS 101 Method 2065 (Modified)					

Puncture Resistance	Load	693.9 N		156 lbs	
ASTM D4833 (Modified)					

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED		
ASTM D1693					

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/16/14**

Signature: 
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ROLL # **F14A251013** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.95 mm	77 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.12 mm	83 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **35/28** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.05** mm **81** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.934
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.38
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Carbon Black Content ASTM D4218	Range	%	2.29
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	44 N/mm	251 ppi	3,108 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	554.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	295.8 N	66.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	693.9 N	156 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/16/14**

Signature: 
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ROLL # **F14A251014** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.97 mm	78 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.13 mm	84 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **32/24** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.03** mm **80** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.38
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Carbon Black Content ASTM D4218	Range	%	2.38
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	46 N/mm	261 ppi	3,268 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	552.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	304.7 N	68.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	720.6 N	162 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/16/14**

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ROLL # **F14A252017** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.96 mm	77 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.09 mm	82 mil	Width.....	7.01 m;	23.0 feet

Asperity GRI GM12: **35/27** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.02** mm **80** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.38
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Carbon Black Content ASTM D4218	Range	%	2.33
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	46 N/mm	260 ppi	3,268 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	552.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	304.7 N	68.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	720.6 N	162 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC&VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/17/14**

Signature: 
Quality Control Department

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ROLL # **F14A252018** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.98 mm	78 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.16 mm	85 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **35/27** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.06** mm **81** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.38
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Carbon Black Content ASTM D4218	Range	%	2.33
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	46 N/mm	265 ppi	3,268 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	552.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	304.7 N	68.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	720.6 N	162 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC&VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/17/14**

Signature: 
Quality Control Department

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ROLL # **F14A252019** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.05 mm	81 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.19 mm	86 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **35/26** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.10** mm **83** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.38
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Carbon Black Content ASTM D4218	Range	%	2.20
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	46 N/mm	261 ppi	3,160 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	576.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	304.7 N	68.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	720.6 N	162 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC&VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/17/14**

Signature: 
Quality Control Department

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ROLL # **F14A252020** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.01 mm	79 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.20 mm	87 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **31/24** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.08** mm **82** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.38
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Carbon Black Content ASTM D4218	Range	%	2.20
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Carbon Black Dispersion ASTM D5596	Category	10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	45 N/mm	259 ppi	3,160 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	576.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	304.7 N	68.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	720.6 N	162 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC&VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/17/14**

Signature: 
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ROLL # **F14A252021** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.01 mm	79 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.17 mm	85 mil	Width.....	7.01 m;	23.0 feet

Asperity GRI GM12: **28/25** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.07** mm **81** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.38
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Carbon Black Content ASTM D4218	Range	%	2.20
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	45 N/mm	257 ppi	3,160 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	576.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	304.7 N	68.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	720.6 N	162 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC&VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/17/14**

Signature: 
Quality Control Department

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ROLL # **F14A252022** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.94 mm	76 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.13 mm	84 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **31/30** mil AVE: **2.05** mm **81** mil OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**
ODD #: TOP EVEN #: BOTTOM

Specific Gravity	Density	g/cc	.935
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.38
COND. E			
GRADE: 7104			

Carbon Black Content	Range	%	2.22
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength					
ASTM D6693					
ASTM D638 (Modified)	Average Strength @ Break	45 N/mm	255 ppi	3,160 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		576.5	
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.34
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	304.7 N		68.500 lbs	

Puncture Resistance				CERTIFIED	
FTMS 101 Method 2065 (Modified)					

Puncture Resistance	Load	720.6 N		162 lbs	
ASTM D4833 (Modified)					

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED		
ASTM D1693					

Customer: **Erosion Control Applications**
PO: **13012 CC&VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/17/14**

Signature: 
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ROLL # **F14A252023** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.05 mm	81 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.23 mm	88 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **29/28** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.11** mm **83** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.38
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Carbon Black Content ASTM D4218	Range	%	2.22
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	46 N/mm	262 ppi	3,160 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	576.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	304.7 N	68.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	720.6 N	162 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC&VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/17/14**

Signature: 
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ROLL # **F14A252024** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.98 mm	78 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.18 mm	86 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **29/28** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.05** mm **81** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.38
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Carbon Black Content ASTM D4218	Range	%	2.37
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Carbon Black Dispersion ASTM D5596	Category	10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	46 N/mm	262 ppi	3,242 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	561.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	304.7 N	68.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	711.7 N	160 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC&VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/17/14**

Signature: 
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ROLL # **F14A252025** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.02 mm	80 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.15 mm	85 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **26/24** mil AVE: **2.09** mm **82** mil OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**
ODD #: TOP EVEN #: BOTTOM

Specific Gravity	Density	g/cc	.935
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.38
COND. E			
GRADE: 7104			

Carbon Black Content	Range	%	2.37
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength					
ASTM D6693					
ASTM D638 (Modified)	Average Strength @ Break	47 N/mm	267 ppi	3,242 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		561.5	
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.34
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	304.7 N		68.500 lbs	

Puncture Resistance				CERTIFIED	
FTMS 101 Method 2065 (Modified)					

Puncture Resistance	Load	711.7 N		160 lbs	
ASTM D4833 (Modified)					

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED		
ASTM D1693					

Customer: **Erosion Control Applications**
PO: **13012 CC&VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/17/14**

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ROLL # **F14A252026** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.95 mm	77 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.10 mm	83 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **26/23** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.06** mm **81** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.38
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Carbon Black Content ASTM D4218	Range	%	2.37
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	46 N/mm	263 ppi	3,242 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	561.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	304.7 N	68.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	711.7 N	160 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC&VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/17/14**

Signature: 
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ROLL # **F14A252027** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.96 mm	77 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.16 mm	85 mil	Width.....	7.01 m;	23.0 feet

Asperity GRI GM12:**32/28** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.05** mm **81** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.38
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Carbon Black Content ASTM D4218	Range	%	2.28
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Carbon Black Dispersion ASTM D5596	Category	10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	46 N/mm	262 ppi	3,242 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	561.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	304.7 N	68.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	711.7 N	160 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC&VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date:.....**6/17/14**.....

Signature.....*[Signature]*.....
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ROLL # **F14A252028** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.99 mm	78 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.13 mm	84 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **35/28** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.06** mm **81** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.38
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Carbon Black Content ASTM D4218	Range	%	2.28
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	46 N/mm	263 ppi	3,242 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	561.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	304.7 N	68.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	711.7 N	160 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC&VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/17/14**

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ROLL # **F14A252029** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.98 mm	78 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.20 mm	87 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **36/28** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.07** mm **81** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.38
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Carbon Black Content ASTM D4218	Range	%	2.21
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	45 N/mm	259 ppi	3,182 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	568.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	304.7 N	68.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	711.7 N	160 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC&VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/17/14**

Signature: 
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ROLL # **F14A253030**Lot #: **CEE810110**Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.97 mm	78 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.20 mm	87 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **34/27** mil
ODD #: TOP EVEN #: BOTTOMAVE: **2.06** mm **81** milOIT(Standard) ASTM D3895 minutes **205****TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.38
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Carbon Black Content ASTM D4218	Range	%	2.21
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Carbon Black Dispersion ASTM D5596	Category	10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	45 N/mm	258 ppi	3,182 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	568.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	304.7 N	68.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	711.7 N	160 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC&VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/18/14**Signature: 
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ROLL # **F14A253031** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.95 mm	77 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.19 mm	86 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **34/27** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.05** mm **81** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.38
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Carbon Black Content ASTM D4218	Range	%	2.21
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	45 N/mm	257 ppi	3,182 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	568.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	304.7 N	68.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	711.7 N	160 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC&VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/18/14**

Signature: 
Quality Control Department

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ROLL # **F14A253032** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.99 mm	78 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.19 mm	86 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **32/24** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.11** mm **83** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.38
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Carbon Black Content ASTM D4218	Range	%	2.31
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	46 N/mm	264 ppi	3,182 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	568.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	304.7 N	68.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	711.7 N	160 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC&VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/18/14**

Signature: 
Quality Control Department

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ROLL # **F14A253033** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.04 mm	80 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.19 mm	86 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **32/35** mil AVE: **2.12** mm **83** mil OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**
ODD #: TOP EVEN #: BOTTOM

Specific Gravity	Density	g/cc	.935
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.38
COND. E			
GRADE: 7104			

Carbon Black Content	Range	%	2.31
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength					
ASTM D6693					
ASTM D638 (Modified)	Average Strength @ Break	47 N/mm	266 ppi	3,182 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		568.0	
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.34
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	304.7 N		68.500 lbs	

Puncture Resistance				CERTIFIED	
FTMS 101 Method 2065 (Modified)					

Puncture Resistance	Load	711.7 N		160 lbs	
ASTM D4833 (Modified)					

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED		
ASTM D1693					

Customer: **Erosion Control Applications**
PO: **13012 CC&VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/18/14**

Signature: 
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ROLL # **F14A253034** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.99 mm	78 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.28 mm	90 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12:**33/26** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.11** mm **83** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.38
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Carbon Black Content ASTM D4218	Range	%	2.18
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	45 N/mm	259 ppi	3,120 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	552.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	306.9 N	69.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	711.7 N	160 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC&VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date:.....**6/18/14**.....

Signature.....*[Signature]*.....
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ROLL # **F14A253035** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.98 mm	78 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.28 mm	90 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **32/32** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.08** mm **82** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.38
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Carbon Black Content ASTM D4218	Range	%	2.18
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	45 N/mm	255 ppi	3,120 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	552.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	306.9 N	69.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	711.7 N	160 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC&VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/18/14**

Signature: 
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ROLL # **F14A253036** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.97 mm	78 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.09 mm	82 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **28/26** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.06** mm **81** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.38
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Carbon Black Content ASTM D4218	Range	%	2.18
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	44 N/mm	253 ppi	3,120 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	552.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	306.9 N	69.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	711.7 N	160 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC&VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/18/14**

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ROLL # **F14A253037** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.94 mm	76 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.18 mm	86 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **26/23** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.08** mm **82** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.38
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Carbon Black Content ASTM D4218	Range	%	2.20
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	45 N/mm	255 ppi	3,120 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	552.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	306.9 N	69.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	711.7 N	160 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC&VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/18/14**

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ROLL # **F14A253038** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.06 mm	81 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.16 mm	85 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **40/27** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.10** mm **83** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.38
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Carbon Black Content ASTM D4218	Range	%	2.20
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	45 N/mm	258 ppi	3,120 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	552.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	306.9 N	69.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	711.7 N	160 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC&VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/18/14**

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ROLL # **F14A253039** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.01 mm	79 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.21 mm	87 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **36/25** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.09** mm **82** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.38
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Carbon Black Content ASTM D4218	Range	%	2.40
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	45 N/mm	259 ppi	3,144 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	551.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	306.9 N	69.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	711.7 N	160 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC&VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/18/14**

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ROLL # **F14A253040**Lot #: **CEE810110**Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.02 mm	80 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.11 mm	83 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **29/27** mil
ODD #: TOP EVEN #: BOTTOMAVE: **2.06** mm **81** milOIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity	Density	g/cc	.935
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.38
COND. E			
GRADE: 7104			

Carbon Black Content	Range	%	2.40
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength					
ASTM D6693					
ASTM D638 (Modified)	Average Strength @ Break	45 N/mm	255 ppi	3,144 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		551.0	
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.34
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	306.9 N		69.000 lbs	

Puncture Resistance				CERTIFIED	
FTMS 101 Method 2065 (Modified)					

Puncture Resistance	Load	711.7 N		160 lbs	
ASTM D4833 (Modified)					

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED		
ASTM D1693					

Customer: **Erosion Control Applications**
PO: **13012 CC&VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**Date: **6/18/14**Signature: 
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ROLL # **F14A253041** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.99 mm	78 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.09 mm	82 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **32/26** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.06** mm **81** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.38
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Carbon Black Content ASTM D4218	Range	%	2.40
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	45 N/mm	255 ppi	3,144 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	551.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	306.9 N	69.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	711.7 N	160 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC&VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/18/14**

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ROLL # **F14A253042** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.98 mm	78 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.12 mm	83 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **32/25** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.03** mm **80** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.38
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Carbon Black Content ASTM D4218	Range	%	2.31
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	44 N/mm	251 ppi	3,144 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	551.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	306.9 N	69.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	711.7 N	160 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC&VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/18/14**

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ROLL # **F14A253043** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.91 mm	75 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.15 mm	85 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **29/24** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.04** mm **80** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.935
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.38
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Carbon Black Content ASTM D4218	Range	%	2.31
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	44 N/mm	253 ppi	3,144 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	551.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	306.9 N	69.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	711.7 N	160 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC&VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/18/14**

Signature: 
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ROLL # **F14A253044** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.90 mm	75 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.17 mm	85 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **30/23** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.05** mm **81** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.937
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.38
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Carbon Black Content ASTM D4218	Range	%	2.33
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	42 N/mm	239 ppi	2,965 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	521.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	300.2 N	67.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	747.3 N	168 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC&VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/18/14**

Signature: 
Quality Control Department

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ROLL # **F14A254045** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.99 mm	78 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.13 mm	84 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **33/27** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.07** mm **81** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.937
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.38
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Carbon Black Content ASTM D4218	Range	%	2.33
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	42 N/mm	242 ppi	2,965 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	521.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	300.2 N	67.500 lbs
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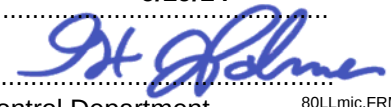
Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	747.3 N	168 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC&VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/19/14**

Signature: 
Quality Control Department

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ROLL # **F14A254046** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.03 mm	80 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.16 mm	85 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **32/30** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.10** mm **83** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.937
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.38
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Carbon Black Content ASTM D4218	Range	%	2.33
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	43 N/mm	245 ppi	2,965 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	521.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	300.2 N	67.500 lbs
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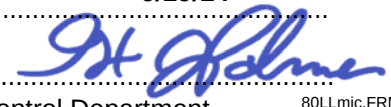
Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	747.3 N	168 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC&VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/19/14**

Signature: 
Quality Control Department

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ROLL # **F14A254047** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.01 mm	79 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.18 mm	86 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **31/26** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.09** mm **82** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.937
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.38
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Carbon Black Content ASTM D4218	Range	%	2.33
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	43 N/mm	244 ppi	2,965 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	521.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	300.2 N	67.500 lbs
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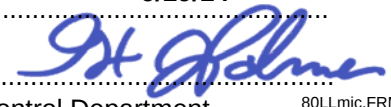
Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	747.3 N	168 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC&VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/19/14**

Signature: 
Quality Control Department

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ROLL # **F14A254048** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.03 mm	80 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.27 mm	89 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **32/30** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.11** mm **83** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.937
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.38
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Carbon Black Content ASTM D4218	Range	%	2.33
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Carbon Black Dispersion ASTM D5596	Category	10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	43 N/mm	246 ppi	2,965 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	521.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	300.2 N	67.500 lbs
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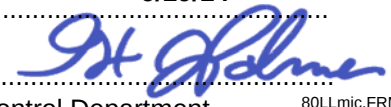
Puncture Resistance FTMS 101 Method 2065 (Modified)	CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	747.3 N	168 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC&VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/19/14**

Signature: 
Quality Control Department

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ROLL # **F14A254049** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.00 mm	79 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.19 mm	86 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **32/26** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.10** mm **83** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.937
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.38
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Carbon Black Content ASTM D4218	Range	%	2.38
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	45 N/mm	255 ppi	3,087 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	536.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	300.2 N	67.500 lbs
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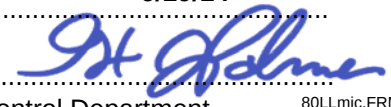
Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	747.3 N	168 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC&VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/19/14**

Signature: 
Quality Control Department

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ROLL # **F14A254050** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.93 mm	76 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.12 mm	83 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **30/26** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.05** mm **81** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.937
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.38
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Carbon Black Content ASTM D4218	Range	%	2.38
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Carbon Black Dispersion ASTM D5596	Category	10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	44 N/mm	249 ppi	3,087 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	536.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	300.2 N	67.500 lbs
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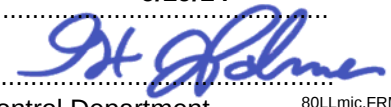
Puncture Resistance FTMS 101 Method 2065 (Modified)	CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	747.3 N	168 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC&VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/19/14**

Signature: 
Quality Control Department

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ROLL # **F14A254051** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	2.02 mm	80 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.18 mm	86 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **27/28** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.10** mm **83** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.937
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.38
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Carbon Black Content ASTM D4218	Range	%	2.38
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Carbon Black Dispersion ASTM D5596	Category	10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	45 N/mm	255 ppi	3,087 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	536.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	300.2 N	67.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	747.3 N	168 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC&VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/19/14**

Signature: 
Quality Control Department

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ROLL # **F14A254052** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.96 mm	77 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.18 mm	86 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **33/26** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.07** mm **81** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.937
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.38
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Carbon Black Content ASTM D4218	Range	%	2.38
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Carbon Black Dispersion ASTM D5596	Category	10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	44 N/mm	252 ppi	3,087 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	536.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	300.2 N	67.500 lbs
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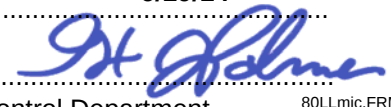
Puncture Resistance FTMS 101 Method 2065 (Modified)	CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	747.3 N	168 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC&VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/19/14**

Signature: 
Quality Control Department

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ROLL # **F14A254053**Lot #: **CEE810110**Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.97 mm	78 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.17 mm	85 mil	Width.....	7.01 m	23.0 feet
Asperity GRI GM12:	AVE:	2.06 mm	81 mil	TEST RESULTS		
ODD #: TOP EVEN #: BOTTOM						

OIT(Standard) ASTM D3895 minutes **205**

Specific Gravity	Density	g/cc	.937
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.38
COND. E			
GRADE: 7104			

Carbon Black Content	Range	%	2.38
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength					
ASTM D6693					
ASTM D638 (Modified)	Average Strength @ Break	44 N/mm	250 ppi	3,087 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		536.5	
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.34
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	300.2 N	67.500 lbs		

Puncture Resistance				CERTIFIED	
FTMS 101 Method 2065 (Modified)					

Puncture Resistance	Load	747.3 N	168 lbs		
ASTM D4833 (Modified)					

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED		
ASTM D1693					

Customer: **Erosion Control Applications**
PO: **13012 CC&VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date:.....**6/19/14**.....Signature.....
Quality Control Department80LLmic.FRM
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12/23/05



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ROLL # **F14A254054** Lot #: **CEE810110** Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.0 mm	80 mil
ASTM D5994	MIN:	1.99 mm	78 mil	Length.....	117.349 m	385.0 feet
(Modified)	MAX:	2.16 mm	85 mil	Width.....	7.01 m	23.0 feet

Asperity GRI GM12: **30/26** mil
ODD #: TOP EVEN #: BOTTOM

AVE: **2.05** mm **81** mil

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.937
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.38
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Carbon Black Content ASTM D4218	Range	%	2.38
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Carbon Black Dispersion ASTM D5596	Category		10 In Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	44 N/mm	249 ppi	3,087 psi
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Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	536.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.34
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	300.2 N	67.500 lbs
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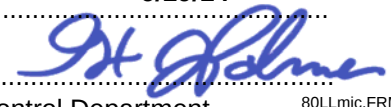
Puncture Resistance FTMS 101 Method 2065 (Modified)			CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Load	747.3 N	168 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
PO: **13012 CC&VMLE2 Squaw Gulch (ph 1,2&3)**
Destination **Cripple Creek, CO**

Date: **6/19/14**

Signature: 
Quality Control Department

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REV 02
12/23/05



quality certificate

ROLL # F15B062010**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.87 mm	73 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.19 mm	86 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.05 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							194 minutes
Asperity	Average	Top				31 mil	
ASTM D7466		Bottom				31 mil	
Specific Gravity	Average Density				g/cc		.935
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.35
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.4
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break	MD		48 N/mm	275 psi	3437 psi	
ASTM D6693		TD		47 N/mm	269 psi	3360 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	510.0	
ASTM D6693		TD			%	621.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%		-0.535
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		306.9 N			69.0 lbs
ASTM D1004 (Modified)		TD		284.7 N			64.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				698.3 N		157.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/3/2015**

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ROLL # F15B062011**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.90 mm	75 mil	Thickness		2.03 mm	80 mil	
Measurement	MAX	2.19 mm	86 mil	Length		117.349 m	385 feet	
ASTM D5994	AVE	2.05 mm	81 mil	Width		7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							194 minutes	
Asperity	Average	Top				31 mil		
ASTM D7466		Bottom				33 mil		
Specific Gravity	Average Density			g/cc		.935		
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min					.35		
Grade	7104							
Carbon Black Content ASTM D4218	Range			%		2.4		
Carbon Black Dispersion ASTM D5596	Category					10 in Category 1		
Tensile Strength	Average Strength @ Break			MD	48 N/mm	275 psi	3437 psi	
ASTM D6693				TD	47 N/mm	269 psi	3360 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break			MD		%	510.0	
ASTM D6693				TD		%	621.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change					%	-0.535	
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance			MD	306.9 N	69.0 lbs		
ASTM D1004 (Modified)				TD	284.7 N	64.0 lbs		
Puncture Resistance						CERTIFIED		
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load					698.3 N	157.0 lbs	
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures			1500 Hrs		CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/3/2015**

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ROLL # F15B062012**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH		
Thickness	MIN	1.94 mm	76 mil	Thickness		2.03 mm	80 mil		
Measurement	MAX	2.16 mm	85 mil	Length		117.349 m	385 feet		
ASTM D5994	AVE	2.06 mm	81 mil	Width		7.01 m	23 feet		
(Modified)									
OIT(Standard) ASTM D 3895							194 minutes		
Asperity	Average	Top				32 mil			
ASTM D7466		Bottom				32 mil			
Specific Gravity	Average Density				g/cc		.935		
ASTM D792									
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.35		
Grade	7104								
Carbon Black Content ASTM D4218	Range				%		2.4		
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1		
Tensile Strength	Average Strength @ Break			MD	48 N/mm	275 psi	3437 psi		
ASTM D6693				TD	47 N/mm	269 psi	3360 psi		
(2 inches / minute)									
Tensile Elongation	Average Elongation @Break			MD		%	510.0		
ASTM D6693				TD		%	621.0		
(2 inches / minute)									
Lo = 1.3" Yield									
Lo = 2.0" Break									
Dimensional Stability	Average Dimensional Change						%	-0.535	
ASTM D1204 (Modified)									
Tear Resistance	Average Tear Resistance			MD	306.9 N	69.0 lbs			
ASTM D1004 (Modified)				TD	284.7 N	64.0 lbs			
Puncture Resistance						CERTIFIED			
FTMS 101 Method 2065 Modified									
Puncture Resistance	Average Peak Load						698.3 N	157.0 lbs	
ASTM D4833 (Modified)									
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/3/2015**

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ROLL # F15B062013**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.94 mm	77 mil	Thickness		2.03 mm	80 mil	
Measurement	MAX	2.15 mm	85 mil	Length		117.349 m	385 feet	
ASTM D5994	AVE	2.05 mm	81 mil	Width		7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							194 minutes	
Asperity	Average	Top				32 mil		
ASTM D7466		Bottom				31 mil		
Specific Gravity	Average Density				g/cc		.935	
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.35	
Grade	7104							
Carbon Black Content ASTM D4218	Range				%		2.3	
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1	
Tensile Strength	Average Strength @ Break		MD	48 N/mm	275 psi	3437 psi		
ASTM D6693				TD	47 N/mm	269 psi	3360 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break		MD		%	510.0		
ASTM D6693				TD		%	621.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change				%		-0.535	
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance		MD	306.9 N	69.0 lbs			
ASTM D1004 (Modified)			TD	284.7 N	64.0 lbs			
Puncture Resistance					CERTIFIED			
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load				698.3 N		157.0 lbs	
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/3/2015

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ROLL # F15B062014**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.94 mm	76 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.10 mm	83 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.03 mm	80 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							194 minutes
Asperity	Average	Top					32 mil
ASTM D7466		Bottom					35 mil
Specific Gravity	Average Density				g/cc		.935
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.35
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.3
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	48 N/mm	275 psi	3437 psi
ASTM D6693				TD	47 N/mm	269 psi	3360 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	510.0
ASTM D6693				TD		%	621.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change					%	-0.535
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	306.9 N		69.0 lbs
ASTM D1004 (Modified)				TD	284.7 N		64.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load					698.3 N	157.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures					1500 Hrs	CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/3/2015**

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ROLL # F15B062015**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.97 mm	77 mil	Thickness		2.03 mm	80 mil	
Measurement	MAX	2.19 mm	86 mil	Length		117.349 m	385 feet	
ASTM D5994	AVE	2.06 mm	81 mil	Width		7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							194 minutes	
Asperity	Average	Top				27 mil		
ASTM D7466		Bottom				37 mil		
Specific Gravity	Average Density				g/cc	.935		
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.35	
Grade	7104							
Carbon Black Content ASTM D4218	Range				%	2.4		
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1	
Tensile Strength	Average Strength @ Break		MD	44 N/mm	251 psi	3142 psi		
ASTM D6693				TD	43 N/mm	248 psi	3100 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break		MD			%	525.0	
ASTM D6693				TD			%	579.0
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change						% -0.535	
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance		MD	306.9 N			69.0 lbs	
ASTM D1004 (Modified)			TD	284.7 N			64.0 lbs	
Puncture Resistance							CERTIFIED	
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load				698.3 N	157.0 lbs		
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs	CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/3/2015

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Quality Control Department



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ROLL # F15B062016**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.99 mm	78 mil	Thickness		2.03 mm	80 mil	
Measurement	MAX	2.20 mm	86 mil	Length		117.349 m	385 feet	
ASTM D5994	AVE	2.08 mm	82 mil	Width		7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							194 minutes	
Asperity	Average	Top				26 mil		
ASTM D7466		Bottom				43 mil		
Specific Gravity	Average Density				g/cc	.935		
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.35	
Grade	7104							
Carbon Black Content ASTM D4218	Range				%	2.4		
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1	
Tensile Strength	Average Strength @ Break			MD	44 N/mm	251 psi	3142 psi	
ASTM D6693				TD	43 N/mm	248 psi	3100 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break			MD		%	525.0	
ASTM D6693				TD		%	579.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change						% -0.535	
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance			MD	306.9 N	69.0 lbs		
ASTM D1004 (Modified)				TD	284.7 N	64.0 lbs		
Puncture Resistance							CERTIFIED	
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load				698.3 N		157.0 lbs	
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/3/2015

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ROLL # F15B063017**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.97 mm	77 mil	Thickness		2.03 mm	80 mil	
Measurement	MAX	2.20 mm	86 mil	Length		117.349 m	385 feet	
ASTM D5994	AVE	2.08 mm	82 mil	Width		7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							194 minutes	
Asperity	Average	Top				25 mil		
ASTM D7466		Bottom				34 mil		
Specific Gravity	Average Density			g/cc		.935		
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min					.35		
Grade	7104							
Carbon Black Content ASTM D4218	Range			%		2.4		
Carbon Black Dispersion ASTM D5596	Category					10 in Category 1		
Tensile Strength	Average Strength @ Break			MD	44 N/mm	251 psi	3142 psi	
ASTM D6693				TD	43 N/mm	248 psi	3100 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break			MD		%	525.0	
ASTM D6693				TD		%	579.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change					%	-0.535	
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance			MD	306.9 N	69.0 lbs		
ASTM D1004 (Modified)				TD	284.7 N	64.0 lbs		
Puncture Resistance						CERTIFIED		
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load					698.3 N	157.0 lbs	
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures			1500 Hrs		CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/4/2015

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Quality Control Department



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ROLL # F15B063018**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.99 mm	78 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.15 mm	85 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.08 mm	82 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							194 minutes
Asperity	Average	Top				27 mil	
ASTM D7466		Bottom				35 mil	
Specific Gravity	Average Density				g/cc	.935	
ASTM D792							
MFI ASTM D1238 COND. E			Melt Flow Index 190C/2160 g - g/10 min				.35
Grade	7104						
Carbon Black Content ASTM D4218	Range				%	2.3	
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	44 N/mm	251 psi	3142 psi
ASTM D6693				TD	43 N/mm	248 psi	3100 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	525.0
ASTM D6693				TD		%	579.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change					%	-0.535
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	306.9 N	69.0 lbs	
ASTM D1004 (Modified)				TD	284.7 N	64.0 lbs	
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				698.3 N	157.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures		1500 Hrs				CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/4/2015

Signature


Quality Control Department



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ROLL # F15B063019**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.99 mm	78 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.13 mm	84 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.06 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							194 minutes
Asperity	Average	Top				28 mil	
ASTM D7466		Bottom				42 mil	
Specific Gravity	Average Density				g/cc	.935	
ASTM D792							
MFI ASTM D1238 COND. E			Melt Flow Index 190C/2160 g - g/10 min				.35
Grade	7104						
Carbon Black Content ASTM D4218	Range				%	2.3	
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	44 N/mm	251 psi	3142 psi
ASTM D6693				TD	43 N/mm	248 psi	3100 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	525.0
ASTM D6693				TD		%	579.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%	-0.535	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	306.9 N	69.0 lbs	
ASTM D1004 (Modified)				TD	284.7 N	64.0 lbs	
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				698.3 N	157.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs	CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/4/2015

Signature


Quality Control Department



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ROLL # F15B063020**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.95 mm	77 mil	Thickness		2.03 mm	80 mil	
Measurement	MAX	2.17 mm	86 mil	Length		117.349 m	385 feet	
ASTM D5994	AVE	2.07 mm	81 mil	Width		7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							194 minutes	
Asperity	Average	Top				28 mil		
ASTM D7466		Bottom				38 mil		
Specific Gravity	Average Density				g/cc	.934		
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.35	
Grade	7104							
Carbon Black Content ASTM D4218	Range				%	2.3		
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1	
Tensile Strength	Average Strength @ Break			MD	45 N/mm	258 psi	3228 psi	
ASTM D6693				TD	46 N/mm	264 psi	3294 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break			MD		%	529.0	
ASTM D6693				TD		%	622.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change					%	-0.535	
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance			MD	302.5 N	68.0 lbs		
ASTM D1004 (Modified)				TD	284.7 N	64.0 lbs		
Puncture Resistance							CERTIFIED	
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load				729.5 N	164.0 lbs		
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs	CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/4/2015

Signature


Quality Control Department



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ROLL # F15B063021**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH		METRIC	ENGLISH
Thickness	MIN	2.02 mm	79 mil	Thickness	2.03 mm	80 mil
Measurement	MAX	2.18 mm	86 mil	Length	117.349 m	385 feet
ASTM D5994	AVE	2.10 mm	83 mil	Width	7.01 m	23 feet
(Modified)						
OIT(Standard) ASTM D 3895						194 minutes
Asperity	Average	Top				25 mil
ASTM D7466		Bottom				35 mil
Specific Gravity	Average Density				g/cc	.934
ASTM D792						
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min				.35	
Grade	7104					
Carbon Black Content ASTM D4218	Range				%	2.3
Carbon Black Dispersion ASTM D5596	Category				10 in Category 1	
Tensile Strength	Average Strength @ Break		MD	45 N/mm	258 psi	3228 psi
ASTM D6693			TD	46 N/mm	264 psi	3294 psi
(2 inches / minute)						
Tensile Elongation	Average Elongation @Break		MD		%	529.0
ASTM D6693			TD		%	622.0
(2 inches / minute)						
Lo = 1.3" Yield						
Lo = 2.0" Break						
Dimensional Stability	Average Dimensional Change				%	-0.535
ASTM D1204 (Modified)						
Tear Resistance	Average Tear Resistance		MD	302.5 N	68.0 lbs	
ASTM D1004 (Modified)			TD	284.7 N	64.0 lbs	
Puncture Resistance					CERTIFIED	
FTMS 101 Method 2065 Modified						
Puncture Resistance	Average Peak Load				729.5 N	164.0 lbs
ASTM D4833 (Modified)						
ESCR ASTM D1693	Minumum Hrs w/o Failures		1500 Hrs		CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/4/2015**

Signature


Quality Control Department



quality certificate

ROLL # F15B063022**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.97 mm	77 mil	Thickness		2.03 mm	80 mil	
Measurement	MAX	2.16 mm	85 mil	Length		117.349 m	385 feet	
ASTM D5994	AVE	2.05 mm	81 mil	Width		7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							194 minutes	
Asperity	Average	Top				32 mil		
ASTM D7466		Bottom				31 mil		
Specific Gravity	Average Density			g/cc		.934		
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min					.35		
Grade	7104							
Carbon Black Content ASTM D4218	Range			%		2.3		
Carbon Black Dispersion ASTM D5596	Category					10 in Category 1		
Tensile Strength	Average Strength @ Break			MD	45 N/mm	258 psi	3228 psi	
ASTM D6693				TD	46 N/mm	264 psi	3294 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break			MD		%	529.0	
ASTM D6693				TD		%	622.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change					%	-0.535	
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance			MD	302.5 N	68.0 lbs		
ASTM D1004 (Modified)				TD	284.7 N	64.0 lbs		
Puncture Resistance						CERTIFIED		
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load					729.5 N	164.0 lbs	
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures			1500 Hrs		CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/4/2015

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ROLL # F15B063023**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.90 mm	75 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.16 mm	85 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.04 mm	80 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							194 minutes
Asperity	Average	Top				29 mil	
ASTM D7466		Bottom				33 mil	
Specific Gravity	Average Density			g/cc		.934	
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min					.35	
Grade	7104						
Carbon Black Content ASTM D4218	Range			%		2.3	
Carbon Black Dispersion ASTM D5596	Category					10 in Category 1	
Tensile Strength	Average Strength @ Break	MD		45 N/mm	258 psi	3228 psi	
ASTM D6693		TD		46 N/mm	264 psi	3294 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	529.0	
ASTM D6693		TD			%	622.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change			%		-0.535	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		302.5 N		68.0 lbs	
ASTM D1004 (Modified)		TD		284.7 N		64.0 lbs	
Puncture Resistance						CERTIFIED	
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load			729.5 N		164.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures			1500 Hrs		CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/4/2015**

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ROLL # F15B063024**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	2.01 mm	79 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.18 mm	86 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.07 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							194 minutes
Asperity	Average	Top					29 mil
ASTM D7466		Bottom					30 mil
Specific Gravity	Average Density				g/cc		.934
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.35
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.3
Carbon Black Dispersion ASTM D5596	Category					10 in Category 1	
Tensile Strength	Average Strength @ Break			MD	45 N/mm	258 psi	3228 psi
ASTM D6693				TD	46 N/mm	264 psi	3294 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	529.0
ASTM D6693				TD		%	622.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change					%	-0.535
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	302.5 N		68.0 lbs
ASTM D1004 (Modified)				TD	284.7 N		64.0 lbs
Puncture Resistance							
FTMS 101 Method 2065 Modified	CERTIFIED						
Puncture Resistance	Average Peak Load				729.5 N		164.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/4/2015**

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Quality Control Department



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ROLL # F15B063025**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH		
Thickness	MIN	2.01 mm	79 mil	Thickness		2.03 mm	80 mil		
Measurement	MAX	2.16 mm	85 mil	Length		117.349 m	385 feet		
ASTM D5994	AVE	2.10 mm	83 mil	Width		7.01 m	23 feet		
(Modified)									
OIT(Standard) ASTM D 3895							194 minutes		
Asperity	Average	Top					29 mil		
ASTM D7466		Bottom					29 mil		
Specific Gravity	Average Density				g/cc		.934		
ASTM D792									
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.35		
Grade	7104								
Carbon Black Content ASTM D4218	Range				%		2.2		
Carbon Black Dispersion ASTM D5596	Category					10 in Category 1			
Tensile Strength	Average Strength @ Break			MD	45 N/mm	256 psi	3206 psi		
ASTM D6693				TD	46 N/mm	261 psi	3261 psi		
(2 inches / minute)									
Tensile Elongation	Average Elongation @Break			MD		%	528.0		
ASTM D6693				TD		%	623.0		
(2 inches / minute)									
Lo = 1.3" Yield									
Lo = 2.0" Break									
Dimensional Stability	Average Dimensional Change					%	-0.535		
ASTM D1204 (Modified)									
Tear Resistance	Average Tear Resistance			MD	302.5 N		68.0 lbs		
ASTM D1004 (Modified)				TD	284.7 N		64.0 lbs		
Puncture Resistance									
FTMS 101 Method 2065 Modified							CERTIFIED		
Puncture Resistance	Average Peak Load				729.5 N		164.0 lbs		
ASTM D4833 (Modified)									
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/4/2015**

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ROLL # F15B063026**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.95 mm	77 mil	Thickness		2.03 mm	80 mil	
Measurement	MAX	2.15 mm	85 mil	Length		117.349 m	385 feet	
ASTM D5994	AVE	2.06 mm	81 mil	Width		7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							194 minutes	
Asperity	Average	Top				36 mil		
ASTM D7466		Bottom				31 mil		
Specific Gravity	Average Density			g/cc		.934		
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min					.35		
Grade	7104							
Carbon Black Content ASTM D4218	Range			%		2.2		
Carbon Black Dispersion ASTM D5596	Category					10 in Category 1		
Tensile Strength	Average Strength @ Break			MD	45 N/mm	256 psi	3206 psi	
ASTM D6693				TD	46 N/mm	261 psi	3261 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break			MD		%	528.0	
ASTM D6693				TD		%	623.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change					%	-0.535	
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance			MD	302.5 N	68.0 lbs		
ASTM D1004 (Modified)				TD	284.7 N	64.0 lbs		
Puncture Resistance						CERTIFIED		
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load					729.5 N	164.0 lbs	
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures			1500 Hrs		CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/4/2015

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ROLL # F15B063027**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.98 mm	78 mil		Thickness	2.03 mm	80 mil
Measurement	MAX	2.16 mm	85 mil		Length	117.349 m	385 feet
ASTM D5994							
(Modified)	AVE	2.09 mm	82 mil		Width	7.01 m	23 feet
OIT(Standard) ASTM D 3895							194 minutes
Asperity	Average	Top				30 mil	
ASTM D7466		Bottom				29 mil	
Specific Gravity	Average Density				g/cc		.934
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.35
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.2
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	45 N/mm	256 psi	3206 psi
ASTM D6693				TD	46 N/mm	261 psi	3261 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	528.0
ASTM D6693				TD		%	623.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change						%
ASTM D1204 (Modified)							-0.535
Tear Resistance	Average Tear Resistance			MD	302.5 N	68.0 lbs	
ASTM D1004 (Modified)				TD	284.7 N	64.0 lbs	
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				729.5 N		164.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/4/2015**

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ROLL # F15B063028**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.95 mm	77 mil	Thickness		2.03 mm	80 mil	
Measurement	MAX	2.15 mm	85 mil	Length		117.349 m	385 feet	
ASTM D5994	AVE	2.03 mm	80 mil	Width		7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							194 minutes	
Asperity	Average	Top				34 mil		
ASTM D7466		Bottom				30 mil		
Specific Gravity	Average Density				g/cc	.934		
ASTM D792								
MFI ASTM D1238 COND. E			Melt Flow Index 190C/2160 g - g/10 min				.35	
Grade	7104							
Carbon Black Content ASTM D4218	Range				%	2.2		
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1	
Tensile Strength	Average Strength @ Break			MD	45 N/mm	256 psi	3206 psi	
ASTM D6693				TD	46 N/mm	261 psi	3261 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break			MD		%	528.0	
ASTM D6693				TD		%	623.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change					%	-0.535	
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance			MD	302.5 N	68.0 lbs		
ASTM D1004 (Modified)				TD	284.7 N	64.0 lbs		
Puncture Resistance							CERTIFIED	
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load				729.5 N	164.0 lbs		
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures		1500 Hrs				CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/4/2015

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Quality Control Department



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ROLL # F15B063029**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.95 mm	77 mil	Thickness	2.03 mm	80 mil		
Measurement	MAX	2.15 mm	85 mil	Length	117.349 m	385 feet		
ASTM D5994	AVE	2.08 mm	82 mil	Width	7.01 m	23 feet		
(Modified)								
OIT(Standard) ASTM D 3895						194 minutes		
Asperity	Average	Top				35 mil		
ASTM D7466		Bottom				30 mil		
Specific Gravity	Average Density				g/cc	.934		
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.35	
Grade	7104							
Carbon Black Content ASTM D4218	Range				%	2.2		
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1	
Tensile Strength	Average Strength @ Break		MD	45 N/mm	256 psi	3206 psi		
ASTM D6693				TD	46 N/mm	261 psi	3261 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break		MD		%	528.0		
ASTM D6693				TD		%	623.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change					%	-0.535	
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance		MD	302.5 N	68.0 lbs			
ASTM D1004 (Modified)			TD	284.7 N	64.0 lbs			
Puncture Resistance							CERTIFIED	
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load				729.5 N	164.0 lbs		
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs	CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/4/2015

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Quality Control Department



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ROLL # F15B063030**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.97 mm	77 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.13 mm	84 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.06 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							194 minutes
Asperity	Average	Top				30 mil	
ASTM D7466		Bottom				32 mil	
Specific Gravity	Average Density				g/cc		.935
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.35
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.4
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break		MD	47 N/mm	266 psi	3325 psi	
ASTM D6693				TD	47 N/mm	269 psi	3364 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break		MD		%	539.0	
ASTM D6693				TD		%	595.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%		-0.535
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance		MD	293.6 N	66.0 lbs		
ASTM D1004 (Modified)			TD	311.4 N	70.0 lbs		
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				729.5 N		164.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/4/2015**

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Quality Control Department



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ROLL # F15B063031**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.91 mm	75 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.08 mm	82 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.03 mm	80 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							194 minutes
Asperity	Average	Top					29 mil
ASTM D7466		Bottom					38 mil
Specific Gravity	Average Density				g/cc		.935
ASTM D792							
MFI ASTM D1238 COND. E		Melt Flow Index 190C/2160 g - g/10 min					.35
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.4
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break	MD	47 N/mm	266 psi			3325 psi
ASTM D6693		TD	47 N/mm	269 psi			3364 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%		539.0
ASTM D6693		TD			%		595.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%		-0.535
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD	293.6 N				66.0 lbs
ASTM D1004 (Modified)		TD	311.4 N				70.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load		729.5 N				164.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures		1500 Hrs				CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/4/2015**

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Quality Control Department



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ROLL # F15B063032**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.98 mm	78 mil		Thickness	2.03 mm	80 mil
Measurement	MAX	2.12 mm	84 mil		Length	117.349 m	385 feet
ASTM D5994	AVE	2.06 mm	81 mil		Width	7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							194 minutes
Asperity	Average	Top				26 mil	
ASTM D7466		Bottom				40 mil	
Specific Gravity	Average Density				g/cc	.935	
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.35
Grade	7104						
Carbon Black Content ASTM D4218	Range				%	2.4	
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break	MD		47 N/mm	266 psi	3325 psi	
ASTM D6693		TD		47 N/mm	269 psi	3364 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	539.0	
ASTM D6693		TD			%	595.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%	-0.535	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		293.6 N	66.0 lbs		
ASTM D1004 (Modified)		TD		311.4 N	70.0 lbs		
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				729.5 N	164.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs	CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/4/2015**

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Quality Control Department



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ROLL # F15B064033**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.91 mm	75 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.13 mm	84 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.04 mm	80 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							194 minutes
Asperity	Average	Top				32 mil	
ASTM D7466		Bottom				32 mil	
Specific Gravity	Average Density			g/cc		.935	
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min					.35	
Grade	7104						
Carbon Black Content ASTM D4218	Range			%		2.4	
Carbon Black Dispersion ASTM D5596	Category					10 in Category 1	
Tensile Strength	Average Strength @ Break	MD		47 N/mm	266 psi	3325 psi	
ASTM D6693		TD		47 N/mm	269 psi	3364 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	539.0	
ASTM D6693		TD			%	595.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change			%		-0.535	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		293.6 N		66.0 lbs	
ASTM D1004 (Modified)		TD		311.4 N		70.0 lbs	
Puncture Resistance						CERTIFIED	
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load			729.5 N		164.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures			1500 Hrs		CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/5/2015**

Signature


Quality Control Department



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ROLL # F15B064034**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.93 mm	76 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.15 mm	85 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.05 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							194 minutes
Asperity	Average	Top				30 mil	
ASTM D7466		Bottom				32 mil	
Specific Gravity	Average Density			g/cc		.935	
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min					.35	
Grade	7104						
Carbon Black Content ASTM D4218	Range			%		2.4	
Carbon Black Dispersion ASTM D5596	Category					10 in Category 1	
Tensile Strength	Average Strength @ Break	MD		47 N/mm	266 psi	3325 psi	
ASTM D6693		TD		47 N/mm	269 psi	3364 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	539.0	
ASTM D6693		TD			%	595.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change			%		-0.535	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		293.6 N		66.0 lbs	
ASTM D1004 (Modified)		TD		311.4 N		70.0 lbs	
Puncture Resistance						CERTIFIED	
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load			729.5 N		164.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures			1500 Hrs		CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/5/2015**

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ROLL # F15B064035**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH		
Thickness	MIN	1.93 mm	76 mil	Thickness		2.03 mm	80 mil		
Measurement	MAX	2.13 mm	84 mil	Length		117.349 m	385 feet		
ASTM D5994	AVE	2.06 mm	81 mil	Width		7.01 m	23 feet		
(Modified)									
OIT(Standard) ASTM D 3895							194 minutes		
Asperity	Average	Top				32 mil			
ASTM D7466		Bottom				32 mil			
Specific Gravity	Average Density				g/cc		.935		
ASTM D792									
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.35		
Grade	7104								
Carbon Black Content ASTM D4218	Range				%		2.5		
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1		
Tensile Strength	Average Strength @ Break			MD	46 N/mm	263 psi	3284 psi		
ASTM D6693				TD	46 N/mm	265 psi	3307 psi		
(2 inches / minute)									
Tensile Elongation	Average Elongation @Break			MD		%	545.0		
ASTM D6693				TD		%	621.0		
(2 inches / minute)									
Lo = 1.3" Yield									
Lo = 2.0" Break									
Dimensional Stability	Average Dimensional Change						%	-0.535	
ASTM D1204 (Modified)									
Tear Resistance	Average Tear Resistance			MD	284.7 N	64.0 lbs			
ASTM D1004 (Modified)				TD	311.4 N	70.0 lbs			
Puncture Resistance							CERTIFIED		
FTMS 101 Method 2065 Modified									
Puncture Resistance	Average Peak Load				729.5 N		164.0 lbs		
ASTM D4833 (Modified)									
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/5/2015

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ROLL # F15B064036**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.90 mm	75 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.14 mm	84 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.07 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							194 minutes
Asperity	Average	Top					35 mil
ASTM D7466		Bottom					35 mil
Specific Gravity	Average Density				g/cc		.935
ASTM D792							
MFI ASTM D1238 COND. E		Melt Flow Index 190C/2160 g - g/10 min					.35
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.5
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break	MD	46 N/mm	263 psi		3284 psi	
ASTM D6693		TD	46 N/mm	265 psi		3307 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	545.0	
ASTM D6693		TD			%	621.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%	-0.535	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD	284.7 N			64.0 lbs	
ASTM D1004 (Modified)		TD	311.4 N			70.0 lbs	
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load		729.5 N			164.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures		1500 Hrs				CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/5/2015**

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Quality Control Department



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ROLL # F15B064037**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.98 mm	78 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.14 mm	84 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.07 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							194 minutes
Asperity	Average	Top				28 mil	
ASTM D7466		Bottom				37 mil	
Specific Gravity	Average Density				g/cc		.935
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.35
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.5
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break	MD		46 N/mm	263 psi	3284 psi	
ASTM D6693		TD		46 N/mm	265 psi	3307 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	545.0	
ASTM D6693		TD			%	621.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%		-0.535
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		284.7 N	64.0 lbs		
ASTM D1004 (Modified)		TD		311.4 N	70.0 lbs		
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				729.5 N		164.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/5/2015**

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ROLL # F15B064040**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH		
Thickness	MIN	1.99 mm	78 mil	Thickness		2.03 mm	80 mil		
Measurement	MAX	2.23 mm	88 mil	Length		117.349 m	385 feet		
ASTM D5994	AVE	2.11 mm	83 mil	Width		7.01 m	23 feet		
(Modified)									
OIT(Standard) ASTM D 3895							194 minutes		
Asperity	Average	Top				30 mil			
ASTM D7466		Bottom				33 mil			
Specific Gravity	Average Density				g/cc		.935		
ASTM D792									
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.35		
Grade	7104								
Carbon Black Content ASTM D4218	Range				%		2.4		
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1		
Tensile Strength	Average Strength @ Break			MD	46 N/mm	260 psi	3255 psi		
ASTM D6693				TD	44 N/mm	251 psi	3133 psi		
(2 inches / minute)									
Tensile Elongation	Average Elongation @Break			MD		%	531.0		
ASTM D6693				TD		%	593.0		
(2 inches / minute)									
Lo = 1.3" Yield									
Lo = 2.0" Break									
Dimensional Stability	Average Dimensional Change						%	-0.535	
ASTM D1204 (Modified)									
Tear Resistance	Average Tear Resistance			MD	311.4 N	70.0 lbs			
ASTM D1004 (Modified)				TD	289.1 N	65.0 lbs			
Puncture Resistance							CERTIFIED		
FTMS 101 Method 2065 Modified									
Puncture Resistance	Average Peak Load				716.1 N		161.0 lbs		
ASTM D4833 (Modified)									
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/5/2015

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ROLL # F15B064041**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	2.00 mm	79 mil	Thickness		2.03 mm	80 mil	
Measurement	MAX	2.20 mm	87 mil	Length		117.349 m	385 feet	
ASTM D5994	AVE	2.10 mm	83 mil	Width		7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							194 minutes	
Asperity	Average	Top				32 mil		
ASTM D7466		Bottom				31 mil		
Specific Gravity	Average Density			g/cc		.935		
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min					.35		
Grade	7104							
Carbon Black Content ASTM D4218	Range			%		2.4		
Carbon Black Dispersion ASTM D5596	Category					10 in Category 1		
Tensile Strength	Average Strength @ Break			MD	46 N/mm	260 psi	3255 psi	
ASTM D6693				TD	44 N/mm	251 psi	3133 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break			MD		%	531.0	
ASTM D6693				TD		%	593.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change					%	-0.535	
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance			MD	311.4 N	70.0 lbs		
ASTM D1004 (Modified)				TD	289.1 N	65.0 lbs		
Puncture Resistance						CERTIFIED		
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load					716.1 N	161.0 lbs	
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures			1500 Hrs		CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/5/2015**

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Quality Control Department



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ROLL # F15B064042**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH		
Thickness	MIN	1.92 mm	76 mil	Thickness		2.03 mm	80 mil		
Measurement	MAX	2.15 mm	85 mil	Length		117.349 m	385 feet		
ASTM D5994	AVE	2.04 mm	80 mil	Width		7.01 m	23 feet		
(Modified)									
OIT(Standard) ASTM D 3895							194 minutes		
Asperity	Average	Top				30 mil			
ASTM D7466		Bottom				31 mil			
Specific Gravity	Average Density				g/cc		.935		
ASTM D792									
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.35		
Grade	7104								
Carbon Black Content ASTM D4218	Range				%		2.4		
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1		
Tensile Strength	Average Strength @ Break			MD	46 N/mm	260 psi	3255 psi		
ASTM D6693				TD	44 N/mm	251 psi	3133 psi		
(2 inches / minute)									
Tensile Elongation	Average Elongation @Break			MD		%	531.0		
ASTM D6693				TD		%	593.0		
(2 inches / minute)									
Lo = 1.3" Yield									
Lo = 2.0" Break									
Dimensional Stability	Average Dimensional Change						%	-0.535	
ASTM D1204 (Modified)									
Tear Resistance	Average Tear Resistance			MD	311.4 N	70.0 lbs			
ASTM D1004 (Modified)				TD	289.1 N	65.0 lbs			
Puncture Resistance						CERTIFIED			
FTMS 101 Method 2065 Modified									
Puncture Resistance	Average Peak Load				716.1 N		161.0 lbs		
ASTM D4833 (Modified)									
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/5/2015**

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Quality Control Department



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ROLL # F15B064043**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC		ENGLISH		METRIC		ENGLISH			
Thickness	MIN	2.02	mm	80	mil	Thickness	2.03	mm	80	mil	
Measurement	MAX	2.13	mm	84	mil	Length	117.349	m	385	feet	
ASTM D5994	AVE	2.06	mm	81	mil	Width	7.01	m	23	feet	
(Modified)											
OIT(Standard) ASTM D 3895									194 minutes		
Asperity	Average			Top					25 mil		
ASTM D7466				Bottom					39 mil		
Specific Gravity	Average Density				g/cc				.935		
ASTM D792											
MFI ASTM D1238 COND. E			Melt Flow Index 190C/2160 g - g/10 min						.35		
Grade	7104										
Carbon Black Content ASTM D4218	Range				%				2.4		
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1				
Tensile Strength	Average Strength @ Break			MD	46	N/mm	260	ppi	3255	psi	
ASTM D6693				TD	44	N/mm	251	ppi	3133	psi	
(2 inches / minute)											
Tensile Elongation	Average Elongation @Break			MD			%		531.0		
ASTM D6693				TD			%		593.0		
(2 inches / minute)											
Lo = 1.3" Yield											
Lo = 2.0" Break											
Dimensional Stability	Average Dimensional Change						%		-0.535		
ASTM D1204 (Modified)											
Tear Resistance	Average Tear Resistance			MD	311.4		N		70.0		lbs
ASTM D1004 (Modified)				TD	289.1		N		65.0		lbs
Puncture Resistance									CERTIFIED		
FTMS 101 Method 2065 Modified											
Puncture Resistance	Average Peak Load				716.1		N		161.0		lbs
ASTM D4833 (Modified)											
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500		Hrs		CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/5/2015

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Quality Control Department



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ROLL # F15B065044**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.97 mm	78 mil	Thickness		2.03 mm	80 mil	
Measurement	MAX	2.14 mm	84 mil	Length		117.349 m	385 feet	
ASTM D5994	AVE	2.05 mm	81 mil	Width		7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							194 minutes	
Asperity	Average	Top				29 mil		
ASTM D7466		Bottom				33 mil		
Specific Gravity	Average Density				g/cc		.935	
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.35	
Grade	7104							
Carbon Black Content ASTM D4218	Range				%		2.4	
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1	
Tensile Strength	Average Strength @ Break			MD	46 N/mm	260 psi	3255 psi	
ASTM D6693				TD	44 N/mm	251 psi	3133 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break			MD		%	531.0	
ASTM D6693				TD		%	593.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change						%	-0.535
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance			MD	311.4 N	70.0 lbs		
ASTM D1004 (Modified)				TD	289.1 N	65.0 lbs		
Puncture Resistance							CERTIFIED	
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load				716.1 N		161.0 lbs	
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/6/2015**

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Quality Control Department



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ROLL # F15B065045**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.90 mm	75 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.20 mm	86 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.05 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							194 minutes
Asperity	Average	Top					27 mil
ASTM D7466		Bottom					34 mil
Specific Gravity	Average Density				g/cc		.935
ASTM D792							
MFI ASTM D1238 COND. E		Melt Flow Index 190C/2160 g - g/10 min					.35
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.3
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break	MD	46 N/mm	260 psi			3255 psi
ASTM D6693		TD	44 N/mm	251 psi			3133 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%		531.0
ASTM D6693		TD			%		593.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%		-0.535
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD	311.4 N				70.0 lbs
ASTM D1004 (Modified)		TD	289.1 N				65.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load		716.1 N				161.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures		1500 Hrs				CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/6/2015**

Signature


Quality Control Department



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ROLL # F15B065046**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	2.03 mm	80 mil	Thickness		2.03 mm	80 mil	
Measurement	MAX	2.21 mm	87 mil	Length		117.349 m	385 feet	
ASTM D5994	AVE	2.10 mm	83 mil	Width		7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							194 minutes	
Asperity	Average	Top				30 mil		
ASTM D7466		Bottom				34 mil		
Specific Gravity	Average Density			g/cc		.935		
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min					.35		
Grade	7104							
Carbon Black Content ASTM D4218	Range			%		2.4		
Carbon Black Dispersion ASTM D5596	Category					10 in Category 1		
Tensile Strength	Average Strength @ Break			MD	46 N/mm	260 psi	3255 psi	
ASTM D6693				TD	44 N/mm	251 psi	3133 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break			MD		%	531.0	
ASTM D6693				TD		%	593.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change					%	-0.535	
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance			MD	311.4 N		70.0 lbs	
ASTM D1004 (Modified)				TD	289.1 N		65.0 lbs	
Puncture Resistance							CERTIFIED	
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load					716.1 N	161.0 lbs	
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures			1500 Hrs			CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/6/2015**

Signature


Quality Control Department



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ROLL # F15B065047**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH		
Thickness	MIN	1.96 mm	77 mil	Thickness		2.03 mm	80 mil		
Measurement	MAX	2.07 mm	82 mil	Length		117.349 m	385 feet		
ASTM D5994	AVE	2.03 mm	80 mil	Width		7.01 m	23 feet		
(Modified)									
OIT(Standard) ASTM D 3895							194 minutes		
Asperity	Average	Top				26 mil			
ASTM D7466		Bottom				39 mil			
Specific Gravity	Average Density				g/cc		.935		
ASTM D792									
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.35		
Grade	7104								
Carbon Black Content ASTM D4218	Range				%		2.4		
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1		
Tensile Strength	Average Strength @ Break			MD	46 N/mm	260 ppi	3255 psi		
ASTM D6693				TD	44 N/mm	251 ppi	3133 psi		
(2 inches / minute)									
Tensile Elongation	Average Elongation @Break			MD		%	531.0		
ASTM D6693				TD		%	593.0		
(2 inches / minute)									
Lo = 1.3" Yield									
Lo = 2.0" Break									
Dimensional Stability	Average Dimensional Change						%	-0.535	
ASTM D1204 (Modified)									
Tear Resistance	Average Tear Resistance			MD	311.4 N	70.0 lbs			
ASTM D1004 (Modified)				TD	289.1 N	65.0 lbs			
Puncture Resistance							CERTIFIED		
FTMS 101 Method 2065 Modified									
Puncture Resistance	Average Peak Load				716.1 N		161.0 lbs		
ASTM D4833 (Modified)									
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/6/2015**

Signature


Quality Control Department



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ROLL # F15B065048**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH		
Thickness	MIN	2.01 mm	79 mil	Thickness		2.03 mm	80 mil		
Measurement	MAX	2.12 mm	84 mil	Length		117.349 m	385 feet		
ASTM D5994	AVE	2.07 mm	81 mil	Width		7.01 m	23 feet		
(Modified)									
OIT(Standard) ASTM D 3895							194 minutes		
Asperity	Average	Top				27 mil			
ASTM D7466		Bottom				37 mil			
Specific Gravity	Average Density				g/cc		.935		
ASTM D792									
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.35		
Grade	7104								
Carbon Black Content ASTM D4218	Range				%		2.4		
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1		
Tensile Strength	Average Strength @ Break			MD	46 N/mm	260 psi	3255 psi		
ASTM D6693				TD	44 N/mm	251 psi	3133 psi		
(2 inches / minute)									
Tensile Elongation	Average Elongation @Break			MD		%	531.0		
ASTM D6693				TD		%	593.0		
(2 inches / minute)									
Lo = 1.3" Yield									
Lo = 2.0" Break									
Dimensional Stability	Average Dimensional Change						%	-0.535	
ASTM D1204 (Modified)									
Tear Resistance	Average Tear Resistance			MD	311.4 N	70.0 lbs			
ASTM D1004 (Modified)				TD	289.1 N	65.0 lbs			
Puncture Resistance						CERTIFIED			
FTMS 101 Method 2065 Modified									
Puncture Resistance	Average Peak Load						716.1 N	161.0 lbs	
ASTM D4833 (Modified)									
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/6/2015**

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ROLL # F15B065049**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.98 mm	78 mil		Thickness	2.03 mm	80 mil
Measurement	MAX	2.19 mm	86 mil		Length	117.349 m	385 feet
ASTM D5994							
(Modified)	AVE	2.07 mm	81 mil		Width	7.01 m	23 feet
OIT(Standard) ASTM D 3895							194 minutes
Asperity	Average	Top				29 mil	
ASTM D7466		Bottom				34 mil	
Specific Gravity	Average Density				g/cc		.935
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.35
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.4
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	46 N/mm	260 psi	3255 psi
ASTM D6693				TD	44 N/mm	251 psi	3133 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	531.0
ASTM D6693				TD		%	593.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change						%
ASTM D1204 (Modified)							-0.535
Tear Resistance	Average Tear Resistance			MD	311.4 N	70.0 lbs	
ASTM D1004 (Modified)				TD	289.1 N	65.0 lbs	
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				716.1 N		161.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/6/2015**

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Quality Control Department



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ROLL # F15B065050**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	2.04 mm	80 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.23 mm	88 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.11 mm	83 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							194 minutes
Asperity	Average	Top					29 mil
ASTM D7466		Bottom					33 mil
Specific Gravity	Average Density				g/cc		.934
ASTM D792							
MFI ASTM D1238 COND. E		Melt Flow Index 190C/2160 g - g/10 min					.35
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.3
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break	MD	45 N/mm	258 psi			3229 psi
ASTM D6693		TD	47 N/mm	269 psi			3365 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%		539.0
ASTM D6693		TD			%		625.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%		-0.535
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD	298.0 N				67.0 lbs
ASTM D1004 (Modified)		TD	293.6 N				66.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load		698.3 N				157.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures		1500 Hrs				CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/6/2015**

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Quality Control Department



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ROLL # F15B065051**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC		ENGLISH		METRIC		ENGLISH			
Thickness	MIN	2.03	mm	80	mil	Thickness	2.03	mm	80	mil	
Measurement	MAX	2.14	mm	84	mil	Length	117.349	m	385	feet	
ASTM D5994	AVE	2.09	mm	82	mil	Width	7.01	m	23	feet	
(Modified)											
OIT(Standard) ASTM D 3895									194 minutes		
Asperity	Average			Top					29 mil		
ASTM D7466				Bottom					33 mil		
Specific Gravity	Average Density				g/cc				.934		
ASTM D792											
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min								.35		
Grade	7104										
Carbon Black Content ASTM D4218	Range				%				2.3		
Carbon Black Dispersion ASTM D5596	Category								10 in Category 1		
Tensile Strength	Average Strength @ Break			MD	45	N/mm	258	ppi	3229	psi	
ASTM D6693				TD	47	N/mm	269	ppi	3365	psi	
(2 inches / minute)											
Tensile Elongation	Average Elongation @Break			MD			%		539.0		
ASTM D6693				TD			%		625.0		
(2 inches / minute)											
Lo = 1.3" Yield											
Lo = 2.0" Break											
Dimensional Stability	Average Dimensional Change						%		-0.535		
ASTM D1204 (Modified)											
Tear Resistance	Average Tear Resistance			MD	298.0		N		67.0		lbs
ASTM D1004 (Modified)				TD	293.6		N		66.0		lbs
Puncture Resistance									CERTIFIED		
FTMS 101 Method 2065 Modified											
Puncture Resistance	Average Peak Load				698.3		N		157.0		lbs
ASTM D4833 (Modified)											
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500		Hrs		CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/6/2015

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Quality Control Department



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ROLL # F15B065052**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.98 mm	78 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.09 mm	82 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.04 mm	80 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							194 minutes
Asperity	Average	Top				30 mil	
ASTM D7466		Bottom				31 mil	
Specific Gravity	Average Density				g/cc		.934
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.35
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.3
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break	MD		45 N/mm	258 psi	3229 psi	
ASTM D6693		TD		47 N/mm	269 psi	3365 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	539.0	
ASTM D6693		TD			%	625.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%		-0.535
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		298.0 N			67.0 lbs
ASTM D1004 (Modified)		TD		293.6 N			66.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				698.3 N		157.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/6/2015**

Signature


Quality Control Department



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ROLL # F15B065053**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH		
Thickness	MIN	2.01 mm	79 mil	Thickness		2.03 mm	80 mil		
Measurement	MAX	2.16 mm	85 mil	Length		117.349 m	385 feet		
ASTM D5994	AVE	2.09 mm	82 mil	Width		7.01 m	23 feet		
(Modified)									
OIT(Standard) ASTM D 3895							194 minutes		
Asperity	Average	Top				28 mil			
ASTM D7466		Bottom				34 mil			
Specific Gravity	Average Density				g/cc		.934		
ASTM D792									
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.35		
Grade	7104								
Carbon Black Content ASTM D4218	Range				%		2.3		
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1		
Tensile Strength	Average Strength @ Break			MD	45 N/mm	258 psi	3229 psi		
ASTM D6693				TD	47 N/mm	269 psi	3365 psi		
(2 inches / minute)									
Tensile Elongation	Average Elongation @Break			MD		%	539.0		
ASTM D6693				TD		%	625.0		
(2 inches / minute)									
Lo = 1.3" Yield									
Lo = 2.0" Break									
Dimensional Stability	Average Dimensional Change						%	-0.535	
ASTM D1204 (Modified)									
Tear Resistance	Average Tear Resistance			MD	298.0 N	67.0 lbs			
ASTM D1004 (Modified)				TD	293.6 N	66.0 lbs			
Puncture Resistance						CERTIFIED			
FTMS 101 Method 2065 Modified									
Puncture Resistance	Average Peak Load				698.3 N		157.0 lbs		
ASTM D4833 (Modified)									
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/6/2015**

Signature


Quality Control Department



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ROLL # F15B065054**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	2.01 mm	79 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.21 mm	87 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.10 mm	83 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							194 minutes
Asperity	Average	Top				29 mil	
ASTM D7466		Bottom				34 mil	
Specific Gravity	Average Density				g/cc	.934	
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min					.35	
Grade	7104						
Carbon Black Content ASTM D4218	Range				%	2.3	
Carbon Black Dispersion ASTM D5596	Category					10 in Category 1	
Tensile Strength	Average Strength @ Break	MD		45 N/mm	258 psi	3229 psi	
ASTM D6693		TD		47 N/mm	269 psi	3365 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	539.0	
ASTM D6693		TD			%	625.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%	-0.535	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD			298.0 N	67.0 lbs	
ASTM D1004 (Modified)		TD			293.6 N	66.0 lbs	
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				698.3 N	157.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs	CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/6/2015**

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Quality Control Department



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ROLL # F15B065055**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	2.01 mm	79 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.20 mm	86 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.10 mm	83 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							194 minutes
Asperity	Average	Top					29 mil
ASTM D7466		Bottom					33 mil
Specific Gravity	Average Density				g/cc		.934
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.35
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.5
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	46 N/mm	261 psi	3262 psi
ASTM D6693				TD	47 N/mm	266 psi	3326 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	537.0
ASTM D6693				TD		%	623.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change					%	-0.535
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	298.0 N		67.0 lbs
ASTM D1004 (Modified)				TD	293.6 N		66.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load					698.3 N	157.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures					1500 Hrs	CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/6/2015**

Signature


Quality Control Department



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ROLL # F15B065056**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	2.05 mm	81 mil		Thickness	2.03 mm	80 mil	
Measurement	MAX	2.14 mm	84 mil		Length	117.349 m	385 feet	
ASTM D5994	AVE	2.09 mm	82 mil		Width	7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							194 minutes	
Asperity	Average	Top				29 mil		
ASTM D7466		Bottom				32 mil		
Specific Gravity	Average Density				g/cc		.934	
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.35	
Grade	7104							
Carbon Black Content ASTM D4218	Range				%		2.5	
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1	
Tensile Strength	Average Strength @ Break			MD	46 N/mm	261 psi	3262 psi	
ASTM D6693				TD	47 N/mm	266 psi	3326 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break			MD		%	537.0	
ASTM D6693				TD		%	623.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change						%	-0.535
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance			MD	298.0 N	67.0 lbs		
ASTM D1004 (Modified)				TD	293.6 N	66.0 lbs		
Puncture Resistance						CERTIFIED		
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load				698.3 N		157.0 lbs	
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/6/2015**

Signature


Quality Control Department



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ROLL # F15B065057**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH		
Thickness	MIN	1.97 mm	78 mil	Thickness		2.03 mm	80 mil		
Measurement	MAX	2.23 mm	88 mil	Length		117.349 m	385 feet		
ASTM D5994	AVE	2.09 mm	82 mil	Width		7.01 m	23 feet		
(Modified)									
OIT(Standard) ASTM D 3895							194 minutes		
Asperity	Average	Top					33 mil		
ASTM D7466		Bottom					29 mil		
Specific Gravity	Average Density				g/cc		.934		
ASTM D792									
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.35		
Grade	7104								
Carbon Black Content ASTM D4218	Range				%		2.5		
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1		
Tensile Strength	Average Strength @ Break			MD	46 N/mm	261 psi	3262 psi		
ASTM D6693				TD	47 N/mm	266 psi	3326 psi		
(2 inches / minute)									
Tensile Elongation	Average Elongation @Break			MD		%	537.0		
ASTM D6693				TD		%	623.0		
(2 inches / minute)									
Lo = 1.3" Yield									
Lo = 2.0" Break									
Dimensional Stability	Average Dimensional Change					%	-0.535		
ASTM D1204 (Modified)									
Tear Resistance	Average Tear Resistance			MD	298.0 N		67.0 lbs		
ASTM D1004 (Modified)				TD	293.6 N		66.0 lbs		
Puncture Resistance							CERTIFIED		
FTMS 101 Method 2065 Modified									
Puncture Resistance	Average Peak Load				698.3 N		157.0 lbs		
ASTM D4833 (Modified)									
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/6/2015**

Signature


Quality Control Department



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ROLL # F15B065058**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.96 mm	77 mil		Thickness	2.03 mm	80 mil
Measurement	MAX	2.21 mm	87 mil		Length	117.349 m	385 feet
ASTM D5994							
(Modified)	AVE	2.06 mm	81 mil		Width	7.01 m	23 feet
OIT(Standard) ASTM D 3895							194 minutes
Asperity	Average	Top				29 mil	
ASTM D7466		Bottom				30 mil	
Specific Gravity	Average Density				g/cc		.934
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.35
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.2
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break		MD	46 N/mm	261 psi	3262 psi	
ASTM D6693				TD	47 N/mm	266 psi	3326 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break		MD		%	537.0	
ASTM D6693				TD		%	623.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%		-0.535
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance		MD	298.0 N	67.0 lbs		
ASTM D1004 (Modified)			TD	293.6 N	66.0 lbs		
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				698.3 N		157.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/6/2015**

Signature


Quality Control Department



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ROLL # F15B065059**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.96 mm	77 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.17 mm	85 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.05 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							194 minutes
Asperity	Average	Top				33 mil	
ASTM D7466		Bottom				29 mil	
Specific Gravity	Average Density				g/cc		.934
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.35
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.2
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break		MD	46 N/mm	261 psi	3262 psi	
ASTM D6693				TD	47 N/mm	266 psi	3326 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break		MD		%	537.0	
ASTM D6693				TD		%	623.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%		-0.535
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance		MD	298.0 N	67.0 lbs		
ASTM D1004 (Modified)			TD	293.6 N	66.0 lbs		
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				698.3 N		157.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/6/2015**

Signature


Quality Control Department



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ROLL # F15B066060**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.94 mm	76 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.16 mm	85 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.04 mm	80 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							194 minutes
Asperity	Average	Top					29 mil
ASTM D7466		Bottom					31 mil
Specific Gravity	Average Density				g/cc		.936
ASTM D792							
MFI ASTM D1238 COND. E		Melt Flow Index 190C/2160 g - g/10 min					.35
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.4
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break	MD	46 N/mm	264 psi			3301 psi
ASTM D6693		TD	49 N/mm	278 psi			3481 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%		539.0
ASTM D6693		TD			%		634.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%		-0.535
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD	302.5 N				68.0 lbs
ASTM D1004 (Modified)		TD	280.2 N				63.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load		707.2 N				159.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures		1500 Hrs				CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/7/2015**

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ROLL # F15B066061**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.95 mm	77 mil	Thickness		2.03 mm	80 mil	
Measurement	MAX	2.16 mm	85 mil	Length		117.349 m	385 feet	
ASTM D5994	AVE	2.06 mm	81 mil	Width		7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							194 minutes	
Asperity	Average	Top				29 mil		
ASTM D7466		Bottom				31 mil		
Specific Gravity	Average Density				g/cc	.936		
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.35	
Grade	7104							
Carbon Black Content ASTM D4218	Range				%	2.4		
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1	
Tensile Strength	Average Strength @ Break		MD	46 N/mm	264 psi	3301 psi		
ASTM D6693				TD	49 N/mm	278 psi	3481 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break		MD			%	539.0	
ASTM D6693				TD			%	634.0
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change						% -0.535	
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance		MD	302.5 N		68.0 lbs		
ASTM D1004 (Modified)			TD	280.2 N		63.0 lbs		
Puncture Resistance							CERTIFIED	
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load				707.2 N	159.0 lbs		
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs	CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/7/2015

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Quality Control Department



quality certificate

ROLL # F15B066062**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.96 mm	77 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.20 mm	86 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.06 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							194 minutes
Asperity	Average	Top				30 mil	
ASTM D7466		Bottom				32 mil	
Specific Gravity	Average Density				g/cc		.936
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.35
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.4
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break	MD		46 N/mm	264 psi	3301 psi	
ASTM D6693		TD		49 N/mm	278 psi	3481 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	539.0	
ASTM D6693		TD			%	634.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%		-0.535
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		302.5 N			68.0 lbs
ASTM D1004 (Modified)		TD		280.2 N			63.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				707.2 N		159.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/7/2015**

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Quality Control Department



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ROLL # F15B066063**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.96 mm	77 mil	Thickness	2.03 mm	80 mil	
Measurement	MAX	2.18 mm	86 mil	Length	117.349 m	385 feet	
ASTM D5994	AVE	2.07 mm	81 mil	Width	7.01 m	23 feet	
(Modified)							
OIT(Standard) ASTM D 3895							194 minutes
Asperity	Average	Top				27 mil	
ASTM D7466		Bottom				32 mil	
Specific Gravity	Average Density				g/cc	.936	
ASTM D792							
MFI ASTM D1238 COND. E			Melt Flow Index 190C/2160 g - g/10 min				.35
Grade	7104						
Carbon Black Content ASTM D4218	Range				%	2.4	
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	46 N/mm	264 psi	3301 psi
ASTM D6693				TD	49 N/mm	278 psi	3481 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	539.0
ASTM D6693				TD		%	634.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%	-0.535	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	302.5 N	68.0 lbs	
ASTM D1004 (Modified)				TD	280.2 N	63.0 lbs	
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				707.2 N	159.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs	CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/7/2015

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Quality Control Department



quality certificate

ROLL # F15B066064**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.99 mm	78 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.11 mm	83 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.04 mm	80 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							194 minutes
Asperity	Average	Top				30 mil	
ASTM D7466		Bottom				30 mil	
Specific Gravity	Average Density				g/cc	.936	
ASTM D792							
MFI ASTM D1238 COND. E			Melt Flow Index 190C/2160 g - g/10 min				.35
Grade	7104						
Carbon Black Content ASTM D4218	Range				%	2.4	
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	46 N/mm	264 psi	3301 psi
ASTM D6693				TD	49 N/mm	278 psi	3481 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	539.0
ASTM D6693				TD		%	634.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%	-0.535	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	302.5 N	68.0 lbs	
ASTM D1004 (Modified)				TD	280.2 N	63.0 lbs	
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				707.2 N	159.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs	CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/7/2015

Signature


Quality Control Department



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ROLL # F15B066065**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.91 mm	75 mil	Thickness		2.03 mm	80 mil	
Measurement	MAX	2.12 mm	84 mil	Length		117.349 m	385 feet	
ASTM D5994	AVE	2.04 mm	80 mil	Width		7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							194 minutes	
Asperity	Average	Top					31 mil	
ASTM D7466		Bottom					29 mil	
Specific Gravity	Average Density				g/cc		.936	
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.35	
Grade	7104							
Carbon Black Content ASTM D4218	Range				%		2.3	
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1	
Tensile Strength	Average Strength @ Break			MD	45 N/mm	257 psi	3212 psi	
ASTM D6693				TD	50 N/mm	284 psi	3554 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break			MD		%	524.0	
ASTM D6693				TD		%	650.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change					%	-0.535	
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance			MD	302.5 N		68.0 lbs	
ASTM D1004 (Modified)				TD	280.2 N		63.0 lbs	
Puncture Resistance							CERTIFIED	
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load				707.2 N		159.0 lbs	
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/7/2015**

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Quality Control Department



quality certificate

ROLL # F15B066066**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.99 mm	78 mil	Thickness		2.03 mm	80 mil	
Measurement	MAX	2.13 mm	84 mil	Length		117.349 m	385 feet	
ASTM D5994	AVE	2.05 mm	81 mil	Width		7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							194 minutes	
Asperity	Average	Top				30 mil		
ASTM D7466		Bottom				29 mil		
Specific Gravity	Average Density			g/cc		.936		
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min					.35		
Grade	7104							
Carbon Black Content ASTM D4218	Range			%		2.3		
Carbon Black Dispersion ASTM D5596	Category					10 in Category 1		
Tensile Strength	Average Strength @ Break			MD	45 N/mm	257 psi	3212 psi	
ASTM D6693				TD	50 N/mm	284 psi	3554 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break			MD		%	524.0	
ASTM D6693				TD		%	650.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change					%	-0.535	
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance			MD	302.5 N	68.0 lbs		
ASTM D1004 (Modified)				TD	280.2 N	63.0 lbs		
Puncture Resistance						CERTIFIED		
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load					707.2 N	159.0 lbs	
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures			1500 Hrs		CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/7/2015

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Quality Control Department



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ROLL # F15B066067**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.94 mm	76 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.15 mm	85 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.05 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							194 minutes
Asperity	Average	Top				30 mil	
ASTM D7466		Bottom				31 mil	
Specific Gravity	Average Density				g/cc	.936	
ASTM D792							
MFI ASTM D1238 COND. E			Melt Flow Index 190C/2160 g - g/10 min				.35
Grade	7104						
Carbon Black Content ASTM D4218	Range				%	2.3	
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	45 N/mm	257 psi	3212 psi
ASTM D6693				TD	50 N/mm	284 psi	3554 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	524.0
ASTM D6693				TD		%	650.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%	-0.535	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	302.5 N	68.0 lbs	
ASTM D1004 (Modified)				TD	280.2 N	63.0 lbs	
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				707.2 N	159.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs	CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/7/2015

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Quality Control Department



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ROLL # F15B066068**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.98 mm	78 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.19 mm	86 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.08 mm	82 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							194 minutes
Asperity	Average	Top				29 mil	
ASTM D7466		Bottom				29 mil	
Specific Gravity	Average Density				g/cc		.936
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.35
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.4
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break	MD		45 N/mm	257 psi	3212 psi	
ASTM D6693		TD		50 N/mm	284 psi	3554 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	524.0	
ASTM D6693		TD			%	650.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%		-0.535
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		302.5 N	68.0 lbs		
ASTM D1004 (Modified)		TD		280.2 N	63.0 lbs		
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				707.2 N		159.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/7/2015**

Signature


Quality Control Department



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ROLL # F15B066069**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.95 mm	77 mil	Thickness		2.03 mm	80 mil	
Measurement	MAX	2.12 mm	83 mil	Length		117.349 m	385 feet	
ASTM D5994	AVE	2.03 mm	80 mil	Width		7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							194 minutes	
Asperity	Average	Top				29 mil		
ASTM D7466		Bottom				28 mil		
Specific Gravity	Average Density				g/cc	.936		
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.35	
Grade	7104							
Carbon Black Content ASTM D4218	Range				%	2.4		
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1	
Tensile Strength	Average Strength @ Break			MD	45 N/mm	257 psi	3212 psi	
ASTM D6693				TD	50 N/mm	284 psi	3554 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break			MD		%	524.0	
ASTM D6693				TD		%	650.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change					%	-0.535	
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance			MD	302.5 N	68.0 lbs		
ASTM D1004 (Modified)				TD	280.2 N	63.0 lbs		
Puncture Resistance							CERTIFIED	
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load				707.2 N	159.0 lbs		
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs	CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/7/2015

Signature


Quality Control Department



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ROLL # F15B066070**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.94 mm	76 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.15 mm	84 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.05 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							194 minutes
Asperity	Average	Top					31 mil
ASTM D7466		Bottom					29 mil
Specific Gravity	Average Density				g/cc		.935
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.35
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.4
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	46 N/mm	263 psi	3284 psi
ASTM D6693				TD	48 N/mm	275 psi	3439 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	514.0
ASTM D6693				TD		%	641.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change					%	-0.535
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	298.0 N		67.0 lbs
ASTM D1004 (Modified)				TD	284.7 N		64.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				693.9 N		156.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/7/2015**

Signature

Quality Control Department



quality certificate

ROLL # F15B066071**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.93 mm	76 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.12 mm	84 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.03 mm	80 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							194 minutes
Asperity	Average	Top				30 mil	
ASTM D7466		Bottom				28 mil	
Specific Gravity	Average Density				g/cc	.935	
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min					.35	
Grade	7104						
Carbon Black Content ASTM D4218	Range				%	2.4	
Carbon Black Dispersion ASTM D5596	Category					10 in Category 1	
Tensile Strength	Average Strength @ Break	MD		46 N/mm	263 psi	3284 psi	
ASTM D6693		TD		48 N/mm	275 psi	3439 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	514.0	
ASTM D6693		TD			%	641.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%	-0.535	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		298.0 N		67.0 lbs	
ASTM D1004 (Modified)		TD		284.7 N		64.0 lbs	
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load			693.9 N		156.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures			1500 Hrs		CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/7/2015**

Signature


Quality Control Department



quality certificate

ROLL # F15B066072**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.95 mm	77 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.18 mm	86 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.05 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							194 minutes
Asperity	Average	Top				26 mil	
ASTM D7466		Bottom				30 mil	
Specific Gravity	Average Density				g/cc		.935
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.35
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.4
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break	MD		46 N/mm	263	psi	3284
ASTM D6693		TD		48 N/mm	275	psi	3439
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD				%	514.0
ASTM D6693		TD				%	641.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%		-0.535
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		298.0 N			67.0 lbs
ASTM D1004 (Modified)		TD		284.7 N			64.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				693.9 N		156.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/7/2015**

Signature


Quality Control Department



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ROLL # F15B066073**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH		
Thickness	MIN	1.98 mm	78 mil		Thickness	2.03 mm	80 mil		
Measurement	MAX	2.10 mm	83 mil		Length	117.349 m	385 feet		
ASTM D5994	AVE	2.05 mm	81 mil		Width	7.01 m	23 feet		
(Modified)									
OIT(Standard) ASTM D 3895							194 minutes		
Asperity	Average	Top				29 mil			
ASTM D7466		Bottom				32 mil			
Specific Gravity	Average Density				g/cc		.935		
ASTM D792									
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.35		
Grade	7104								
Carbon Black Content ASTM D4218	Range				%		2.3		
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1		
Tensile Strength	Average Strength @ Break			MD	46 N/mm	263 psi	3284 psi		
ASTM D6693				TD	48 N/mm	275 psi	3439 psi		
(2 inches / minute)									
Tensile Elongation	Average Elongation @Break			MD		%	514.0		
ASTM D6693				TD		%	641.0		
(2 inches / minute)									
Lo = 1.3" Yield									
Lo = 2.0" Break									
Dimensional Stability	Average Dimensional Change						%	-0.535	
ASTM D1204 (Modified)									
Tear Resistance	Average Tear Resistance			MD	298.0 N	67.0 lbs			
ASTM D1004 (Modified)				TD	284.7 N	64.0 lbs			
Puncture Resistance						CERTIFIED			
FTMS 101 Method 2065 Modified									
Puncture Resistance	Average Peak Load				693.9 N		156.0 lbs		
ASTM D4833 (Modified)									
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

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ROLL # F15B066074**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.97 mm	78 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.12 mm	83 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.04 mm	80 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							194 minutes
Asperity	Average	Top				29 mil	
ASTM D7466		Bottom				32 mil	
Specific Gravity	Average Density				g/cc		.935
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.35
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.3
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break	MD		46 N/mm	263 psi	3284 psi	
ASTM D6693		TD		48 N/mm	275 psi	3439 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	514.0	
ASTM D6693		TD			%	641.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%		-0.535
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		298.0 N			67.0 lbs
ASTM D1004 (Modified)		TD		284.7 N			64.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				693.9 N		156.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/7/2015**

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ROLL # F15B066075**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.99 mm	78 mil	Thickness		2.03 mm	80 mil	
Measurement	MAX	2.17 mm	85 mil	Length		117.349 m	385 feet	
ASTM D5994	AVE	2.05 mm	81 mil	Width		7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							194 minutes	
Asperity	Average	Top				30 mil		
ASTM D7466		Bottom				33 mil		
Specific Gravity	Average Density			g/cc		.935		
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min					.35		
Grade	7104							
Carbon Black Content ASTM D4218	Range			%		2.4		
Carbon Black Dispersion ASTM D5596	Category					10 in Category 1		
Tensile Strength	Average Strength @ Break			MD	48 N/mm	276 psi	3453 psi	
ASTM D6693				TD	48 N/mm	272 psi	3399 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break			MD		%	552.0	
ASTM D6693				TD		%	624.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change					%	-0.535	
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance			MD	298.0 N	67.0 lbs		
ASTM D1004 (Modified)				TD	284.7 N	64.0 lbs		
Puncture Resistance						CERTIFIED		
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load					693.9 N	156.0 lbs	
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures			1500 Hrs		CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/7/2015

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ROLL # F15B067076**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.95 mm	77 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.12 mm	83 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.06 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							194 minutes
Asperity	Average	Top					31 mil
ASTM D7466		Bottom					33 mil
Specific Gravity	Average Density				g/cc		.935
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.35
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.4
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	48 N/mm	276 psi	3453 psi
ASTM D6693				TD	48 N/mm	272 psi	3399 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	552.0
ASTM D6693				TD		%	624.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change					%	-0.535
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	298.0 N		67.0 lbs
ASTM D1004 (Modified)				TD	284.7 N		64.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				693.9 N		156.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/8/2015**

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ROLL # F15B067077**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.99 mm	78 mil	Thickness		2.03 mm	80 mil	
Measurement	MAX	2.15 mm	85 mil	Length		117.349 m	385 feet	
ASTM D5994	AVE	2.05 mm	81 mil	Width		7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							194 minutes	
Asperity	Average	Top				31 mil		
ASTM D7466		Bottom				32 mil		
Specific Gravity	Average Density				g/cc	.935		
ASTM D792								
MFI ASTM D1238 COND. E			Melt Flow Index 190C/2160 g - g/10 min				.35	
Grade	7104							
Carbon Black Content ASTM D4218	Range				%	2.4		
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1	
Tensile Strength	Average Strength @ Break		MD	48 N/mm	276 psi	3453 psi		
ASTM D6693				TD	48 N/mm	272 psi	3399 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break		MD			%	552.0	
ASTM D6693				TD			%	624.0
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change					%	-0.535	
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance		MD	298.0 N			67.0 lbs	
ASTM D1004 (Modified)			TD	284.7 N			64.0 lbs	
Puncture Resistance							CERTIFIED	
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load				693.9 N	156.0 lbs		
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures		1500 Hrs				CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/8/2015

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ROLL # F15B067078**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.99 mm	78 mil	Thickness		2.03 mm	80 mil	
Measurement	MAX	2.13 mm	84 mil	Length		117.349 m	385 feet	
ASTM D5994				Width				
(Modified)	AVE	2.08 mm	82 mil			7.01 m	23 feet	
OIT(Standard) ASTM D 3895							194 minutes	
Asperity	Average	Top				35 mil		
ASTM D7466		Bottom				30 mil		
Specific Gravity	Average Density				g/cc		.935	
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.35	
Grade	7104							
Carbon Black Content ASTM D4218	Range				%		2.4	
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1	
Tensile Strength	Average Strength @ Break		MD	48 N/mm	276	psi	3453	
ASTM D6693				TD	48 N/mm	272	psi	3399
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break		MD			%	552.0	
ASTM D6693				TD			%	624.0
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change						%	
ASTM D1204 (Modified)							-0.535	
Tear Resistance	Average Tear Resistance		MD		298.0	N	67.0	
ASTM D1004 (Modified)			TD		284.7	N	64.0	
Puncture Resistance							CERTIFIED	
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load				693.9		N	
ASTM D4833 (Modified)							156.0	
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/8/2015

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ROLL # F15B067079**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.94 mm	76 mil	Thickness		2.03 mm	80 mil	
Measurement	MAX	2.16 mm	85 mil	Length		117.349 m	385 feet	
ASTM D5994	AVE	2.05 mm	81 mil	Width		7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							194 minutes	
Asperity	Average	Top				28 mil		
ASTM D7466		Bottom				32 mil		
Specific Gravity	Average Density			g/cc		.935		
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min					.35		
Grade	7104							
Carbon Black Content ASTM D4218	Range			%		2.4		
Carbon Black Dispersion ASTM D5596	Category					10 in Category 1		
Tensile Strength	Average Strength @ Break		MD	48 N/mm	276 psi	3453 psi		
ASTM D6693				TD	48 N/mm	272 psi	3399 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break		MD			%	552.0	
ASTM D6693				TD			%	624.0
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change					%	-0.535	
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance		MD		298.0 N	67.0 lbs		
ASTM D1004 (Modified)				TD	284.7 N	64.0 lbs		
Puncture Resistance						CERTIFIED		
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load					693.9 N	156.0 lbs	
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures			1500 Hrs		CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/8/2015**

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Quality Control Department



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ROLL # F15B067080**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.96 mm	77 mil	Thickness		2.03 mm	80 mil	
Measurement	MAX	2.18 mm	86 mil	Length		117.349 m	385 feet	
ASTM D5994	AVE	2.06 mm	81 mil	Width		7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							194 minutes	
Asperity	Average	Top						29 mil
ASTM D7466		Bottom						31 mil
Specific Gravity	Average Density					g/cc	.935	
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.35	
Grade	7104							
Carbon Black Content ASTM D4218	Range					%	2.4	
Carbon Black Dispersion ASTM D5596	Category					10 in Category 1		
Tensile Strength	Average Strength @ Break			MD	47 N/mm	270 psi	3373 psi	
ASTM D6693				TD	47 N/mm	270 psi	3374 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break			MD		%	561.0	
ASTM D6693				TD		%	628.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change					%	-0.535	
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance			MD	311.4 N		70.0 lbs	
ASTM D1004 (Modified)				TD	289.1 N		65.0 lbs	
Puncture Resistance						CERTIFIED		
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load					698.3 N	157.0 lbs	
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures					1500 Hrs	CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/8/2015**

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Quality Control Department



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ROLL # F15B067081**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.96 mm	77 mil	Thickness		2.03 mm	80 mil	
Measurement	MAX	2.16 mm	85 mil	Length		117.349 m	385 feet	
ASTM D5994	AVE	2.06 mm	81 mil	Width		7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							194 minutes	
Asperity	Average	Top				30 mil		
ASTM D7466		Bottom				31 mil		
Specific Gravity	Average Density			g/cc		.935		
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min					.35		
Grade	7104							
Carbon Black Content ASTM D4218	Range			%		2.4		
Carbon Black Dispersion ASTM D5596	Category					10 in Category 1		
Tensile Strength	Average Strength @ Break		MD	47 N/mm	270 psi	3373 psi		
ASTM D6693				TD	47 N/mm	270 psi	3374 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break		MD		%	561.0		
ASTM D6693				TD		%	628.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change					%	-0.535	
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance		MD	311.4 N	70.0 lbs			
ASTM D1004 (Modified)				TD	289.1 N	65.0 lbs		
Puncture Resistance						CERTIFIED		
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load			698.3 N		157.0 lbs		
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures			1500 Hrs		CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/8/2015**

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Quality Control Department



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ROLL # F15B067082**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.91 mm	75 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.14 mm	84 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.05 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							194 minutes
Asperity	Average	Top				30 mil	
ASTM D7466		Bottom				31 mil	
Specific Gravity	Average Density				g/cc	.935	
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min					.35	
Grade	7104						
Carbon Black Content ASTM D4218	Range				%	2.4	
Carbon Black Dispersion ASTM D5596	Category					10 in Category 1	
Tensile Strength	Average Strength @ Break	MD		47 N/mm	270 ppi	3373 psi	
ASTM D6693		TD		47 N/mm	270 ppi	3374 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	561.0	
ASTM D6693		TD			%	628.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%	-0.535	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		311.4 N		70.0 lbs	
ASTM D1004 (Modified)		TD		289.1 N		65.0 lbs	
Puncture Resistance						CERTIFIED	
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load			698.3 N		157.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures			1500 Hrs		CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/8/2015**

Signature


Quality Control Department



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ROLL # F15B067083**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.97 mm	78 mil		Thickness	2.03 mm	80 mil
Measurement	MAX	2.17 mm	85 mil		Length	117.349 m	385 feet
ASTM D5994	AVE	2.06 mm	81 mil		Width	7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							194 minutes
Asperity	Average	Top				29 mil	
ASTM D7466		Bottom				31 mil	
Specific Gravity	Average Density				g/cc		.935
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.35
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.4
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break		MD	47 N/mm	270 psi	3373 psi	
ASTM D6693				TD	47 N/mm	270 psi	3374 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break		MD		%	561.0	
ASTM D6693				TD		%	628.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%		-0.535
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance		MD	311.4 N	70.0 lbs		
ASTM D1004 (Modified)			TD	289.1 N	65.0 lbs		
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				698.3 N		157.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/8/2015**

Signature


Quality Control Department



quality certificate

ROLL # F15B067084**LOT # CEK810150****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.99 mm	78 mil	Thickness		2.03 mm	80 mil	
Measurement	MAX	2.15 mm	84 mil	Length		117.349 m	385 feet	
ASTM D5994	AVE	2.05 mm	81 mil	Width		7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							194 minutes	
Asperity	Average	Top				32 mil		
ASTM D7466		Bottom				31 mil		
Specific Gravity	Average Density				g/cc	.935		
ASTM D792								
MFI ASTM D1238 COND. E			Melt Flow Index 190C/2160 g - g/10 min				.35	
Grade	7104							
Carbon Black Content ASTM D4218	Range				%	2.4		
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1	
Tensile Strength	Average Strength @ Break			MD	47 N/mm	270 ppi	3373 psi	
ASTM D6693				TD	47 N/mm	270 ppi	3374 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break			MD		%	561.0	
ASTM D6693				TD		%	628.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change					%	-0.535	
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance			MD	311.4 N	70.0 lbs		
ASTM D1004 (Modified)				TD	289.1 N	65.0 lbs		
Puncture Resistance							CERTIFIED	
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load				698.3 N	157.0 lbs		
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures		1500 Hrs				CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/8/2015

Signature


Quality Control Department



quality certificate

ROLL # F15B067085**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.97 mm	78 mil	Thickness		2.03 mm	80 mil	
Measurement	MAX	2.12 mm	84 mil	Length		117.349 m	385 feet	
ASTM D5994	AVE	2.05 mm	81 mil	Width		7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							203 minutes	
Asperity	Average	Top				32 mil		
ASTM D7466		Bottom				32 mil		
Specific Gravity	Average Density				g/cc	.935		
ASTM D792								
MFI ASTM D1238 COND. E			Melt Flow Index 190C/2160 g - g/10 min				.32	
Grade	7104							
Carbon Black Content ASTM D4218	Range				%	2.3		
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1	
Tensile Strength	Average Strength @ Break			MD	46 N/mm	261 psi	3261 psi	
ASTM D6693				TD	45 N/mm	259 psi	3232 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break			MD		%	524.0	
ASTM D6693				TD		%	610.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change					%	-0.32	
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance			MD	311.4 N	70.0 lbs		
ASTM D1004 (Modified)				TD	289.1 N	65.0 lbs		
Puncture Resistance							CERTIFIED	
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load				698.3 N	157.0 lbs		
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures		1500 Hrs				CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/8/2015

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ROLL # F15B067086**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	2.02 mm	79 mil		Thickness	2.03 mm	80 mil	
Measurement	MAX	2.14 mm	84 mil		Length	117.349 m	385 feet	
ASTM D5994	AVE	2.08 mm	82 mil		Width	7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							203 minutes	
Asperity	Average	Top				31 mil		
ASTM D7466		Bottom				30 mil		
Specific Gravity	Average Density				g/cc		.935	
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.32	
Grade	7104							
Carbon Black Content ASTM D4218	Range				%		2.3	
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1	
Tensile Strength	Average Strength @ Break			MD	46 N/mm	261 psi	3261 psi	
ASTM D6693				TD	45 N/mm	259 psi	3232 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break			MD		%	524.0	
ASTM D6693				TD		%	610.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change						%	-0.32
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance			MD	311.4 N	70.0 lbs		
ASTM D1004 (Modified)				TD	289.1 N	65.0 lbs		
Puncture Resistance						CERTIFIED		
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load				698.3 N		157.0 lbs	
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/8/2015**

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ROLL # F15B067087**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	2.02 mm	79 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.14 mm	84 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.08 mm	82 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							203 minutes
Asperity	Average	Top					30 mil
ASTM D7466		Bottom					31 mil
Specific Gravity	Average Density				g/cc		.935
ASTM D792							
MFI ASTM D1238 COND. E		Melt Flow Index 190C/2160 g - g/10 min					.32
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.3
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break	MD	46 N/mm	261 psi			3261 psi
ASTM D6693		TD	45 N/mm	259 psi			3232 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%		524.0
ASTM D6693		TD			%		610.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%		-0.32
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD	311.4 N				70.0 lbs
ASTM D1004 (Modified)		TD	289.1 N				65.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load		698.3 N				157.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures		1500 Hrs				CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/8/2015**

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Quality Control Department



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ROLL # F15B067088**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH		
Thickness	MIN	1.94 mm	76 mil		Thickness	2.03 mm	80 mil		
Measurement	MAX	2.21 mm	87 mil		Length	117.349 m	385 feet		
ASTM D5994	AVE	2.07 mm	81 mil		Width	7.01 m	23 feet		
(Modified)									
OIT(Standard) ASTM D 3895							203 minutes		
Asperity	Average	Top				30 mil			
ASTM D7466		Bottom				30 mil			
Specific Gravity	Average Density				g/cc		.935		
ASTM D792									
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.32		
Grade	7104								
Carbon Black Content ASTM D4218	Range				%		2.3		
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1		
Tensile Strength	Average Strength @ Break			MD	46 N/mm	261 psi	3261 psi		
ASTM D6693				TD	45 N/mm	259 psi	3232 psi		
(2 inches / minute)									
Tensile Elongation	Average Elongation @Break			MD		%	524.0		
ASTM D6693				TD		%	610.0		
(2 inches / minute)									
Lo = 1.3" Yield									
Lo = 2.0" Break									
Dimensional Stability	Average Dimensional Change						%	-0.32	
ASTM D1204 (Modified)									
Tear Resistance	Average Tear Resistance			MD	311.4 N		70.0 lbs		
ASTM D1004 (Modified)				TD	289.1 N		65.0 lbs		
Puncture Resistance							CERTIFIED		
FTMS 101 Method 2065 Modified									
Puncture Resistance	Average Peak Load				698.3 N		157.0 lbs		
ASTM D4833 (Modified)									
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/8/2015**

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ROLL # F15B067089**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.95 mm	77 mil		Thickness	2.03 mm	80 mil	
Measurement	MAX	2.16 mm	85 mil		Length	117.349 m	385 feet	
ASTM D5994	AVE	2.04 mm	80 mil		Width	7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							203 minutes	
Asperity	Average	Top				32 mil		
ASTM D7466		Bottom				31 mil		
Specific Gravity	Average Density				g/cc	.935		
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.32	
Grade	7104							
Carbon Black Content ASTM D4218	Range				%	2.3		
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1	
Tensile Strength	Average Strength @ Break			MD	46 N/mm	261 psi	3261 psi	
ASTM D6693				TD	45 N/mm	259 psi	3232 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break			MD		%	524.0	
ASTM D6693				TD		%	610.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change						% -0.32	
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance			MD	311.4 N	70.0 lbs		
ASTM D1004 (Modified)				TD	289.1 N	65.0 lbs		
Puncture Resistance							CERTIFIED	
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load				698.3 N	157.0 lbs		
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs	CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/8/2015

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Quality Control Department



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ROLL # F15B067090**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.95 mm	77 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.18 mm	86 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.05 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							203 minutes
Asperity	Average	Top					28 mil
ASTM D7466		Bottom					32 mil
Specific Gravity	Average Density				g/cc		.937
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.32
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.5
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	46 N/mm	261 psi	3265 psi
ASTM D6693				TD	50 N/mm	285 psi	3562 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	547.0
ASTM D6693				TD		%	654.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change					%	-0.32
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	302.5 N		68.0 lbs
ASTM D1004 (Modified)				TD	284.7 N		64.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				711.7 N		160.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/8/2015**

Signature


Quality Control Department



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ROLL # F15B067091**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.97 mm	78 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.17 mm	86 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.06 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							203 minutes
Asperity	Average	Top				27 mil	
ASTM D7466		Bottom				31 mil	
Specific Gravity	Average Density				g/cc	.937	
ASTM D792							
MFI ASTM D1238 COND. E			Melt Flow Index 190C/2160 g - g/10 min				.32
Grade	7104						
Carbon Black Content ASTM D4218	Range				%	2.5	
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	46 N/mm	261 psi	3265 psi
ASTM D6693				TD	50 N/mm	285 psi	3562 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	547.0
ASTM D6693				TD		%	654.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%	-0.32	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	302.5 N	68.0 lbs	
ASTM D1004 (Modified)				TD	284.7 N	64.0 lbs	
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				711.7 N	160.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs	CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/8/2015

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Quality Control Department



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ROLL # F15B071001**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.98 mm	78 mil		Thickness	2.03 mm	80 mil
Measurement	MAX	2.13 mm	84 mil		Length	117.349 m	385 feet
ASTM D5994	AVE	2.06 mm	81 mil		Width	7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							203 minutes
Asperity	Average	Top				29 mil	
ASTM D7466		Bottom				30 mil	
Specific Gravity	Average Density				g/cc	.937	
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.32
Grade	7104						
Carbon Black Content ASTM D4218	Range				%	2.5	
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break	MD		46 N/mm	261 psi	3265 psi	
ASTM D6693		TD		50 N/mm	285 psi	3562 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	547.0	
ASTM D6693		TD			%	654.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%	-0.32	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		302.5 N			68.0 lbs
ASTM D1004 (Modified)		TD		284.7 N			64.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				711.7 N	160.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs	CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/9/2015**

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Quality Control Department



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ROLL # F15B071002**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.95 mm	77 mil	Thickness		2.03 mm	80 mil	
Measurement	MAX	2.16 mm	85 mil	Length		117.349 m	385 feet	
ASTM D5994	AVE	2.07 mm	81 mil	Width		7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							203 minutes	
Asperity	Average	Top				36 mil		
ASTM D7466		Bottom				30 mil		
Specific Gravity	Average Density				g/cc	.937		
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min					.32		
Grade	7104							
Carbon Black Content ASTM D4218	Range			%		2.5		
Carbon Black Dispersion ASTM D5596	Category					10 in Category 1		
Tensile Strength	Average Strength @ Break			MD	46 N/mm	261 psi	3265 psi	
ASTM D6693				TD	50 N/mm	285 psi	3562 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break			MD		%	547.0	
ASTM D6693				TD		%	654.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change					%	-0.32	
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance			MD	302.5 N	68.0 lbs		
ASTM D1004 (Modified)				TD	284.7 N	64.0 lbs		
Puncture Resistance						CERTIFIED		
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load					711.7 N	160.0 lbs	
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures			1500 Hrs		CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/9/2015**

Signature


Quality Control Department



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ROLL # F15B071003**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.95 mm	77 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.13 mm	84 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.06 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							203 minutes
Asperity	Average	Top					35 mil
ASTM D7466		Bottom					29 mil
Specific Gravity	Average Density				g/cc		.937
ASTM D792							
MFI ASTM D1238 COND. E		Melt Flow Index 190C/2160 g - g/10 min					.32
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.5
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break	MD	46 N/mm	261 psi		3265 psi	
ASTM D6693		TD	50 N/mm	285 psi		3562 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	547.0	
ASTM D6693		TD			%	654.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%	-0.32	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD	302.5 N			68.0 lbs	
ASTM D1004 (Modified)		TD	284.7 N			64.0 lbs	
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load		711.7 N			160.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures		1500 Hrs			CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/9/2015**

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Quality Control Department



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ROLL # F15B071004**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH		
Thickness	MIN	1.96 mm	77 mil	Thickness		2.03 mm	80 mil		
Measurement	MAX	2.14 mm	84 mil	Length		117.349 m	385 feet		
ASTM D5994	AVE	2.06 mm	81 mil	Width		7.01 m	23 feet		
(Modified)									
OIT(Standard) ASTM D 3895							203 minutes		
Asperity	Average	Top				32 mil			
ASTM D7466		Bottom				30 mil			
Specific Gravity	Average Density				g/cc		.937		
ASTM D792									
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.32		
Grade	7104								
Carbon Black Content ASTM D4218	Range				%		2.2		
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1		
Tensile Strength	Average Strength @ Break			MD	46 N/mm	261 psi	3265 psi		
ASTM D6693				TD	50 N/mm	285 psi	3562 psi		
(2 inches / minute)									
Tensile Elongation	Average Elongation @Break			MD		%	547.0		
ASTM D6693				TD		%	654.0		
(2 inches / minute)									
Lo = 1.3" Yield									
Lo = 2.0" Break									
Dimensional Stability	Average Dimensional Change						%	-0.32	
ASTM D1204 (Modified)									
Tear Resistance	Average Tear Resistance			MD	302.5 N	68.0 lbs			
ASTM D1004 (Modified)				TD	284.7 N	64.0 lbs			
Puncture Resistance						CERTIFIED			
FTMS 101 Method 2065 Modified									
Puncture Resistance	Average Peak Load				711.7 N		160.0 lbs		
ASTM D4833 (Modified)									
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/9/2015**

Signature


Quality Control Department



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ROLL # F15B071005**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.95 mm	77 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.15 mm	85 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.06 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							203 minutes
Asperity	Average	Top					33 mil
ASTM D7466		Bottom					29 mil
Specific Gravity	Average Density				g/cc		.937
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.32
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.2
Carbon Black Dispersion ASTM D5596	Category					10 in Category 1	
Tensile Strength	Average Strength @ Break			MD	46 N/mm	261 psi	3265 psi
ASTM D6693				TD	50 N/mm	285 psi	3562 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	547.0
ASTM D6693				TD		%	654.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change					%	-0.32
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	302.5 N		68.0 lbs
ASTM D1004 (Modified)				TD	284.7 N		64.0 lbs
Puncture Resistance							
FTMS 101 Method 2065 Modified	CERTIFIED						
Puncture Resistance	Average Peak Load				711.7 N		160.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/9/2015**

Signature


Quality Control Department



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ROLL # F15B071006**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.94 mm	76 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.08 mm	82 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.03 mm	80 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							203 minutes
Asperity	Average	Top					34 mil
ASTM D7466		Bottom					31 mil
Specific Gravity	Average Density				g/cc		.937
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.32
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.2
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	46 N/mm	261 psi	3265 psi
ASTM D6693				TD	50 N/mm	285 psi	3562 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	547.0
ASTM D6693				TD		%	654.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change					%	-0.32
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	302.5 N		68.0 lbs
ASTM D1004 (Modified)				TD	284.7 N		64.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				711.7 N		160.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/9/2015**

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ROLL # F15B071007**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.93 mm	76 mil		Thickness	2.03 mm	80 mil
Measurement	MAX	2.18 mm	86 mil		Length	117.349 m	385 feet
ASTM D5994	AVE	2.05 mm	81 mil		Width	7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							203 minutes
Asperity	Average	Top				28 mil	
ASTM D7466		Bottom				36 mil	
Specific Gravity	Average Density				g/cc	.937	
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min					.32	
Grade	7104						
Carbon Black Content ASTM D4218	Range				%	2.3	
Carbon Black Dispersion ASTM D5596	Category					10 in Category 1	
Tensile Strength	Average Strength @ Break	MD		46 N/mm	261 psi	3265 psi	
ASTM D6693		TD		50 N/mm	285 psi	3562 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	547.0	
ASTM D6693		TD			%	654.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%	-0.32	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		302.5 N		68.0 lbs	
ASTM D1004 (Modified)		TD		284.7 N		64.0 lbs	
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load			711.7 N		160.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures			1500 Hrs		CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/9/2015**

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ROLL # F15B071008**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.98 mm	78 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.14 mm	84 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.05 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							203 minutes
Asperity	Average	Top					37 mil
ASTM D7466		Bottom					33 mil
Specific Gravity	Average Density				g/cc		.937
ASTM D792							
MFI ASTM D1238 COND. E		Melt Flow Index 190C/2160 g - g/10 min					.32
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.3
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break	MD	46 N/mm	261 psi			3265 psi
ASTM D6693		TD	50 N/mm	285 psi			3562 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%		547.0
ASTM D6693		TD			%		654.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%		-0.32
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD	302.5 N				68.0 lbs
ASTM D1004 (Modified)		TD	284.7 N				64.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load		711.7 N				160.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures		1500 Hrs				CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/9/2015**

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ROLL # F15B071009**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.95 mm	77 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.10 mm	83 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.03 mm	80 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							203 minutes
Asperity	Average	Top				34 mil	
ASTM D7466		Bottom				32 mil	
Specific Gravity	Average Density				g/cc		.937
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.32
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.4
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break		MD	46 N/mm	260 psi	3250 psi	
ASTM D6693				TD	47 N/mm	269 psi	3368 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break		MD		%	529.0	
ASTM D6693				TD		%	619.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%		-0.32
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance		MD	311.4 N	70.0 lbs		
ASTM D1004 (Modified)			TD	289.1 N	65.0 lbs		
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				720.6 N		162.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/9/2015**

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ROLL # F15B071010**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.95 mm	77 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.13 mm	84 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.05 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							203 minutes
Asperity	Average	Top					27 mil
ASTM D7466		Bottom					34 mil
Specific Gravity	Average Density				g/cc		.937
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.32
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.4
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	46 N/mm	260 psi	3250 psi
ASTM D6693				TD	47 N/mm	269 psi	3368 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	529.0
ASTM D6693				TD		%	619.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change					%	-0.32
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	311.4 N		70.0 lbs
ASTM D1004 (Modified)				TD	289.1 N		65.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				720.6 N		162.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/9/2015**

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ROLL # F15B071011**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.98 mm	78 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.11 mm	83 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.04 mm	80 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							203 minutes
Asperity	Average	Top				26 mil	
ASTM D7466		Bottom				41 mil	
Specific Gravity	Average Density			g/cc		.937	
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min					.32	
Grade	7104						
Carbon Black Content ASTM D4218	Range			%		2.4	
Carbon Black Dispersion ASTM D5596	Category					10 in Category 1	
Tensile Strength	Average Strength @ Break	MD		46 N/mm	260 psi	3250 psi	
ASTM D6693		TD		47 N/mm	269 psi	3368 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	529.0	
ASTM D6693		TD			%	619.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change			%		-0.32	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		311.4 N		70.0 lbs	
ASTM D1004 (Modified)		TD		289.1 N		65.0 lbs	
Puncture Resistance						CERTIFIED	
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load			720.6 N		162.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures			1500 Hrs		CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/9/2015**

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Quality Control Department



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ROLL # F15B071012**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.97 mm	77 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.14 mm	84 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.06 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							203 minutes
Asperity	Average	Top				27 mil	
ASTM D7466		Bottom				33 mil	
Specific Gravity	Average Density				g/cc	.937	
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min					.32	
Grade	7104						
Carbon Black Content ASTM D4218	Range				%	2.3	
Carbon Black Dispersion ASTM D5596	Category					10 in Category 1	
Tensile Strength	Average Strength @ Break	MD		46 N/mm	260 psi	3250 psi	
ASTM D6693		TD		47 N/mm	269 psi	3368 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	529.0	
ASTM D6693		TD			%	619.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%	-0.32	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		311.4 N		70.0 lbs	
ASTM D1004 (Modified)		TD		289.1 N		65.0 lbs	
Puncture Resistance						CERTIFIED	
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load			720.6 N		162.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures			1500 Hrs		CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/9/2015**

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Quality Control Department



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ROLL # F15B071013**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.94 mm	76 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.20 mm	87 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.05 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							203 minutes
Asperity	Average	Top					27 mil
ASTM D7466		Bottom					35 mil
Specific Gravity	Average Density				g/cc		.937
ASTM D792							
MFI ASTM D1238 COND. E		Melt Flow Index 190C/2160 g - g/10 min					.32
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.3
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break	MD	46 N/mm	260 psi			3250 psi
ASTM D6693		TD	47 N/mm	269 psi			3368 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%		529.0
ASTM D6693		TD			%		619.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%		-0.32
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD	311.4 N				70.0 lbs
ASTM D1004 (Modified)		TD	289.1 N				65.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load		720.6 N				162.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures		1500 Hrs				CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/9/2015**

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Quality Control Department



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ROLL # F15B071014**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.90 mm	75 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.10 mm	83 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.04 mm	80 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							203 minutes
Asperity	Average	Top				32 mil	
ASTM D7466		Bottom				30 mil	
Specific Gravity	Average Density			g/cc		.937	
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min					.32	
Grade	7104						
Carbon Black Content ASTM D4218	Range			%		2.4	
Carbon Black Dispersion ASTM D5596	Category					10 in Category 1	
Tensile Strength	Average Strength @ Break	MD		47 N/mm	268 psi	3344 psi	
ASTM D6693		TD		48 N/mm	274 psi	3428 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	528.0	
ASTM D6693		TD			%	631.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change					%	-0.32
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		311.4 N	70.0 lbs		
ASTM D1004 (Modified)		TD		289.1 N	65.0 lbs		
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load			720.6 N	162.0 lbs		
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures			1500 Hrs	CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/9/2015**

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Quality Control Department



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ROLL # F15B071015**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.92 mm	76 mil	Thickness	2.03 mm	80 mil	
Measurement	MAX	2.13 mm	84 mil	Length	117.349 m	385 feet	
ASTM D5994	AVE	2.04 mm	80 mil	Width	7.01 m	23 feet	
(Modified)							
OIT(Standard) ASTM D 3895							203 minutes
Asperity	Average	Top				30 mil	
ASTM D7466		Bottom				32 mil	
Specific Gravity	Average Density				g/cc	.937	
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.32
Grade	7104						
Carbon Black Content ASTM D4218	Range				%	2.4	
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break	MD		47 N/mm	268 psi	3344 psi	
ASTM D6693		TD		48 N/mm	274 psi	3428 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	528.0	
ASTM D6693		TD			%	631.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%	-0.32	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		311.4 N	70.0 lbs		
ASTM D1004 (Modified)		TD		289.1 N	65.0 lbs		
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				720.6 N	162.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs	CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/9/2015

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Quality Control Department



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ROLL # F15B071016**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	2.00 mm	79 mil	Thickness	2.03 mm	80 mil	
Measurement	MAX	2.16 mm	85 mil	Length	117.349 m	385 feet	
ASTM D5994	AVE	2.07 mm	82 mil	Width	7.01 m	23 feet	
(Modified)							
OIT(Standard) ASTM D 3895						203 minutes	
Asperity	Average	Top				30 mil	
ASTM D7466		Bottom				32 mil	
Specific Gravity	Average Density				g/cc	.937	
ASTM D792							
MFI ASTM D1238 COND. E							
Grade	7104	Melt Flow Index 190C/2160 g - g/10 min				.32	
Carbon Black Content ASTM D4218	Range				%	2.4	
Carbon Black Dispersion ASTM D5596	Category				10 in Category 1		
Tensile Strength	Average Strength @ Break			MD	47 N/mm	268 ppi	3344 psi
ASTM D6693				TD	48 N/mm	274 ppi	3428 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD			% 528.0
ASTM D6693				TD			% 631.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change						% -0.32
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	311.4 N	70.0 lbs	
ASTM D1004 (Modified)				TD	289.1 N	65.0 lbs	
Puncture Resistance							
FTMS 101 Method 2065 Modified							CERTIFIED
Puncture Resistance	Average Peak Load				720.6 N		162.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/9/2015

Signature


Quality Control Department



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ROLL # F15B072017**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.98 mm	78 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.15 mm	85 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.05 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							203 minutes
Asperity	Average	Top					27 mil
ASTM D7466		Bottom					33 mil
Specific Gravity	Average Density				g/cc		.937
ASTM D792							
MFI ASTM D1238 COND. E		Melt Flow Index 190C/2160 g - g/10 min					.32
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.3
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength				MD	47 N/mm	268 psi	3344 psi
ASTM D6693	Average Strength @ Break			TD	48 N/mm	274 psi	3428 psi
(2 inches / minute)							
Tensile Elongation				MD		%	528.0
ASTM D6693	Average Elongation @Break			TD		%	631.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change					%	-0.32
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	311.4 N		70.0 lbs
ASTM D1004 (Modified)				TD	289.1 N		65.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				720.6 N		162.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/10/2015**

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Quality Control Department



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ROLL # F15B072018**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.96 mm	77 mil		Thickness	2.03 mm	80 mil	
Measurement	MAX	2.17 mm	85 mil		Length	117.349 m	385 feet	
ASTM D5994								
(Modified)	AVE	2.05 mm	81 mil		Width	7.01 m	23 feet	
OIT(Standard) ASTM D 3895							203 minutes	
Asperity	Average	Top				29 mil		
ASTM D7466		Bottom				34 mil		
Specific Gravity	Average Density				g/cc	.937		
ASTM D792								
MFI ASTM D1238 COND. E			Melt Flow Index 190C/2160 g - g/10 min				.32	
Grade	7104							
Carbon Black Content ASTM D4218	Range				%	2.3		
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1	
Tensile Strength	Average Strength @ Break			MD	47 N/mm	268 psi	3344 psi	
ASTM D6693				TD	48 N/mm	274 psi	3428 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break			MD		%	528.0	
ASTM D6693				TD		%	631.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change					%	-0.32	
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance			MD	311.4 N	70.0 lbs		
ASTM D1004 (Modified)				TD	289.1 N	65.0 lbs		
Puncture Resistance							CERTIFIED	
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load				720.6 N	162.0 lbs		
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures		1500 Hrs				CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/10/2015

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ROLL # F15B072019**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.99 mm	79 mil	Thickness	2.03 mm	80 mil		
Measurement	MAX	2.18 mm	86 mil	Length	117.349 m	385 feet		
ASTM D5994	AVE	2.09 mm	82 mil	Width	7.01 m	23 feet		
(Modified)								
OIT(Standard) ASTM D 3895							203 minutes	
Asperity	Average	Top				33 mil		
ASTM D7466		Bottom				34 mil		
Specific Gravity	Average Density				g/cc	.936		
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.32	
Grade	7104							
Carbon Black Content ASTM D4218	Range				%	2.4		
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1	
Tensile Strength	Average Strength @ Break		MD	47 N/mm	267 psi	3334 psi		
ASTM D6693				TD	48 N/mm	272 psi	3401 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break		MD			%	554.0	
ASTM D6693				TD			%	638.0
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change						% -0.32	
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance		MD	311.4 N		70.0 lbs		
ASTM D1004 (Modified)			TD	289.1 N		65.0 lbs		
Puncture Resistance							CERTIFIED	
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load				711.7 N	160.0 lbs		
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs	CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
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ROLL # F15B072020**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.96 mm	77 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.13 mm	84 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.06 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							203 minutes
Asperity	Average	Top					27 mil
ASTM D7466		Bottom					34 mil
Specific Gravity	Average Density				g/cc		.936
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.32
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.4
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	47 N/mm	267 psi	3334 psi
ASTM D6693				TD	48 N/mm	272 psi	3401 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	554.0
ASTM D6693				TD		%	638.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change					%	-0.32
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	311.4 N		70.0 lbs
ASTM D1004 (Modified)				TD	289.1 N		65.0 lbs
Puncture Resistance							
FTMS 101 Method 2065 Modified							CERTIFIED
Puncture Resistance	Average Peak Load					711.7 N	160.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures					1500 Hrs	CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/10/2015**

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ROLL # F15B072021**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.93 mm	76 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.13 mm	84 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.06 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							203 minutes
Asperity	Average	Top					29 mil
ASTM D7466		Bottom					32 mil
Specific Gravity	Average Density				g/cc		.936
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.32
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.4
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	47 N/mm	267 psi	3334 psi
ASTM D6693				TD	48 N/mm	272 psi	3401 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	554.0
ASTM D6693				TD		%	638.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change					%	-0.32
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	311.4 N		70.0 lbs
ASTM D1004 (Modified)				TD	289.1 N		65.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				711.7 N		160.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/10/2015**

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ROLL # F15B072022**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH		METRIC	ENGLISH
Thickness	MIN	1.97 mm	77 mil	Thickness	2.03 mm	80 mil
Measurement	MAX	2.11 mm	83 mil	Length	117.349 m	385 feet
ASTM D5994	AVE	2.03 mm	80 mil	Width	7.01 m	23 feet
(Modified)						
OIT(Standard) ASTM D 3895						203 minutes
Asperity	Average	Top				32 mil
ASTM D7466		Bottom				31 mil
Specific Gravity	Average Density				g/cc	.936
ASTM D792						
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min				.32	
Grade	7104					
Carbon Black Content ASTM D4218	Range				%	2.4
Carbon Black Dispersion ASTM D5596	Category				10 in Category 1	
Tensile Strength	Average Strength @ Break		MD	47 N/mm	267 psi	3334 psi
ASTM D6693			TD	48 N/mm	272 psi	3401 psi
(2 inches / minute)						
Tensile Elongation	Average Elongation @Break		MD		%	554.0
ASTM D6693			TD		%	638.0
(2 inches / minute)						
Lo = 1.3" Yield						
Lo = 2.0" Break						
Dimensional Stability	Average Dimensional Change				%	-0.32
ASTM D1204 (Modified)						
Tear Resistance	Average Tear Resistance		MD	311.4 N	70.0 lbs	
ASTM D1004 (Modified)			TD	289.1 N	65.0 lbs	
Puncture Resistance					CERTIFIED	
FTMS 101 Method 2065 Modified						
Puncture Resistance	Average Peak Load				711.7 N	160.0 lbs
ASTM D4833 (Modified)						
ESCR ASTM D1693	Minumum Hrs w/o Failures		1500 Hrs		CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/10/2015**

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ROLL # F15B072023**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.98 mm	78 mil		Thickness	2.03 mm	80 mil
Measurement	MAX	2.23 mm	88 mil		Length	117.349 m	385 feet
ASTM D5994	AVE	2.12 mm	84 mil		Width	7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							203 minutes
Asperity	Average	Top					25 mil
ASTM D7466		Bottom					34 mil
Specific Gravity	Average Density				g/cc		.936
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.32
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.4
Carbon Black Dispersion ASTM D5596	Category					10 in Category 1	
Tensile Strength	Average Strength @ Break			MD	47 N/mm	267 psi	3334 psi
ASTM D6693				TD	48 N/mm	272 psi	3401 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	554.0
ASTM D6693				TD		%	638.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change					%	-0.32
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	311.4 N		70.0 lbs
ASTM D1004 (Modified)				TD	289.1 N		65.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load					711.7 N	160.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures					1500 Hrs	CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/10/2015**

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ROLL # F15B072024**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.95 mm	77 mil	Thickness	2.03 mm	80 mil	
Measurement	MAX	2.18 mm	86 mil	Length	117.349 m	385 feet	
ASTM D5994	AVE	2.06 mm	81 mil	Width	7.01 m	23 feet	
(Modified)							
OIT(Standard) ASTM D 3895						203 minutes	
Asperity	Average	Top				28 mil	
ASTM D7466		Bottom				37 mil	
Specific Gravity	Average Density				g/cc	.936	
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min					.32	
Grade	7104						
Carbon Black Content ASTM D4218	Range				%	2.5	
Carbon Black Dispersion ASTM D5596	Category				10 in Category 1		
Tensile Strength	Average Strength @ Break		MD	47 N/mm	271 psi	3385 psi	
ASTM D6693			TD	48 N/mm	274 psi	3428 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break		MD		%	544.0	
ASTM D6693			TD		%	620.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%	-0.32	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance		MD	311.4 N	70.0 lbs		
ASTM D1004 (Modified)			TD	289.1 N	65.0 lbs		
Puncture Resistance					CERTIFIED		
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				711.7 N	160.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures		1500 Hrs		CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/10/2015

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Quality Control Department



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ROLL # F15B072025**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.96 mm	77 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.15 mm	85 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.07 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							203 minutes
Asperity	Average	Top					26 mil
ASTM D7466		Bottom					33 mil
Specific Gravity	Average Density				g/cc		.936
ASTM D792							
MFI ASTM D1238 COND. E		Melt Flow Index 190C/2160 g - g/10 min					.32
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.5
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break	MD	47 N/mm	271	ppi	3385	psi
ASTM D6693		TD	48 N/mm	274	ppi	3428	psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	544.0	
ASTM D6693		TD			%	620.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%	-0.32	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		311.4	N	70.0	lbs
ASTM D1004 (Modified)		TD		289.1	N	65.0	lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load			711.7	N	160.0	lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures			1500	Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/10/2015

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Quality Control Department



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ROLL # F15B072026**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.98 mm	78 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.14 mm	84 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.03 mm	80 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							203 minutes
Asperity	Average	Top				29 mil	
ASTM D7466		Bottom				33 mil	
Specific Gravity	Average Density				g/cc		.936
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.32
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.5
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break	MD		47 N/mm	271 psi	3385 psi	
ASTM D6693		TD		48 N/mm	274 psi	3428 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	544.0	
ASTM D6693		TD			%	620.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%		-0.32
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		311.4 N	70.0 lbs		
ASTM D1004 (Modified)		TD		289.1 N	65.0 lbs		
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				711.7 N		160.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/10/2015**

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Quality Control Department



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ROLL # F15B072027**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.98 mm	78 mil	Thickness		2.03 mm	80 mil	
Measurement	MAX	2.14 mm	84 mil	Length		117.349 m	385 feet	
ASTM D5994	AVE	2.03 mm	80 mil	Width		7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							203 minutes	
Asperity	Average	Top				29 mil		
ASTM D7466		Bottom				33 mil		
Specific Gravity	Average Density			g/cc		.936		
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min					.32		
Grade	7104							
Carbon Black Content ASTM D4218	Range			%		2.5		
Carbon Black Dispersion ASTM D5596	Category					10 in Category 1		
Tensile Strength	Average Strength @ Break			MD	47 N/mm	271 psi	3385 psi	
ASTM D6693				TD	48 N/mm	274 psi	3428 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break			MD		%	544.0	
ASTM D6693				TD		%	620.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change					%	-0.32	
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance			MD	311.4 N		70.0 lbs	
ASTM D1004 (Modified)				TD	289.1 N		65.0 lbs	
Puncture Resistance							CERTIFIED	
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load					711.7 N	160.0 lbs	
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures			1500 Hrs			CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/10/2015**

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Quality Control Department



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ROLL # F15B072028**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.94 mm	76 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.15 mm	85 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.02 mm	80 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							203 minutes
Asperity	Average	Top					27 mil
ASTM D7466		Bottom					39 mil
Specific Gravity	Average Density				g/cc		.936
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.32
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.5
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	47 N/mm	271 psi	3385 psi
ASTM D6693				TD	48 N/mm	274 psi	3428 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	544.0
ASTM D6693				TD		%	620.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change					%	-0.32
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	311.4 N		70.0 lbs
ASTM D1004 (Modified)				TD	289.1 N		65.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				711.7 N		160.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/10/2015**

Signature


Quality Control Department



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ROLL # F15B072029**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.94 mm	76 mil		Thickness	2.03 mm	80 mil
Measurement	MAX	2.15 mm	85 mil		Length	117.349 m	385 feet
ASTM D5994	AVE	2.03 mm	80 mil		Width	7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							203 minutes
Asperity	Average	Top				28 mil	
ASTM D7466		Bottom				37 mil	
Specific Gravity	Average Density				g/cc		.934
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.32
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.3
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	47 N/mm	269 psi	3366 psi
ASTM D6693				TD	48 N/mm	275 psi	3433 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	528.0
ASTM D6693				TD		%	626.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change						%
ASTM D1204 (Modified)							-0.32
Tear Resistance	Average Tear Resistance			MD	302.5 N	68.0 lbs	
ASTM D1004 (Modified)				TD	280.2 N	63.0 lbs	
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				689.4 N		155.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/10/2015**

Signature


Quality Control Department



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ROLL # F15B072030**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH		
Thickness	MIN	1.95 mm	77 mil	Thickness		2.03 mm	80 mil		
Measurement	MAX	2.13 mm	84 mil	Length		117.349 m	385 feet		
ASTM D5994	AVE	2.04 mm	80 mil	Width		7.01 m	23 feet		
(Modified)									
OIT(Standard) ASTM D 3895							203 minutes		
Asperity	Average	Top				29 mil			
ASTM D7466		Bottom				35 mil			
Specific Gravity	Average Density				g/cc		.934		
ASTM D792									
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.32		
Grade	7104								
Carbon Black Content ASTM D4218	Range				%		2.3		
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1		
Tensile Strength	Average Strength @ Break			MD	47 N/mm	269 psi	3366 psi		
ASTM D6693				TD	48 N/mm	275 psi	3433 psi		
(2 inches / minute)									
Tensile Elongation	Average Elongation @Break			MD		%	528.0		
ASTM D6693				TD		%	626.0		
(2 inches / minute)									
Lo = 1.3" Yield									
Lo = 2.0" Break									
Dimensional Stability	Average Dimensional Change						%	-0.32	
ASTM D1204 (Modified)									
Tear Resistance	Average Tear Resistance			MD	302.5 N	68.0 lbs			
ASTM D1004 (Modified)				TD	280.2 N	63.0 lbs			
Puncture Resistance						CERTIFIED			
FTMS 101 Method 2065 Modified									
Puncture Resistance	Average Peak Load				689.4 N		155.0 lbs		
ASTM D4833 (Modified)									
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/10/2015**

Signature

Quality Control Department



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ROLL # F15B072031**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.94 mm	76 mil		Thickness	2.03 mm	80 mil
Measurement	MAX	2.13 mm	84 mil		Length	117.349 m	385 feet
ASTM D5994							
(Modified)	AVE	2.04 mm	80 mil		Width	7.01 m	23 feet
OIT(Standard) ASTM D 3895							203 minutes
Asperity	Average	Top				29 mil	
ASTM D7466		Bottom				34 mil	
Specific Gravity	Average Density				g/cc		.934
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.32
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.3
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	47 N/mm	269 psi	3366 psi
ASTM D6693				TD	48 N/mm	275 psi	3433 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	528.0
ASTM D6693				TD		%	626.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change						%
ASTM D1204 (Modified)							-0.32
Tear Resistance	Average Tear Resistance			MD	302.5 N	68.0 lbs	
ASTM D1004 (Modified)				TD	280.2 N	63.0 lbs	
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				689.4 N		155.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

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ROLL # F15B073032**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.92 mm	75 mil	Thickness		2.03 mm	80 mil	
Measurement	MAX	2.19 mm	86 mil	Length		117.349 m	385 feet	
ASTM D5994	AVE	2.06 mm	81 mil	Width		7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							203 minutes	
Asperity	Average	Top				29 mil		
ASTM D7466		Bottom				35 mil		
Specific Gravity	Average Density			g/cc		.934		
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min					.32		
Grade	7104							
Carbon Black Content ASTM D4218	Range			%		2.3		
Carbon Black Dispersion ASTM D5596	Category					10 in Category 1		
Tensile Strength	Average Strength @ Break			MD	47 N/mm	269 psi	3366 psi	
ASTM D6693				TD	48 N/mm	275 psi	3433 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break			MD		%	528.0	
ASTM D6693				TD		%	626.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change					%	-0.32	
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance			MD	302.5 N	68.0 lbs		
ASTM D1004 (Modified)				TD	280.2 N	63.0 lbs		
Puncture Resistance						CERTIFIED		
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load					689.4 N	155.0 lbs	
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures			1500 Hrs		CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/11/2015

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ROLL # F15B073033**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.94 mm	76 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.20 mm	87 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.06 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							203 minutes
Asperity	Average	Top					31 mil
ASTM D7466		Bottom					30 mil
Specific Gravity	Average Density				g/cc		.934
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.32
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.3
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	47 N/mm	269 psi	3366 psi
ASTM D6693				TD	48 N/mm	275 psi	3433 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	528.0
ASTM D6693				TD		%	626.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change					%	-0.32
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	302.5 N		68.0 lbs
ASTM D1004 (Modified)				TD	280.2 N		63.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				689.4 N		155.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

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PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/11/2015**

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ROLL # F15B073034**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.89 mm	74 mil	Thickness		2.03 mm	80 mil	
Measurement	MAX	2.12 mm	84 mil	Length		117.349 m	385 feet	
ASTM D5994	AVE	2.02 mm	80 mil	Width		7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							203 minutes	
Asperity	Average	Top				33 mil		
ASTM D7466		Bottom				30 mil		
Specific Gravity	Average Density				g/cc		.934	
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.32	
Grade	7104							
Carbon Black Content ASTM D4218	Range				%		2.4	
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1	
Tensile Strength	Average Strength @ Break			MD	45 N/mm	254 psi	3181 psi	
ASTM D6693				TD	46 N/mm	262 psi	3279 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break			MD		%	521.0	
ASTM D6693				TD		%	625.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change						%	-0.32
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance			MD	302.5 N	68.0 lbs		
ASTM D1004 (Modified)				TD	280.2 N	63.0 lbs		
Puncture Resistance						CERTIFIED		
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load				689.4 N		155.0 lbs	
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED	

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PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/11/2015**

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ROLL # F15B073035**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH		
Thickness	MIN	1.97 mm	78 mil		Thickness	2.03 mm	80 mil		
Measurement	MAX	2.15 mm	84 mil		Length	117.349 m	385 feet		
ASTM D5994	AVE	2.05 mm	81 mil		Width	7.01 m	23 feet		
(Modified)									
OIT(Standard) ASTM D 3895							203 minutes		
Asperity	Average	Top				31 mil			
ASTM D7466		Bottom				31 mil			
Specific Gravity	Average Density				g/cc		.934		
ASTM D792									
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.32		
Grade	7104								
Carbon Black Content ASTM D4218	Range				%		2.4		
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1		
Tensile Strength	Average Strength @ Break			MD	45 N/mm	254 psi	3181 psi		
ASTM D6693				TD	46 N/mm	262 psi	3279 psi		
(2 inches / minute)									
Tensile Elongation	Average Elongation @Break			MD		%	521.0		
ASTM D6693				TD		%	625.0		
(2 inches / minute)									
Lo = 1.3" Yield									
Lo = 2.0" Break									
Dimensional Stability	Average Dimensional Change						%	-0.32	
ASTM D1204 (Modified)									
Tear Resistance	Average Tear Resistance			MD	302.5 N		68.0 lbs		
ASTM D1004 (Modified)				TD	280.2 N		63.0 lbs		
Puncture Resistance							CERTIFIED		
FTMS 101 Method 2065 Modified									
Puncture Resistance	Average Peak Load				689.4 N		155.0 lbs		
ASTM D4833 (Modified)									
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/11/2015**

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ROLL # F15B073036**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH		
Thickness	MIN	1.96 mm	77 mil	Thickness		2.03 mm	80 mil		
Measurement	MAX	2.15 mm	85 mil	Length		117.349 m	385 feet		
ASTM D5994	AVE	2.05 mm	81 mil	Width		7.01 m	23 feet		
(Modified)									
OIT(Standard) ASTM D 3895							203 minutes		
Asperity	Average	Top				31 mil			
ASTM D7466		Bottom				31 mil			
Specific Gravity	Average Density				g/cc		.934		
ASTM D792									
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.32		
Grade	7104								
Carbon Black Content ASTM D4218	Range				%		2.4		
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1		
Tensile Strength	Average Strength @ Break			MD	45 N/mm	254 psi	3181 psi		
ASTM D6693				TD	46 N/mm	262 psi	3279 psi		
(2 inches / minute)									
Tensile Elongation	Average Elongation @Break			MD		%	521.0		
ASTM D6693				TD		%	625.0		
(2 inches / minute)									
Lo = 1.3" Yield									
Lo = 2.0" Break									
Dimensional Stability	Average Dimensional Change						%	-0.32	
ASTM D1204 (Modified)									
Tear Resistance	Average Tear Resistance			MD	302.5 N	68.0 lbs			
ASTM D1004 (Modified)				TD	280.2 N	63.0 lbs			
Puncture Resistance							CERTIFIED		
FTMS 101 Method 2065 Modified									
Puncture Resistance	Average Peak Load				689.4 N		155.0 lbs		
ASTM D4833 (Modified)									
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/11/2015

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ROLL # F15B073037**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.91 mm	75 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.17 mm	86 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.06 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							203 minutes
Asperity	Average	Top				31 mil	
ASTM D7466		Bottom				29 mil	
Specific Gravity	Average Density				g/cc	.934	
ASTM D792							
MFI ASTM D1238 COND. E			Melt Flow Index 190C/2160 g - g/10 min				.32
Grade	7104						
Carbon Black Content ASTM D4218	Range				%	2.4	
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	45 N/mm	254 psi	3181 psi
ASTM D6693				TD	46 N/mm	262 psi	3279 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	521.0
ASTM D6693				TD		%	625.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%	-0.32	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	302.5 N	68.0 lbs	
ASTM D1004 (Modified)				TD	280.2 N	63.0 lbs	
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				689.4 N	155.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures		1500 Hrs				CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/11/2015

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ROLL # F15B073038**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH		
Thickness	MIN	1.97 mm	77 mil	Thickness		2.03 mm	80 mil		
Measurement	MAX	2.10 mm	83 mil	Length		117.349 m	385 feet		
ASTM D5994	AVE	2.02 mm	80 mil	Width		7.01 m	23 feet		
(Modified)									
OIT(Standard) ASTM D 3895							203 minutes		
Asperity	Average	Top				31 mil			
ASTM D7466		Bottom				38 mil			
Specific Gravity	Average Density				g/cc		.934		
ASTM D792									
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.32		
Grade	7104								
Carbon Black Content ASTM D4218	Range				%		2.4		
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1		
Tensile Strength	Average Strength @ Break			MD	45 N/mm	254 psi	3181 psi		
ASTM D6693				TD	46 N/mm	262 psi	3279 psi		
(2 inches / minute)									
Tensile Elongation	Average Elongation @Break			MD		%	521.0		
ASTM D6693				TD		%	625.0		
(2 inches / minute)									
Lo = 1.3" Yield									
Lo = 2.0" Break									
Dimensional Stability	Average Dimensional Change						%	-0.32	
ASTM D1204 (Modified)									
Tear Resistance	Average Tear Resistance			MD	302.5 N	68.0 lbs			
ASTM D1004 (Modified)				TD	280.2 N	63.0 lbs			
Puncture Resistance						CERTIFIED			
FTMS 101 Method 2065 Modified									
Puncture Resistance	Average Peak Load				689.4 N		155.0 lbs		
ASTM D4833 (Modified)									
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/11/2015**

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ROLL # F15B073039**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH		
Thickness	MIN	1.91 mm	75 mil	Thickness		2.03 mm	80 mil		
Measurement	MAX	2.08 mm	82 mil	Length		117.349 m	385 feet		
ASTM D5994	AVE	2.03 mm	80 mil	Width		7.01 m	23 feet		
(Modified)									
OIT(Standard) ASTM D 3895							203 minutes		
Asperity	Average	Top				28 mil			
ASTM D7466		Bottom				37 mil			
Specific Gravity	Average Density				g/cc		.935		
ASTM D792									
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.32		
Grade	7104								
Carbon Black Content ASTM D4218	Range				%		2.3		
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1		
Tensile Strength	Average Strength @ Break			MD	45 N/mm	260 psi	3247 psi		
ASTM D6693				TD	46 N/mm	263 psi	3292 psi		
(2 inches / minute)									
Tensile Elongation	Average Elongation @Break			MD		%	518.0		
ASTM D6693				TD		%	617.0		
(2 inches / minute)									
Lo = 1.3" Yield									
Lo = 2.0" Break									
Dimensional Stability	Average Dimensional Change						%	-0.32	
ASTM D1204 (Modified)									
Tear Resistance	Average Tear Resistance			MD	302.5 N	68.0 lbs			
ASTM D1004 (Modified)				TD	280.2 N	63.0 lbs			
Puncture Resistance						CERTIFIED			
FTMS 101 Method 2065 Modified									
Puncture Resistance	Average Peak Load				720.6 N		162.0 lbs		
ASTM D4833 (Modified)									
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/11/2015**

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ROLL # F15B073040**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.90 mm	75 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.14 mm	84 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.05 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							203 minutes
Asperity	Average	Top				26 mil	
ASTM D7466		Bottom				34 mil	
Specific Gravity	Average Density			g/cc		.935	
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min					.32	
Grade	7104						
Carbon Black Content ASTM D4218	Range			%		2.3	
Carbon Black Dispersion ASTM D5596	Category					10 in Category 1	
Tensile Strength	Average Strength @ Break	MD		45 N/mm	260 psi	3247 psi	
ASTM D6693		TD		46 N/mm	263 psi	3292 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	518.0	
ASTM D6693		TD			%	617.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change					%	-0.32
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		302.5 N	68.0 lbs		
ASTM D1004 (Modified)		TD		280.2 N	63.0 lbs		
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load			720.6 N	162.0 lbs		
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures			1500 Hrs	CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/11/2015**

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Quality Control Department



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ROLL # F15B073041**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.95 mm	77 mil	Thickness	2.03 mm	80 mil		
Measurement	MAX	2.12 mm	84 mil	Length	117.349 m	385 feet		
ASTM D5994	AVE	2.06 mm	81 mil	Width	7.01 m	23 feet		
(Modified)								
OIT(Standard) ASTM D 3895							203 minutes	
Asperity	Average	Top				30 mil		
ASTM D7466		Bottom				29 mil		
Specific Gravity	Average Density				g/cc	.935		
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.32	
Grade	7104							
Carbon Black Content ASTM D4218	Range				%	2.3		
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1	
Tensile Strength	Average Strength @ Break			MD	45 N/mm	260 psi	3247 psi	
ASTM D6693				TD	46 N/mm	263 psi	3292 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break			MD		%	518.0	
ASTM D6693				TD		%	617.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change						% -0.32	
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance			MD	302.5 N	68.0 lbs		
ASTM D1004 (Modified)				TD	280.2 N	63.0 lbs		
Puncture Resistance							CERTIFIED	
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load				720.6 N	162.0 lbs		
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs	CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/11/2015

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Quality Control Department



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ROLL # F15B073042**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.96 mm	77 mil	Thickness		2.03 mm	80 mil	
Measurement	MAX	2.16 mm	85 mil	Length		117.349 m	385 feet	
ASTM D5994	AVE	2.04 mm	80 mil	Width		7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							203 minutes	
Asperity	Average	Top				31 mil		
ASTM D7466		Bottom				34 mil		
Specific Gravity	Average Density				g/cc	.935		
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.32	
Grade	7104							
Carbon Black Content ASTM D4218	Range				%	2.2		
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1	
Tensile Strength	Average Strength @ Break			MD	45 N/mm	260 ppi	3247 psi	
ASTM D6693				TD	46 N/mm	263 ppi	3292 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break			MD		%	518.0	
ASTM D6693				TD		%	617.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change						% -0.32	
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance			MD	302.5 N	68.0 lbs		
ASTM D1004 (Modified)				TD	280.2 N	63.0 lbs		
Puncture Resistance							CERTIFIED	
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load				720.6 N	162.0 lbs		
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs	CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/11/2015

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ROLL # F15B073043**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.97 mm	78 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.15 mm	85 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.06 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							203 minutes
Asperity	Average	Top					24 mil
ASTM D7466		Bottom					34 mil
Specific Gravity	Average Density				g/cc		.935
ASTM D792							
MFI ASTM D1238 COND. E		Melt Flow Index 190C/2160 g - g/10 min					.32
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.2
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break	MD	45 N/mm	260	ppi	3247	psi
ASTM D6693		TD	46 N/mm	263	ppi	3292	psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	518.0	
ASTM D6693		TD			%	617.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%	-0.32	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		302.5	N	68.0	lbs
ASTM D1004 (Modified)		TD		280.2	N	63.0	lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load			720.6	N	162.0	lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures			1500	Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/11/2015

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ROLL # F15B073044**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.99 mm	78 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.12 mm	83 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.06 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							203 minutes
Asperity	Average	Top				26 mil	
ASTM D7466		Bottom				34 mil	
Specific Gravity	Average Density				g/cc	.935	
ASTM D792							
MFI ASTM D1238 COND. E			Melt Flow Index 190C/2160 g - g/10 min				.32
Grade	7104						
Carbon Black Content ASTM D4218	Range				%	2.2	
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	47 N/mm	268 psi	3350 psi
ASTM D6693				TD	45 N/mm	259 psi	3237 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	524.0
ASTM D6693				TD		%	613.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%	-0.32	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	302.5 N	68.0 lbs	
ASTM D1004 (Modified)				TD	280.2 N	63.0 lbs	
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				720.6 N	162.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs	CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/11/2015

Signature


Quality Control Department



quality certificate

ROLL # F15B073045**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.99 mm	78 mil	Thickness	2.03 mm	80 mil	
Measurement	MAX	2.10 mm	83 mil	Length	117.349 m	385 feet	
ASTM D5994	AVE	2.06 mm	81 mil	Width	7.01 m	23 feet	
(Modified)							
OIT(Standard) ASTM D 3895						203 minutes	
Asperity	Average	Top				29 mil	
ASTM D7466		Bottom				34 mil	
Specific Gravity	Average Density				g/cc	.935	
ASTM D792							
MFI ASTM D1238 COND. E			Melt Flow Index 190C/2160 g - g/10 min				.32
Grade	7104						
Carbon Black Content ASTM D4218	Range				%	2.2	
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	47 N/mm	268 psi	3350 psi
ASTM D6693				TD	45 N/mm	259 psi	3237 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	524.0
ASTM D6693				TD		%	613.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%	-0.32	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	302.5 N	68.0 lbs	
ASTM D1004 (Modified)				TD	280.2 N	63.0 lbs	
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				720.6 N	162.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs	CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/11/2015

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Quality Control Department



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ROLL # F15B073046**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.93 mm	76 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.16 mm	85 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.06 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							203 minutes
Asperity	Average	Top					34 mil
ASTM D7466		Bottom					30 mil
Specific Gravity	Average Density				g/cc		.935
ASTM D792							
MFI ASTM D1238 COND. E		Melt Flow Index 190C/2160 g - g/10 min					.32
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.2
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break	MD	47 N/mm	268 psi			3350 psi
ASTM D6693		TD	45 N/mm	259 psi			3237 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%		524.0
ASTM D6693		TD			%		613.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%		-0.32
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD	302.5 N				68.0 lbs
ASTM D1004 (Modified)		TD	280.2 N				63.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load		720.6 N				162.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures		1500 Hrs				CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/11/2015**

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Quality Control Department



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ROLL # F15B073047**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.91 mm	75 mil		Thickness	2.03 mm	80 mil
Measurement	MAX	2.14 mm	84 mil		Length	117.349 m	385 feet
ASTM D5994	AVE	2.05 mm	81 mil		Width	7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							203 minutes
Asperity	Average	Top				30 mil	
ASTM D7466		Bottom				34 mil	
Specific Gravity	Average Density				g/cc		.935
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.32
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.2
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	47 N/mm	268 psi	3350 psi
ASTM D6693				TD	45 N/mm	259 psi	3237 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	524.0
ASTM D6693				TD		%	613.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change						%
ASTM D1204 (Modified)							-0.32
Tear Resistance	Average Tear Resistance			MD	302.5 N	68.0 lbs	
ASTM D1004 (Modified)				TD	280.2 N	63.0 lbs	
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				720.6 N		162.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/11/2015**

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Quality Control Department



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ROLL # F15B074048**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH		
Thickness	MIN	1.95 mm	77 mil	Thickness		2.03 mm	80 mil		
Measurement	MAX	2.20 mm	87 mil	Length		117.349 m	385 feet		
ASTM D5994	AVE	2.07 mm	81 mil	Width		7.01 m	23 feet		
(Modified)									
OIT(Standard) ASTM D 3895							203 minutes		
Asperity	Average	Top				31 mil			
ASTM D7466		Bottom				30 mil			
Specific Gravity	Average Density				g/cc		.935		
ASTM D792									
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.32		
Grade	7104								
Carbon Black Content ASTM D4218	Range				%		2.3		
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1		
Tensile Strength	Average Strength @ Break			MD	47 N/mm	268 psi	3351 psi		
ASTM D6693				TD	47 N/mm	268 psi	3352 psi		
(2 inches / minute)									
Tensile Elongation	Average Elongation @Break			MD		%	535.0		
ASTM D6693				TD		%	625.0		
(2 inches / minute)									
Lo = 1.3" Yield									
Lo = 2.0" Break									
Dimensional Stability	Average Dimensional Change						%	-0.32	
ASTM D1204 (Modified)									
Tear Resistance	Average Tear Resistance			MD	306.9 N	69.0 lbs			
ASTM D1004 (Modified)				TD	289.1 N	65.0 lbs			
Puncture Resistance						CERTIFIED			
FTMS 101 Method 2065 Modified									
Puncture Resistance	Average Peak Load				698.3 N		157.0 lbs		
ASTM D4833 (Modified)									
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/12/2015**

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Quality Control Department



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ROLL # F15B074049**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.94 mm	76 mil		Thickness	2.03 mm	80 mil
Measurement	MAX	2.17 mm	86 mil		Length	117.349 m	385 feet
ASTM D5994							
(Modified)	AVE	2.05 mm	81 mil		Width	7.01 m	23 feet
OIT(Standard) ASTM D 3895							203 minutes
Asperity	Average	Top				28 mil	
ASTM D7466		Bottom				34 mil	
Specific Gravity	Average Density				g/cc		.935
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.32
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.3
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break		MD	47 N/mm	268 psi	3351 psi	
ASTM D6693				TD	47 N/mm	268 psi	3352 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break		MD		%	535.0	
ASTM D6693				TD		%	625.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%		-0.32
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance		MD	306.9 N	69.0 lbs		
ASTM D1004 (Modified)			TD	289.1 N	65.0 lbs		
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				698.3 N		157.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/12/2015**

Signature


Quality Control Department



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ROLL # F15B074050**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.93 mm	76 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.16 mm	85 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.05 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							203 minutes
Asperity	Average	Top					29 mil
ASTM D7466		Bottom					31 mil
Specific Gravity	Average Density				g/cc		.935
ASTM D792							
MFI ASTM D1238 COND. E		Melt Flow Index 190C/2160 g - g/10 min					.32
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.3
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	47 N/mm	268 psi	3351 psi
ASTM D6693				TD	47 N/mm	268 psi	3352 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	535.0
ASTM D6693				TD		%	625.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change					%	-0.32
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	306.9 N		69.0 lbs
ASTM D1004 (Modified)				TD	289.1 N		65.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load					698.3 N	157.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures					1500 Hrs	CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/12/2015**

Signature


Quality Control Department



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ROLL # F15B074051**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.93 mm	76 mil	Thickness		2.03 mm	80 mil	
Measurement	MAX	2.16 mm	85 mil	Length		117.349 m	385 feet	
ASTM D5994	AVE	2.05 mm	81 mil	Width		7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							203 minutes	
Asperity	Average	Top				30 mil		
ASTM D7466		Bottom				31 mil		
Specific Gravity	Average Density				g/cc	.935		
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min					.32		
Grade	7104							
Carbon Black Content ASTM D4218	Range				%	2.3		
Carbon Black Dispersion ASTM D5596	Category					10 in Category 1		
Tensile Strength	Average Strength @ Break			MD	47 N/mm	268 psi	3351 psi	
ASTM D6693				TD	47 N/mm	268 psi	3352 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break			MD		%	535.0	
ASTM D6693				TD		%	625.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change					%	-0.32	
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance			MD	306.9 N	69.0 lbs		
ASTM D1004 (Modified)				TD	289.1 N	65.0 lbs		
Puncture Resistance						CERTIFIED		
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load				698.3 N	157.0 lbs		
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs	CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/12/2015**

Signature


Quality Control Department



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ROLL # F15B074052**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.92 mm	76 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.21 mm	87 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.06 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							203 minutes
Asperity	Average	Top					29 mil
ASTM D7466		Bottom					31 mil
Specific Gravity	Average Density				g/cc		.935
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.32
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.3
Carbon Black Dispersion ASTM D5596	Category					10 in Category 1	
Tensile Strength	Average Strength @ Break			MD	47 N/mm	268 psi	3351 psi
ASTM D6693				TD	47 N/mm	268 psi	3352 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	535.0
ASTM D6693				TD		%	625.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change					%	-0.32
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	306.9 N		69.0 lbs
ASTM D1004 (Modified)				TD	289.1 N		65.0 lbs
Puncture Resistance							
FTMS 101 Method 2065 Modified							CERTIFIED
Puncture Resistance	Average Peak Load				698.3 N		157.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/12/2015**

Signature


Quality Control Department



quality certificate

ROLL # F15B074053**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.89 mm	74 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.17 mm	85 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.06 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							203 minutes
Asperity	Average	Top				31 mil	
ASTM D7466		Bottom				31 mil	
Specific Gravity	Average Density				g/cc	.935	
ASTM D792							
MFI ASTM D1238 COND. E			Melt Flow Index 190C/2160 g - g/10 min				.32
Grade	7104						
Carbon Black Content ASTM D4218	Range				%	2.3	
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	44 N/mm	252 ppi	3155 psi
ASTM D6693				TD	47 N/mm	269 ppi	3362 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	506.0
ASTM D6693				TD		%	632.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change					%	-0.32
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	306.9 N	69.0 lbs	
ASTM D1004 (Modified)				TD	289.1 N	65.0 lbs	
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				698.3 N	157.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs	CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/12/2015**

Signature


Quality Control Department



quality certificate

ROLL # F15B074054**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.91 mm	75 mil	Thickness		2.03 mm	80 mil	
Measurement	MAX	2.13 mm	84 mil	Length		117.349 m	385 feet	
ASTM D5994	AVE	2.04 mm	80 mil	Width		7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							203 minutes	
Asperity	Average	Top				27 mil		
ASTM D7466		Bottom				36 mil		
Specific Gravity	Average Density				g/cc		.935	
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.32	
Grade	7104							
Carbon Black Content ASTM D4218	Range				%		2.3	
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1	
Tensile Strength	Average Strength @ Break			MD	44 N/mm	252 psi	3155 psi	
ASTM D6693				TD	47 N/mm	269 psi	3362 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break			MD		%	506.0	
ASTM D6693				TD		%	632.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change						%	-0.32
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance			MD	306.9 N	69.0 lbs		
ASTM D1004 (Modified)				TD	289.1 N	65.0 lbs		
Puncture Resistance						CERTIFIED		
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load				698.3 N		157.0 lbs	
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/12/2015**

Signature


Quality Control Department



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ROLL # F15B074055**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.94 mm	76 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.09 mm	82 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.03 mm	80 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							203 minutes
Asperity	Average	Top				28 mil	
ASTM D7466		Bottom				36 mil	
Specific Gravity	Average Density				g/cc	.935	
ASTM D792							
MFI ASTM D1238 COND. E			Melt Flow Index 190C/2160 g - g/10 min				.32
Grade	7104						
Carbon Black Content ASTM D4218	Range				%	2.3	
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	44 N/mm	252 psi	3155 psi
ASTM D6693				TD	47 N/mm	269 psi	3362 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	506.0
ASTM D6693				TD		%	632.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%	-0.32	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	306.9 N	69.0 lbs	
ASTM D1004 (Modified)				TD	289.1 N	65.0 lbs	
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				698.3 N	157.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures		1500 Hrs				CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/12/2015

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Quality Control Department



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ROLL # F15B074056**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.91 mm	75 mil	Thickness		2.03 mm	80 mil	
Measurement	MAX	2.13 mm	84 mil	Length		117.349 m	385 feet	
ASTM D5994	AVE	2.04 mm	80 mil	Width		7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							203 minutes	
Asperity	Average	Top				31 mil		
ASTM D7466		Bottom				36 mil		
Specific Gravity	Average Density				g/cc		.935	
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.32	
Grade	7104							
Carbon Black Content ASTM D4218	Range				%		2.2	
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1	
Tensile Strength	Average Strength @ Break			MD	44 N/mm	252 psi	3155 psi	
ASTM D6693				TD	47 N/mm	269 psi	3362 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break			MD		%	506.0	
ASTM D6693				TD		%	632.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change						%	-0.32
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance			MD	306.9 N	69.0 lbs		
ASTM D1004 (Modified)				TD	289.1 N	65.0 lbs		
Puncture Resistance						CERTIFIED		
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load				698.3 N		157.0 lbs	
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/12/2015**

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Quality Control Department



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ROLL # F15B074057**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.95 mm	77 mil	Thickness		2.03 mm	80 mil	
Measurement	MAX	2.13 mm	84 mil	Length		117.349 m	385 feet	
ASTM D5994	AVE	2.03 mm	80 mil	Width		7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							203 minutes	
Asperity	Average	Top				28 mil		
ASTM D7466		Bottom				37 mil		
Specific Gravity	Average Density			g/cc		.935		
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min					.32		
Grade	7104							
Carbon Black Content ASTM D4218	Range			%		2.2		
Carbon Black Dispersion ASTM D5596	Category					10 in Category 1		
Tensile Strength	Average Strength @ Break			MD	44 N/mm	252 psi	3155 psi	
ASTM D6693				TD	47 N/mm	269 psi	3362 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break			MD		%	506.0	
ASTM D6693				TD		%	632.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change					%	-0.32	
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance			MD	306.9 N	69.0 lbs		
ASTM D1004 (Modified)				TD	289.1 N	65.0 lbs		
Puncture Resistance						CERTIFIED		
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load					698.3 N	157.0 lbs	
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures			1500 Hrs		CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/12/2015

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Quality Control Department



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ROLL # F15B074058**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.96 mm	77 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.13 mm	84 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.04 mm	80 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							203 minutes
Asperity	Average	Top					27 mil
ASTM D7466		Bottom					35 mil
Specific Gravity	Average Density				g/cc		.938
ASTM D792							
MFI ASTM D1238 COND. E		Melt Flow Index 190C/2160 g - g/10 min					.32
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.3
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break	MD	48 N/mm	273	ppi	3414	psi
ASTM D6693		TD	46 N/mm	263	ppi	3286	psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	526.0	
ASTM D6693		TD			%	600.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%	-0.32	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		311.4	N	70.0	lbs
ASTM D1004 (Modified)		TD		293.6	N	66.0	lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load			725.0	N	163.0	lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures			1500	Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/12/2015

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Quality Control Department



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ROLL # F15B074059**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.95 mm	77 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.13 mm	84 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.03 mm	80 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							203 minutes
Asperity	Average	Top				28 mil	
ASTM D7466		Bottom				36 mil	
Specific Gravity	Average Density				g/cc	.937	
ASTM D792							
MFI ASTM D1238 COND. E			Melt Flow Index 190C/2160 g - g/10 min				.32
Grade	7104						
Carbon Black Content ASTM D4218	Range				%	2.3	
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	48 N/mm	273 psi	3414 psi
ASTM D6693				TD	46 N/mm	263 psi	3286 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	526.0
ASTM D6693				TD		%	600.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%	-0.32	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	311.4 N	70.0 lbs	
ASTM D1004 (Modified)				TD	293.6 N	66.0 lbs	
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				725.0 N	163.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures		1500 Hrs				CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/12/2015

Signature


Quality Control Department



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ROLL # F15B074060**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.91 mm	75 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.13 mm	84 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.04 mm	80 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							203 minutes
Asperity	Average	Top					26 mil
ASTM D7466		Bottom					33 mil
Specific Gravity	Average Density				g/cc		.937
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.32
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.3
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	48 N/mm	273 psi	3414 psi
ASTM D6693				TD	46 N/mm	263 psi	3286 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	526.0
ASTM D6693				TD		%	600.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change					%	-0.32
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	311.4 N		70.0 lbs
ASTM D1004 (Modified)				TD	293.6 N		66.0 lbs
Puncture Resistance					CERTIFIED		
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				725.0 N		163.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/12/2015**

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Quality Control Department



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ROLL # F15B074061**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.92 mm	76 mil	Thickness		2.03 mm	80 mil	
Measurement	MAX	2.19 mm	86 mil	Length		117.349 m	385 feet	
ASTM D5994	AVE	2.05 mm	81 mil	Width		7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							203 minutes	
Asperity	Average	Top				26 mil		
ASTM D7466		Bottom				32 mil		
Specific Gravity	Average Density				g/cc	.937		
ASTM D792								
MFI ASTM D1238 COND. E			Melt Flow Index 190C/2160 g - g/10 min				.32	
Grade	7104							
Carbon Black Content ASTM D4218	Range				%	2.3		
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1	
Tensile Strength	Average Strength @ Break			MD	48 N/mm	273 psi	3414 psi	
ASTM D6693				TD	46 N/mm	263 psi	3286 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break			MD		%	526.0	
ASTM D6693				TD		%	600.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change					%	-0.32	
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance			MD	311.4 N	70.0 lbs		
ASTM D1004 (Modified)				TD	293.6 N	66.0 lbs		
Puncture Resistance							CERTIFIED	
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load				725.0 N	163.0 lbs		
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures		1500 Hrs				CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/12/2015

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Quality Control Department



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ROLL # F15B074062**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.93 mm	76 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.14 mm	84 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.04 mm	80 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							203 minutes
Asperity	Average	Top					28 mil
ASTM D7466		Bottom					34 mil
Specific Gravity	Average Density				g/cc		.937
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.32
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.3
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	48 N/mm	273 psi	3414 psi
ASTM D6693				TD	46 N/mm	263 psi	3286 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	526.0
ASTM D6693				TD		%	600.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change					%	-0.32
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	311.4 N		70.0 lbs
ASTM D1004 (Modified)				TD	293.6 N		66.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				725.0 N		163.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/12/2015**

Signature

Quality Control Department



quality certificate

ROLL # F15B074063**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC		ENGLISH		METRIC		ENGLISH		
Thickness	MIN	1.92	mm	76	mil	Thickness	2.03	mm	80	mil
Measurement	MAX	2.14	mm	84	mil	Length	117.349	m	385	feet
ASTM D5994	AVE	2.04	mm	80	mil	Width	7.01	m	23	feet
(Modified)										
OIT(Standard) ASTM D 3895									203	minutes
Asperity	Average			Top					29	mil
ASTM D7466				Bottom					34	mil
Specific Gravity			Average Density			g/cc			.937	
ASTM D792										
MFI ASTM D1238 COND. E					Melt Flow Index 190C/2160 g - g/10 min				.32	
Grade	7104									
Carbon Black Content ASTM D4218	Range					%			2.3	
Carbon Black Dispersion ASTM D5596	Category								10 in Category 1	
Tensile Strength	Average Strength @ Break			MD	46	N/mm	262	ppi	3277	psi
ASTM D6693				TD	49	N/mm	279	ppi	3483	psi
(2 inches / minute)										
Tensile Elongation	Average Elongation @Break			MD				%	524.0	
ASTM D6693				TD				%	647.0	
(2 inches / minute)										
Lo = 1.3" Yield										
Lo = 2.0" Break										
Dimensional Stability			Average Dimensional Change						%	-0.32
ASTM D1204 (Modified)										
Tear Resistance	Average Tear Resistance			MD		311.4	N		70.0	lbs
ASTM D1004 (Modified)				TD		293.6	N		66.0	lbs
Puncture Resistance									CERTIFIED	
FTMS 101 Method 2065 Modified										
Puncture Resistance			Average Peak Load			725.0		N	163.0	lbs
ASTM D4833 (Modified)										
ESCR ASTM D1693			Minumum Hrs w/o Failures			1500		Hrs	CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/12/2015

Signature


Quality Control Department



quality certificate

ROLL # F15B075064**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	2.01 mm	79 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.14 mm	84 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.06 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							203 minutes
Asperity	Average	Top				28 mil	
ASTM D7466		Bottom				34 mil	
Specific Gravity	Average Density				g/cc		.937
ASTM D792							
MFI ASTM D1238 COND. E			Melt Flow Index 190C/2160 g - g/10 min				.32
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.3
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	46 N/mm	262 psi	3277 psi
ASTM D6693				TD	49 N/mm	279 psi	3483 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	524.0
ASTM D6693				TD		%	647.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change						%
ASTM D1204 (Modified)							-0.32
Tear Resistance	Average Tear Resistance			MD	311.4 N	70.0 lbs	
ASTM D1004 (Modified)				TD	293.6 N	66.0 lbs	
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				725.0 N		163.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/13/2015**

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Quality Control Department



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ROLL # F15B075065**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.95 mm	77 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.12 mm	84 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.06 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							203 minutes
Asperity	Average	Top				28 mil	
ASTM D7466		Bottom				34 mil	
Specific Gravity	Average Density				g/cc	.935	
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.32
Grade	7104						
Carbon Black Content ASTM D4218	Range				%	2.3	
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	46 N/mm	262 psi	3277 psi
ASTM D6693				TD	49 N/mm	279 psi	3483 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	524.0
ASTM D6693				TD		%	647.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%	-0.32	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	311.4 N	70.0 lbs	
ASTM D1004 (Modified)				TD	293.6 N	66.0 lbs	
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				725.0 N	163.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs	CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/13/2015

Signature


Quality Control Department



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ROLL # F15B075066**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.93 mm	76 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.12 mm	84 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.06 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							203 minutes
Asperity	Average	Top				28 mil	
ASTM D7466		Bottom				34 mil	
Specific Gravity	Average Density			g/cc		.935	
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min					.32	
Grade	7104						
Carbon Black Content ASTM D4218	Range			%		2.3	
Carbon Black Dispersion ASTM D5596	Category					10 in Category 1	
Tensile Strength	Average Strength @ Break	MD		46 N/mm	262 psi	3277 psi	
ASTM D6693		TD		49 N/mm	279 psi	3483 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	524.0	
ASTM D6693		TD			%	647.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change					%	-0.32
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		311.4 N	70.0 lbs		
ASTM D1004 (Modified)		TD		293.6 N	66.0 lbs		
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load			725.0 N	163.0 lbs		
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures			1500 Hrs	CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/13/2015**

Signature


Quality Control Department



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ROLL # F15B075067**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.93 mm	76 mil		Thickness	2.03 mm	80 mil
Measurement	MAX	2.19 mm	86 mil		Length	117.349 m	385 feet
ASTM D5994	AVE	2.04 mm	80 mil		Width	7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							203 minutes
Asperity	Average	Top				32 mil	
ASTM D7466		Bottom				31 mil	
Specific Gravity	Average Density				g/cc		.935
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.32
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.3
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	46 N/mm	262 psi	3277 psi
ASTM D6693				TD	49 N/mm	279 psi	3483 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	524.0
ASTM D6693				TD		%	647.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change						%
ASTM D1204 (Modified)							-0.32
Tear Resistance	Average Tear Resistance			MD	311.4 N	70.0 lbs	
ASTM D1004 (Modified)				TD	293.6 N	66.0 lbs	
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				725.0 N		163.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/13/2015**

Signature


Quality Control Department



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ROLL # F15B075068**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.93 mm	76 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.17 mm	85 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.04 mm	80 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							203 minutes
Asperity	Average	Top				31 mil	
ASTM D7466		Bottom				31 mil	
Specific Gravity	Average Density				g/cc	.935	
ASTM D792							
MFI ASTM D1238 COND. E			Melt Flow Index 190C/2160 g - g/10 min				.32
Grade	7104						
Carbon Black Content ASTM D4218	Range				%	2.3	
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	46 N/mm	262 psi	3277 psi
ASTM D6693				TD	49 N/mm	279 psi	3483 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	524.0
ASTM D6693				TD		%	647.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%	-0.32	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	311.4 N	70.0 lbs	
ASTM D1004 (Modified)				TD	293.6 N	66.0 lbs	
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				725.0 N	163.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs	CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/13/2015**

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ROLL # F15B075069**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.96 mm	77 mil	Thickness		2.03 mm	80 mil	
Measurement	MAX	2.08 mm	82 mil	Length		117.349 m	385 feet	
ASTM D5994	AVE	2.03 mm	80 mil	Width		7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							203 minutes	
Asperity	Average	Top				28 mil		
ASTM D7466		Bottom				33 mil		
Specific Gravity	Average Density			g/cc		.935		
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min					.32		
Grade	7104							
Carbon Black Content ASTM D4218	Range			%		2.2		
Carbon Black Dispersion ASTM D5596	Category					10 in Category 1		
Tensile Strength	Average Strength @ Break			MD	48 N/mm	271 psi	3392 psi	
ASTM D6693				TD	49 N/mm	280 psi	3504 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break			MD		%	533.0	
ASTM D6693				TD		%	652.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change					%	-0.32	
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance			MD	306.9 N	69.0 lbs		
ASTM D1004 (Modified)				TD	280.2 N	63.0 lbs		
Puncture Resistance						CERTIFIED		
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load					702.8 N	158.0 lbs	
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures			1500 Hrs		CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/13/2015

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ROLL # F15B075070**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.96 mm	77 mil	Thickness	2.03 mm	80 mil	
Measurement	MAX	2.07 mm	81 mil	Length	117.349 m	385 feet	
ASTM D5994				Width	7.01 m	23 feet	
(Modified)	AVE	2.02 mm	80 mil				
OIT(Standard) ASTM D 3895							203 minutes
Asperity	Average	Top				28 mil	
ASTM D7466		Bottom				33 mil	
Specific Gravity	Average Density				g/cc		.935
ASTM D792							
MFI ASTM D1238 COND. E			Melt Flow Index 190C/2160 g - g/10 min				.32
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.2
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break	MD		48 N/mm	271 psi	3392 psi	
ASTM D6693		TD		49 N/mm	280 psi	3504 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	533.0	
ASTM D6693		TD			%	652.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%		-0.32
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		306.9 N			69.0 lbs
ASTM D1004 (Modified)		TD		280.2 N			63.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				702.8 N		158.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/13/2015

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ROLL # F15B075071**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.90 mm	75 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.10 mm	83 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.04 mm	80 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							203 minutes
Asperity	Average	Top				31 mil	
ASTM D7466		Bottom				31 mil	
Specific Gravity	Average Density				g/cc		.935
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.32
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.2
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break	MD		48 N/mm	271 psi	3392 psi	
ASTM D6693		TD		49 N/mm	280 psi	3504 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	533.0	
ASTM D6693		TD			%	652.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%		-0.32
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		306.9 N	69.0 lbs		
ASTM D1004 (Modified)		TD		280.2 N	63.0 lbs		
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				702.8 N		158.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/13/2015**

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ROLL # F15B075072**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.88 mm	74 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.10 mm	83 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.03 mm	80 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							203 minutes
Asperity	Average	Top				28 mil	
ASTM D7466		Bottom				32 mil	
Specific Gravity	Average Density				g/cc		.935
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.32
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.3
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break	MD		48 N/mm	271 psi	3392 psi	
ASTM D6693		TD		49 N/mm	280 psi	3504 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	533.0	
ASTM D6693		TD			%	652.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%		-0.32
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		306.9 N			69.0 lbs
ASTM D1004 (Modified)		TD		280.2 N			63.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				702.8 N		158.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/13/2015**

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ROLL # F15B075073**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.92 mm	76 mil	Thickness		2.03 mm	80 mil	
Measurement	MAX	2.12 mm	83 mil	Length		117.349 m	385 feet	
ASTM D5994	AVE	2.04 mm	80 mil	Width		7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							203 minutes	
Asperity	Average	Top				27 mil		
ASTM D7466		Bottom				35 mil		
Specific Gravity	Average Density				g/cc	.935		
ASTM D792								
MFI ASTM D1238 COND. E			Melt Flow Index 190C/2160 g - g/10 min				.32	
Grade	7104							
Carbon Black Content ASTM D4218	Range				%	2.3		
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1	
Tensile Strength	Average Strength @ Break			MD	48 N/mm	271 psi	3392 psi	
ASTM D6693				TD	49 N/mm	280 psi	3504 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break			MD		%	533.0	
ASTM D6693				TD		%	652.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change					%	-0.32	
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance			MD	306.9 N	69.0 lbs		
ASTM D1004 (Modified)				TD	280.2 N	63.0 lbs		
Puncture Resistance							CERTIFIED	
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load				702.8 N	158.0 lbs		
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures		1500 Hrs				CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/13/2015

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ROLL # F15B075074**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.93 mm	76 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.10 mm	83 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.03 mm	80 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							203 minutes
Asperity	Average	Top				26 mil	
ASTM D7466		Bottom				34 mil	
Specific Gravity	Average Density				g/cc		.935
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.32
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.4
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break	MD		47 N/mm	270 psi	3376 psi	
ASTM D6693		TD		49 N/mm	281 psi	3507 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	554.0	
ASTM D6693		TD			%	643.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%		-0.32
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		306.9 N			69.0 lbs
ASTM D1004 (Modified)		TD		280.2 N			63.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				702.8 N		158.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/13/2015**

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Quality Control Department



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ROLL # F15B075075**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.90 mm	75 mil		Thickness	2.03 mm	80 mil
Measurement	MAX	2.14 mm	84 mil		Length	117.349 m	385 feet
ASTM D5994	AVE	2.04 mm	80 mil		Width	7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							203 minutes
Asperity	Average	Top					27 mil
ASTM D7466		Bottom					34 mil
Specific Gravity	Average Density				g/cc		.935
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.32
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.4
Carbon Black Dispersion ASTM D5596	Category					10 in Category 1	
Tensile Strength	Average Strength @ Break			MD	47 N/mm	270 psi	3376 psi
ASTM D6693				TD	49 N/mm	281 psi	3507 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	554.0
ASTM D6693				TD		%	643.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change					%	-0.32
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	306.9 N		69.0 lbs
ASTM D1004 (Modified)				TD	280.2 N		63.0 lbs
Puncture Resistance							
FTMS 101 Method 2065 Modified							CERTIFIED
Puncture Resistance	Average Peak Load				702.8 N		158.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/13/2015**

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Quality Control Department



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ROLL # F15B075076**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.93 mm	76 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.16 mm	85 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.03 mm	80 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							203 minutes
Asperity	Average	Top				26 mil	
ASTM D7466		Bottom				33 mil	
Specific Gravity	Average Density			g/cc		.935	
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min					.32	
Grade	7104						
Carbon Black Content ASTM D4218	Range			%		2.4	
Carbon Black Dispersion ASTM D5596	Category					10 in Category 1	
Tensile Strength	Average Strength @ Break	MD		47 N/mm	270 psi	3376 psi	
ASTM D6693		TD		49 N/mm	281 psi	3507 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	554.0	
ASTM D6693		TD			%	643.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change					%	-0.32
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		306.9 N	69.0 lbs		
ASTM D1004 (Modified)		TD		280.2 N	63.0 lbs		
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load			702.8 N	158.0 lbs		
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures			1500 Hrs	CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/13/2015**

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Quality Control Department



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ROLL # F15B075077**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.91 mm	75 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.15 mm	85 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.04 mm	80 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							203 minutes
Asperity	Average	Top				26 mil	
ASTM D7466		Bottom				33 mil	
Specific Gravity	Average Density				g/cc		.935
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.32
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.2
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	47 N/mm	270 psi	3376 psi
ASTM D6693				TD	49 N/mm	281 psi	3507 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	554.0
ASTM D6693				TD		%	643.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change						%
ASTM D1204 (Modified)							-0.32
Tear Resistance	Average Tear Resistance			MD	306.9 N	69.0 lbs	
ASTM D1004 (Modified)				TD	280.2 N	63.0 lbs	
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				702.8 N		158.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/13/2015**

Signature


Quality Control Department



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ROLL # F15B075078**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH		
Thickness	MIN	1.93 mm	76 mil	Thickness		2.03 mm	80 mil		
Measurement	MAX	2.16 mm	85 mil	Length		117.349 m	385 feet		
ASTM D5994	AVE	2.05 mm	81 mil	Width		7.01 m	23 feet		
(Modified)									
OIT(Standard) ASTM D 3895							203 minutes		
Asperity	Average	Top				31 mil			
ASTM D7466		Bottom				30 mil			
Specific Gravity	Average Density				g/cc		.935		
ASTM D792									
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.32		
Grade	7104								
Carbon Black Content ASTM D4218	Range				%		2.2		
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1		
Tensile Strength	Average Strength @ Break			MD	47 N/mm	270 psi	3376 psi		
ASTM D6693				TD	49 N/mm	281 psi	3507 psi		
(2 inches / minute)									
Tensile Elongation	Average Elongation @Break			MD		%	554.0		
ASTM D6693				TD		%	643.0		
(2 inches / minute)									
Lo = 1.3" Yield									
Lo = 2.0" Break									
Dimensional Stability	Average Dimensional Change						%	-0.32	
ASTM D1204 (Modified)									
Tear Resistance	Average Tear Resistance			MD	306.9 N	69.0 lbs			
ASTM D1004 (Modified)				TD	280.2 N	63.0 lbs			
Puncture Resistance						CERTIFIED			
FTMS 101 Method 2065 Modified									
Puncture Resistance	Average Peak Load				702.8 N		158.0 lbs		
ASTM D4833 (Modified)									
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/13/2015**

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Quality Control Department



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ROLL # F15B075079**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.93 mm	76 mil		Thickness	2.03 mm	80 mil
Measurement	MAX	2.11 mm	83 mil		Length	117.349 m	385 feet
ASTM D5994	AVE	2.05 mm	81 mil		Width	7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							203 minutes
Asperity	Average	Top				30 mil	
ASTM D7466		Bottom				29 mil	
Specific Gravity	Average Density				g/cc		.935
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.32
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.3
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break	MD		46 N/mm	263 psi	3282 psi	
ASTM D6693		TD		47 N/mm	270 psi	3370 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	527.0	
ASTM D6693		TD			%	635.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%		-0.32
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		298.0 N			67.0 lbs
ASTM D1004 (Modified)		TD		271.3 N			61.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				702.8 N		158.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/13/2015**

Signature


Quality Control Department



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ROLL # F15B076080**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.94 mm	76 mil	Thickness		2.03 mm	80 mil	
Measurement	MAX	2.10 mm	83 mil	Length		117.349 m	385 feet	
ASTM D5994	AVE	2.04 mm	80 mil	Width		7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							203 minutes	
Asperity	Average	Top				31 mil		
ASTM D7466		Bottom				31 mil		
Specific Gravity	Average Density				g/cc	.935		
ASTM D792								
MFI ASTM D1238 COND. E								
Grade	7104		Melt Flow Index 190C/2160 g - g/10 min				.32	
Carbon Black Content ASTM D4218	Range				%	2.3		
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1	
Tensile Strength	Average Strength @ Break			MD	46 N/mm	263 psi	3282 psi	
ASTM D6693				TD	47 N/mm	270 psi	3370 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break			MD		%	527.0	
ASTM D6693				TD		%	635.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change							
ASTM D1204 (Modified)					%	-0.32		
Tear Resistance	Average Tear Resistance			MD	298.0 N	67.0 lbs		
ASTM D1004 (Modified)				TD	271.3 N	61.0 lbs		
Puncture Resistance							CERTIFIED	
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load				702.8 N	158.0 lbs		
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs	CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/14/2015

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ROLL # F15B076081**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.94 mm	76 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.13 mm	84 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.06 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							203 minutes
Asperity	Average	Top					31 mil
ASTM D7466		Bottom					30 mil
Specific Gravity	Average Density				g/cc		.935
ASTM D792							
MFI ASTM D1238 COND. E		Melt Flow Index 190C/2160 g - g/10 min					.32
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.3
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break	MD	46 N/mm	263 psi			3282 psi
ASTM D6693		TD	47 N/mm	270 psi			3370 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%		527.0
ASTM D6693		TD			%		635.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%		-0.32
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD	298.0 N				67.0 lbs
ASTM D1004 (Modified)		TD	271.3 N				61.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load		702.8 N				158.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures		1500 Hrs				CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/14/2015**

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Quality Control Department



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ROLL # F15B076082**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC		ENGLISH		METRIC		ENGLISH			
Thickness	MIN	1.98	mm	78	mil	Thickness	2.03	mm	80	mil	
Measurement	MAX	2.14	mm	84	mil	Length	117.349	m	385	feet	
ASTM D5994	AVE	2.07	mm	81	mil	Width	7.01	m	23	feet	
(Modified)											
OIT(Standard) ASTM D 3895									203	minutes	
Asperity	Average			Top					29	mil	
ASTM D7466				Bottom					30	mil	
Specific Gravity			Average Density			g/cc			.935		
ASTM D792											
MFI ASTM D1238 COND. E									.32		
Grade	7104			Melt Flow Index 190C/2160 g - g/10 min							
Carbon Black Content ASTM D4218	Range					%			2.3		
Carbon Black Dispersion ASTM D5596	Category								10 in Category 1		
Tensile Strength	Average Strength @ Break			MD	46	N/mm	263	ppi	3282	psi	
ASTM D6693				TD	47	N/mm	270	ppi	3370	psi	
(2 inches / minute)											
Tensile Elongation	Average Elongation @Break			MD				%	527.0		
ASTM D6693				TD				%	635.0		
(2 inches / minute)											
Lo = 1.3" Yield											
Lo = 2.0" Break											
Dimensional Stability			Average Dimensional Change						%	-0.32	
ASTM D1204 (Modified)											
Tear Resistance	Average Tear Resistance			MD			298.0	N	67.0	lbs	
ASTM D1004 (Modified)				TD			271.3	N	61.0	lbs	
Puncture Resistance									CERTIFIED		
FTMS 101 Method 2065 Modified											
Puncture Resistance			Average Peak Load					702.8	N	158.0	lbs
ASTM D4833 (Modified)											
ESCR ASTM D1693			Minumum Hrs w/o Failures			1500 Hrs			CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/14/2015

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Quality Control Department



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ROLL # F15B076083**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.99 mm	79 mil	Thickness		2.03 mm	80 mil	
Measurement	MAX	2.15 mm	85 mil	Length		117.349 m	385 feet	
ASTM D5994	AVE	2.07 mm	81 mil	Width		7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							203 minutes	
Asperity	Average	Top				30 mil		
ASTM D7466		Bottom				31 mil		
Specific Gravity	Average Density			g/cc		.935		
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min					.32		
Grade	7104							
Carbon Black Content ASTM D4218	Range			%		2.3		
Carbon Black Dispersion ASTM D5596	Category					10 in Category 1		
Tensile Strength	Average Strength @ Break			MD	46 N/mm	263 psi	3282 psi	
ASTM D6693				TD	47 N/mm	270 psi	3370 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break			MD		%	527.0	
ASTM D6693				TD		%	635.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change					%	-0.32	
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance			MD	298.0 N	67.0 lbs		
ASTM D1004 (Modified)				TD	271.3 N	61.0 lbs		
Puncture Resistance						CERTIFIED		
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load					702.8 N	158.0 lbs	
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures			1500 Hrs		CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/14/2015

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Quality Control Department



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ROLL # F15B076084**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.98 mm	78 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.14 mm	84 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.06 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							203 minutes
Asperity	Average	Top					31 mil
ASTM D7466		Bottom					31 mil
Specific Gravity	Average Density				g/cc		.935
ASTM D792							
MFI ASTM D1238 COND. E		Melt Flow Index 190C/2160 g - g/10 min					.32
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.2
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break	MD	46 N/mm	262 psi			3278 psi
ASTM D6693		TD	47 N/mm	266 psi			3324 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%		526.0
ASTM D6693		TD			%		625.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%		-0.32
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD	298.0 N				67.0 lbs
ASTM D1004 (Modified)		TD	271.3 N				61.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load		702.8 N				158.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures		1500 Hrs				CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/14/2015**

Signature


Quality Control Department



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ROLL # F15B076085**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.95 mm	77 mil	Thickness		2.03 mm	80 mil	
Measurement	MAX	2.16 mm	85 mil	Length		117.349 m	385 feet	
ASTM D5994	AVE	2.06 mm	81 mil	Width		7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							203 minutes	
Asperity	Average	Top				30 mil		
ASTM D7466		Bottom				30 mil		
Specific Gravity	Average Density			g/cc		.935		
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min					.32		
Grade	7104							
Carbon Black Content ASTM D4218	Range			%		2.2		
Carbon Black Dispersion ASTM D5596	Category					10 in Category 1		
Tensile Strength	Average Strength @ Break			MD	46 N/mm	262 psi	3278 psi	
ASTM D6693				TD	47 N/mm	266 psi	3324 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break			MD		%	526.0	
ASTM D6693				TD		%	625.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change					%	-0.32	
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance			MD	298.0 N	67.0 lbs		
ASTM D1004 (Modified)				TD	271.3 N	61.0 lbs		
Puncture Resistance						CERTIFIED		
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load					702.8 N	158.0 lbs	
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures			1500 Hrs		CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/14/2015

Signature


Quality Control Department



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ROLL # F15B076086**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.96 mm	77 mil	Thickness		2.03 mm	80 mil	
Measurement	MAX	2.11 mm	83 mil	Length		117.349 m	385 feet	
ASTM D5994	AVE	2.04 mm	80 mil	Width		7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							203 minutes	
Asperity	Average	Top				26 mil		
ASTM D7466		Bottom				34 mil		
Specific Gravity	Average Density				g/cc	.935		
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.32	
Grade	7104							
Carbon Black Content ASTM D4218	Range				%	2.2		
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1	
Tensile Strength	Average Strength @ Break			MD	46 N/mm	262 psi	3278 psi	
ASTM D6693				TD	47 N/mm	266 psi	3324 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break			MD		%	526.0	
ASTM D6693				TD		%	625.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change						% -0.32	
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance			MD	298.0 N	67.0 lbs		
ASTM D1004 (Modified)				TD	271.3 N	61.0 lbs		
Puncture Resistance							CERTIFIED	
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load				702.8 N	158.0 lbs		
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs	CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/14/2015

Signature


Quality Control Department



quality certificate

ROLL # F15B076087**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.94 mm	76 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.11 mm	83 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.03 mm	80 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							203 minutes
Asperity	Average	Top					26 mil
ASTM D7466		Bottom					34 mil
Specific Gravity	Average Density				g/cc		.935
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.32
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.2
Carbon Black Dispersion ASTM D5596	Category		10 in Category 1				
Tensile Strength	Average Strength @ Break			MD	46 N/mm	262 psi	3278 psi
ASTM D6693				TD	47 N/mm	266 psi	3324 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	526.0
ASTM D6693				TD		%	625.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change					%	-0.32
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	298.0 N		67.0 lbs
ASTM D1004 (Modified)				TD	271.3 N		61.0 lbs
Puncture Resistance							
FTMS 101 Method 2065 Modified	CERTIFIED						
Puncture Resistance	Average Peak Load				702.8 N		158.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/14/2015**

Signature

Quality Control Department



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ROLL # F15B076088**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.92 mm	76 mil	Thickness	2.03 mm	80 mil	
Measurement	MAX	2.18 mm	86 mil	Length	117.349 m	385 feet	
ASTM D5994	AVE	2.03 mm	80 mil	Width	7.01 m	23 feet	
(Modified)							
OIT(Standard) ASTM D 3895						203 minutes	
Asperity	Average	Top				28 mil	
ASTM D7466		Bottom				31 mil	
Specific Gravity	Average Density				g/cc	.935	
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min					.32	
Grade	7104						
Carbon Black Content ASTM D4218	Range				%	2.2	
Carbon Black Dispersion ASTM D5596	Category				10 in Category 1		
Tensile Strength	Average Strength @ Break		MD	46 N/mm	262 psi	3278 psi	
ASTM D6693			TD	47 N/mm	266 psi	3324 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break		MD		%	526.0	
ASTM D6693			TD		%	625.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%	-0.32	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance		MD	298.0 N	67.0 lbs		
ASTM D1004 (Modified)			TD	271.3 N	61.0 lbs		
Puncture Resistance					CERTIFIED		
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				702.8 N	158.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs	CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/14/2015

Signature


Quality Control Department



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ROLL # F15B076089**LOT # CEK810140****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.90 mm	75 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.17 mm	86 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.03 mm	80 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							203 minutes
Asperity	Average	Top				28 mil	
ASTM D7466		Bottom				30 mil	
Specific Gravity	Average Density			g/cc		.935	
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min					.32	
Grade	7104						
Carbon Black Content ASTM D4218	Range			%		2.4	
Carbon Black Dispersion ASTM D5596	Category					10 in Category 1	
Tensile Strength	Average Strength @ Break	MD		47 N/mm	271 psi	3388 psi	
ASTM D6693		TD		53 N/mm	300 psi	3750 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	536.0	
ASTM D6693		TD			%	649.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change			%		-0.32	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		289.1 N		65.0 lbs	
ASTM D1004 (Modified)		TD		289.1 N		65.0 lbs	
Puncture Resistance						CERTIFIED	
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load			689.4 N		155.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures			1500 Hrs		CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/14/2015**

Signature


Quality Control Department



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ROLL # F15B076090**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.92 mm	76 mil	Thickness		2.03 mm	80 mil	
Measurement	MAX	2.14 mm	84 mil	Length		117.349 m	385 feet	
ASTM D5994	AVE	2.03 mm	80 mil	Width		7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							210 minutes	
Asperity	Average	Top				23 mil		
ASTM D7466		Bottom				36 mil		
Specific Gravity	Average Density				g/cc	.935		
ASTM D792								
MFI ASTM D1238 COND. E			Melt Flow Index 190C/2160 g - g/10 min				.37	
Grade	7104							
Carbon Black Content ASTM D4218	Range				%	2.4		
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1	
Tensile Strength	Average Strength @ Break			MD	47 N/mm	271 psi	3388 psi	
ASTM D6693				TD	53 N/mm	300 psi	3750 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break			MD		%	536.0	
ASTM D6693				TD		%	649.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change					%	-0.15	
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance			MD	289.1 N	65.0 lbs		
ASTM D1004 (Modified)				TD	289.1 N	65.0 lbs		
Puncture Resistance							CERTIFIED	
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load				689.4 N	155.0 lbs		
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures		1500 Hrs				CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/14/2015

Signature


Quality Control Department



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ROLL # F15B076091**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.93 mm	76 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.09 mm	82 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.03 mm	80 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							210 minutes
Asperity	Average	Top				24 mil	
ASTM D7466		Bottom				36 mil	
Specific Gravity	Average Density				g/cc	.935	
ASTM D792							
MFI ASTM D1238 COND. E			Melt Flow Index 190C/2160 g - g/10 min				.37
Grade	7104						
Carbon Black Content ASTM D4218	Range				%	2.4	
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	47 N/mm	271 psi	3388 psi
ASTM D6693				TD	53 N/mm	300 psi	3750 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	536.0
ASTM D6693				TD		%	649.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%	-0.15	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	289.1 N	65.0 lbs	
ASTM D1004 (Modified)				TD	289.1 N	65.0 lbs	
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				689.4 N	155.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs	CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/14/2015

Signature


Quality Control Department



quality certificate

ROLL # F15B076092**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.93 mm	76 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.12 mm	83 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.03 mm	80 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							210 minutes
Asperity	Average	Top					27 mil
ASTM D7466		Bottom					28 mil
Specific Gravity	Average Density				g/cc		.935
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.37
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.4
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	47 N/mm	271 psi	3388 psi
ASTM D6693				TD	53 N/mm	300 psi	3750 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	536.0
ASTM D6693				TD		%	649.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change					%	-0.15
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	289.1 N		65.0 lbs
ASTM D1004 (Modified)				TD	289.1 N		65.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				689.4 N		155.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/14/2015**

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ROLL # F15B076093**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.98 mm	78 mil		Thickness	2.03 mm	80 mil
Measurement	MAX	2.16 mm	85 mil		Length	117.349 m	385 feet
ASTM D5994							
(Modified)	AVE	2.06 mm	81 mil		Width	7.01 m	23 feet
OIT(Standard) ASTM D 3895							210 minutes
Asperity	Average	Top				31 mil	
ASTM D7466		Bottom				30 mil	
Specific Gravity	Average Density				g/cc		.935
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.37
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.4
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	47 N/mm	271 psi	3388 psi
ASTM D6693				TD	53 N/mm	300 psi	3750 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	536.0
ASTM D6693				TD		%	649.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change						%
ASTM D1204 (Modified)							-0.15
Tear Resistance	Average Tear Resistance			MD	289.1 N	65.0 lbs	
ASTM D1004 (Modified)				TD	289.1 N	65.0 lbs	
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				689.4 N		155.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/14/2015**

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Quality Control Department



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ROLL # F15B076094**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC		ENGLISH		METRIC		ENGLISH			
Thickness	MIN	1.99	mm	78	mil	Thickness	2.03	mm	80	mil	
Measurement	MAX	2.12	mm	84	mil	Length	117.349	m	385	feet	
ASTM D5994	AVE	2.07	mm	81	mil	Width	7.01	m	23	feet	
(Modified)											
OIT(Standard) ASTM D 3895									210 minutes		
Asperity	Average			Top					24 mil		
ASTM D7466				Bottom					33 mil		
Specific Gravity	Average Density				g/cc				.935		
ASTM D792											
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min								.37		
Grade	7104										
Carbon Black Content ASTM D4218	Range				%				2.4		
Carbon Black Dispersion ASTM D5596	Category								10 in Category 1		
Tensile Strength	Average Strength @ Break			MD	48	N/mm	272	ppi	3403	psi	
ASTM D6693				TD	47	N/mm	267	ppi	3332	psi	
(2 inches / minute)											
Tensile Elongation	Average Elongation @Break			MD			%		567.0		
ASTM D6693				TD			%		636.0		
(2 inches / minute)											
Lo = 1.3" Yield											
Lo = 2.0" Break											
Dimensional Stability	Average Dimensional Change						%		-0.15		
ASTM D1204 (Modified)											
Tear Resistance	Average Tear Resistance			MD	289.1		N		65.0		lbs
ASTM D1004 (Modified)				TD	289.1		N		65.0		lbs
Puncture Resistance											
FTMS 101 Method 2065 Modified									CERTIFIED		
Puncture Resistance	Average Peak Load				689.4		N		155.0		lbs
ASTM D4833 (Modified)											
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500		Hrs		CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/14/2015

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ROLL # F15B076095**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.98 mm	78 mil		Thickness	2.03 mm	80 mil
Measurement	MAX	2.15 mm	85 mil		Length	117.349 m	385 feet
ASTM D5994	AVE	2.09 mm	82 mil		Width	7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							210 minutes
Asperity	Average	Top				24 mil	
ASTM D7466		Bottom				36 mil	
Specific Gravity	Average Density				g/cc		.935
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.37
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.4
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break	MD		48 N/mm	272 psi	3403 psi	
ASTM D6693		TD		47 N/mm	267 psi	3332 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	567.0	
ASTM D6693		TD			%	636.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%		-0.15
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		289.1 N			65.0 lbs
ASTM D1004 (Modified)		TD		289.1 N			65.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				689.4 N		155.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/14/2015**

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ROLL # F15B077097**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.96 mm	77 mil	Thickness	2.03 mm	80 mil	
Measurement	MAX	2.11 mm	83 mil	Length	117.349 m	385 feet	
ASTM D5994	AVE	2.03 mm	80 mil	Width	7.01 m	23 feet	
(Modified)							
OIT(Standard) ASTM D 3895							210 minutes
Asperity	Average	Top				25 mil	
ASTM D7466		Bottom				35 mil	
Specific Gravity	Average Density				g/cc		.935
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.37
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.4
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break	MD		48 N/mm	272 psi	3403 psi	
ASTM D6693		TD		47 N/mm	267 psi	3332 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	567.0	
ASTM D6693		TD			%	636.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%		-0.15
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		289.1 N			65.0 lbs
ASTM D1004 (Modified)		TD		289.1 N			65.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				689.4 N		155.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/15/2015

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ROLL # F15B077098**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.85 mm	73 mil		Thickness	2.03 mm	80 mil	
Measurement	MAX	2.15 mm	85 mil		Length	117.349 m	385 feet	
ASTM D5994								
(Modified)	AVE	2.03 mm	80 mil		Width	7.01 m	23 feet	
OIT(Standard) ASTM D 3895							210 minutes	
Asperity	Average	Top				26 mil		
ASTM D7466		Bottom				34 mil		
Specific Gravity	Average Density				g/cc		.935	
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.37	
Grade	7104							
Carbon Black Content ASTM D4218	Range				%		2.3	
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1	
Tensile Strength	Average Strength @ Break			MD	48 N/mm	272 psi	3403 psi	
ASTM D6693				TD	47 N/mm	267 psi	3332 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break			MD		%	567.0	
ASTM D6693				TD		%	636.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change						%	
ASTM D1204 (Modified)							-0.15	
Tear Resistance	Average Tear Resistance			MD	289.1 N	65.0 lbs		
ASTM D1004 (Modified)				TD	289.1 N	65.0 lbs		
Puncture Resistance							CERTIFIED	
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load				689.4 N		155.0 lbs	
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/15/2015**

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Quality Control Department



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ROLL # F15B077099**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.83 mm	72 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.18 mm	86 mil	Length		117.349 m	385 feet
ASTM D5994				Width		7.01 m	23 feet
(Modified)	AVE	2.05 mm	81 mil				
OIT(Standard) ASTM D 3895							210 minutes
Asperity	Average	Top				25 mil	
ASTM D7466		Bottom				35 mil	
Specific Gravity	Average Density				g/cc		.935
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.37
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.3
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	48 N/mm	272 psi	3403 psi
ASTM D6693				TD	47 N/mm	267 psi	3332 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	567.0
ASTM D6693				TD		%	636.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change						%
ASTM D1204 (Modified)							-0.15
Tear Resistance	Average Tear Resistance			MD	289.1 N	65.0 lbs	
ASTM D1004 (Modified)				TD	289.1 N	65.0 lbs	
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				689.4 N		155.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/15/2015**

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Quality Control Department



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ROLL # F15B077100**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.86 mm	73 mil		Thickness	2.03 mm	80 mil
Measurement	MAX	2.19 mm	86 mil		Length	117.349 m	385 feet
ASTM D5994							
(Modified)	AVE	2.06 mm	81 mil		Width	7.01 m	23 feet
OIT(Standard) ASTM D 3895							210 minutes
Asperity	Average	Top				25 mil	
ASTM D7466		Bottom				33 mil	
Specific Gravity	Average Density				g/cc		.932
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.37
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.3
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	47 N/mm	270 psi	3375 psi
ASTM D6693				TD	47 N/mm	269 psi	3359 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	547.0
ASTM D6693				TD		%	635.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change						%
ASTM D1204 (Modified)							-0.15
Tear Resistance	Average Tear Resistance			MD	302.5 N	68.0 lbs	
ASTM D1004 (Modified)				TD	280.2 N	63.0 lbs	
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				671.6 N		151.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/15/2015**

Signature


Quality Control Department



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ROLL # F15B077101**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.95 mm	77 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.15 mm	84 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.05 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							210 minutes
Asperity	Average	Top					25 mil
ASTM D7466		Bottom					35 mil
Specific Gravity	Average Density				g/cc		.932
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.37
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.3
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	47 N/mm	270 psi	3375 psi
ASTM D6693				TD	47 N/mm	269 psi	3359 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	547.0
ASTM D6693				TD		%	635.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change					%	-0.15
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	302.5 N		68.0 lbs
ASTM D1004 (Modified)				TD	280.2 N		63.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				671.6 N		151.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/15/2015**

Signature


Quality Control Department



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ROLL # F15B077102**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.92 mm	76 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.12 mm	84 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.02 mm	80 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							210 minutes
Asperity	Average	Top				27 mil	
ASTM D7466		Bottom				33 mil	
Specific Gravity	Average Density				g/cc		.932
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.37
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.3
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break		MD	47 N/mm	270 psi	3375 psi	
ASTM D6693				TD	47 N/mm	269 psi	3359 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break		MD		%	547.0	
ASTM D6693				TD		%	635.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%		-0.15
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance		MD	302.5 N	68.0 lbs		
ASTM D1004 (Modified)			TD	280.2 N	63.0 lbs		
Puncture Resistance							
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				671.6 N		151.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/15/2015**

Signature


Quality Control Department



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ROLL # F15B077103**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.88 mm	74 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.08 mm	82 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.03 mm	80 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							210 minutes
Asperity	Average	Top				28 mil	
ASTM D7466		Bottom				35 mil	
Specific Gravity	Average Density				g/cc		.932
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.37
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.2
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break	MD		47 N/mm	270 psi	3375 psi	
ASTM D6693		TD		47 N/mm	269 psi	3359 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	547.0	
ASTM D6693		TD			%	635.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%		-0.15
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		302.5 N			68.0 lbs
ASTM D1004 (Modified)		TD		280.2 N			63.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				671.6 N		151.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/15/2015**

Signature


Quality Control Department



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ROLL # F15B077104**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.90 mm	75 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.16 mm	85 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.04 mm	80 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							210 minutes
Asperity	Average	Top				26 mil	
ASTM D7466		Bottom				33 mil	
Specific Gravity	Average Density			g/cc		.932	
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min					.37	
Grade	7104						
Carbon Black Content ASTM D4218	Range			%		2.2	
Carbon Black Dispersion ASTM D5596	Category					10 in Category 1	
Tensile Strength	Average Strength @ Break	MD		47 N/mm	270 psi	3375 psi	
ASTM D6693		TD		47 N/mm	269 psi	3359 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	547.0	
ASTM D6693		TD			%	635.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change			%		-0.15	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		302.5 N	68.0 lbs		
ASTM D1004 (Modified)		TD		280.2 N	63.0 lbs		
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load			671.6 N	151.0 lbs		
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures			1500 Hrs	CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/15/2015**

Signature


Quality Control Department



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ROLL # F15B077105**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.87 mm	74 mil	Thickness		2.03 mm	80 mil	
Measurement	MAX	2.16 mm	85 mil	Length		117.349 m	385 feet	
ASTM D5994	AVE	2.05 mm	81 mil	Width		7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							210 minutes	
Asperity	Average	Top				26 mil		
ASTM D7466		Bottom				34 mil		
Specific Gravity	Average Density				g/cc		.932	
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.37	
Grade	7104							
Carbon Black Content ASTM D4218	Range				%		2.3	
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1	
Tensile Strength	Average Strength @ Break		MD	46 N/mm	263 psi	3289 psi		
ASTM D6693				TD	46 N/mm	260 psi	3250 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break		MD		%	542.0		
ASTM D6693				TD		%	622.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change				%		-0.15	
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance		MD	302.5 N	68.0 lbs			
ASTM D1004 (Modified)			TD	280.2 N	63.0 lbs			
Puncture Resistance					CERTIFIED			
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load				671.6 N		151.0 lbs	
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/15/2015**

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ROLL # F15B077106**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.93 mm	76 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.10 mm	83 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.02 mm	80 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							210 minutes
Asperity	Average	Top				25 mil	
ASTM D7466		Bottom				35 mil	
Specific Gravity	Average Density			g/cc		.932	
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min					.37	
Grade	7104						
Carbon Black Content ASTM D4218	Range			%		2.3	
Carbon Black Dispersion ASTM D5596	Category					10 in Category 1	
Tensile Strength	Average Strength @ Break	MD		46 N/mm	263 psi	3289 psi	
ASTM D6693		TD		46 N/mm	260 psi	3250 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	542.0	
ASTM D6693		TD			%	622.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change			%		-0.15	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		302.5 N	68.0 lbs		
ASTM D1004 (Modified)		TD		280.2 N	63.0 lbs		
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load			671.6 N	151.0 lbs		
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures			1500 Hrs	CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/15/2015**

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ROLL # F15B077107**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.94 mm	76 mil		Thickness	2.03 mm	80 mil
Measurement	MAX	2.13 mm	84 mil		Length	117.349 m	385 feet
ASTM D5994							
(Modified)	AVE	2.02 mm	80 mil		Width	7.01 m	23 feet
OIT(Standard) ASTM D 3895							210 minutes
Asperity	Average	Top				26 mil	
ASTM D7466		Bottom				34 mil	
Specific Gravity	Average Density				g/cc		.932
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.37
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.3
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	46 N/mm	263 psi	3289 psi
ASTM D6693				TD	46 N/mm	260 psi	3250 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	542.0
ASTM D6693				TD		%	622.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change						%
ASTM D1204 (Modified)							-0.15
Tear Resistance	Average Tear Resistance			MD	302.5 N	68.0 lbs	
ASTM D1004 (Modified)				TD	280.2 N	63.0 lbs	
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				671.6 N		151.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/15/2015**

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Quality Control Department



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ROLL # F15B077108**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.87 mm	74 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.15 mm	85 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.02 mm	80 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							210 minutes
Asperity	Average	Top					26 mil
ASTM D7466		Bottom					35 mil
Specific Gravity	Average Density				g/cc		.932
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.37
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.3
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break	MD	46 N/mm	263 psi			3289 psi
ASTM D6693		TD	46 N/mm	260 psi			3250 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%		542.0
ASTM D6693		TD			%		622.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%		-0.15
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD	302.5 N				68.0 lbs
ASTM D1004 (Modified)		TD	280.2 N				63.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load		671.6 N				151.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures		1500 Hrs				CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/15/2015**

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ROLL # F15B077109**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.93 mm	76 mil	Thickness		2.03 mm	80 mil	
Measurement	MAX	2.11 mm	83 mil	Length		117.349 m	385 feet	
ASTM D5994	AVE	2.03 mm	80 mil	Width		7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							210 minutes	
Asperity	Average	Top				30 mil		
ASTM D7466		Bottom				34 mil		
Specific Gravity	Average Density				g/cc	.932		
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.37	
Grade	7104							
Carbon Black Content ASTM D4218	Range				%	2.3		
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1	
Tensile Strength	Average Strength @ Break		MD	46 N/mm	263 psi	3289 psi		
ASTM D6693				TD	46 N/mm	260 psi	3250 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break		MD			%	542.0	
ASTM D6693				TD			%	622.0
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change						%	
ASTM D1204 (Modified)							-0.15	
Tear Resistance	Average Tear Resistance		MD		302.5 N	68.0 lbs		
ASTM D1004 (Modified)			TD		280.2 N	63.0 lbs		
Puncture Resistance							CERTIFIED	
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load				671.6 N		151.0 lbs	
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/15/2015

Signature


Quality Control Department



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ROLL # F15B077110**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH		METRIC	ENGLISH
Thickness	MIN	1.83 mm	72 mil	Thickness	2.03 mm	80 mil
Measurement	MAX	2.20 mm	86 mil	Length	117.349 m	385 feet
ASTM D5994	AVE	2.08 mm	82 mil	Width	7.01 m	23 feet
(Modified)						
OIT(Standard) ASTM D 3895						210 minutes
Asperity	Average	Top				26 mil
ASTM D7466		Bottom				34 mil
Specific Gravity	Average Density			g/cc		.934
ASTM D792						
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min					.37
Grade	7104					
Carbon Black Content ASTM D4218	Range			%		2.3
Carbon Black Dispersion ASTM D5596	Category					10 in Category 1
Tensile Strength	Average Strength @ Break	MD	47 N/mm	268 psi		3352 psi
ASTM D6693		TD	44 N/mm	250 psi		3125 psi
(2 inches / minute)						
Tensile Elongation	Average Elongation @Break	MD		%		544.0
ASTM D6693		TD		%		594.0
(2 inches / minute)						
Lo = 1.3" Yield						
Lo = 2.0" Break						
Dimensional Stability	Average Dimensional Change			%		-0.15
ASTM D1204 (Modified)						
Tear Resistance	Average Tear Resistance	MD	306.9 N			69.0 lbs
ASTM D1004 (Modified)		TD	275.8 N			62.0 lbs
Puncture Resistance						CERTIFIED
FTMS 101 Method 2065 Modified						
Puncture Resistance	Average Peak Load		685.0 N			154.0 lbs
ASTM D4833 (Modified)						
ESCR ASTM D1693	Minumum Hrs w/o Failures		1500 Hrs			CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/15/2015**

Signature


Quality Control Department



quality certificate

ROLL # F15B081001**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.89 mm	75 mil		Thickness	2.03 mm	80 mil
Measurement	MAX	2.20 mm	86 mil		Length	117.349 m	385 feet
ASTM D5994							
(Modified)	AVE	2.05 mm	81 mil		Width	7.01 m	23 feet
OIT(Standard) ASTM D 3895							210 minutes
Asperity	Average	Top				30 mil	
ASTM D7466		Bottom				34 mil	
Specific Gravity	Average Density				g/cc		.934
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.37
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.3
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	47 N/mm	268 psi	3352 psi
ASTM D6693				TD	44 N/mm	250 psi	3125 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	544.0
ASTM D6693				TD		%	594.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change						%
ASTM D1204 (Modified)							-0.15
Tear Resistance	Average Tear Resistance			MD	306.9 N	69.0 lbs	
ASTM D1004 (Modified)				TD	275.8 N	62.0 lbs	
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				685.0 N		154.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/16/2015**

Signature

Quality Control Department



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ROLL # F15B081002**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.89 mm	75 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.20 mm	87 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.06 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							210 minutes
Asperity	Average	Top				29 mil	
ASTM D7466		Bottom				35 mil	
Specific Gravity	Average Density				g/cc	.934	
ASTM D792							
MFI ASTM D1238 COND. E			Melt Flow Index 190C/2160 g - g/10 min				.37
Grade	7104						
Carbon Black Content ASTM D4218	Range				%	2.3	
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	47 N/mm	268 psi	3352 psi
ASTM D6693				TD	44 N/mm	250 psi	3125 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	544.0
ASTM D6693				TD		%	594.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%	-0.15	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	306.9 N	69.0 lbs	
ASTM D1004 (Modified)				TD	275.8 N	62.0 lbs	
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				685.0 N	154.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs	CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/16/2015

Signature


Quality Control Department



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ROLL # F15B081003**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.97 mm	77 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.18 mm	86 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.09 mm	82 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							210 minutes
Asperity	Average	Top					29 mil
ASTM D7466		Bottom					32 mil
Specific Gravity	Average Density				g/cc		.934
ASTM D792							
MFI ASTM D1238 COND. E		Melt Flow Index 190C/2160 g - g/10 min					.37
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.3
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength				MD	47 N/mm	268 psi	3352 psi
ASTM D6693	Average Strength @ Break			TD	44 N/mm	250 psi	3125 psi
(2 inches / minute)							
Tensile Elongation				MD		%	544.0
ASTM D6693	Average Elongation @Break			TD		%	594.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change					%	-0.15
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	306.9 N		69.0 lbs
ASTM D1004 (Modified)				TD	275.8 N		62.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				685.0 N		154.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/16/2015**

Signature


Quality Control Department



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ROLL # F15B081004**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.91 mm	75 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.19 mm	86 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.06 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							210 minutes
Asperity	Average	Top				28 mil	
ASTM D7466		Bottom				36 mil	
Specific Gravity	Average Density				g/cc	.934	
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min					.37	
Grade	7104						
Carbon Black Content ASTM D4218	Range				%	2.3	
Carbon Black Dispersion ASTM D5596	Category					10 in Category 1	
Tensile Strength	Average Strength @ Break	MD		47 N/mm	268 psi	3352 psi	
ASTM D6693		TD		44 N/mm	250 psi	3125 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	544.0	
ASTM D6693		TD			%	594.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%	-0.15	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		306.9 N	69.0 lbs		
ASTM D1004 (Modified)		TD		275.8 N	62.0 lbs		
Puncture Resistance					CERTIFIED		
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load			685.0 N	154.0 lbs		
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures			1500 Hrs	CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/16/2015**

Signature


Quality Control Department



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ROLL # F15B081005**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.89 mm	75 mil		Thickness	2.03 mm	80 mil
Measurement	MAX	2.21 mm	87 mil		Length	117.349 m	385 feet
ASTM D5994							
(Modified)	AVE	2.07 mm	81 mil		Width	7.01 m	23 feet
OIT(Standard) ASTM D 3895							210 minutes
Asperity	Average	Top				26 mil	
ASTM D7466		Bottom				34 mil	
Specific Gravity	Average Density				g/cc	.934	
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.37
Grade	7104						
Carbon Black Content ASTM D4218	Range				%	2.3	
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break	MD		47 N/mm	268 psi	3352 psi	
ASTM D6693		TD		44 N/mm	250 psi	3125 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	544.0	
ASTM D6693		TD			%	594.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%	-0.15	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		306.9 N			69.0 lbs
ASTM D1004 (Modified)		TD		275.8 N			62.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				685.0 N	154.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs	CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/16/2015**

Signature

Quality Control Department



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ROLL # F15B081006**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.87 mm	73 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.25 mm	89 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.09 mm	82 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							210 minutes
Asperity	Average	Top					25 mil
ASTM D7466		Bottom					35 mil
Specific Gravity	Average Density				g/cc		.934
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.37
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.3
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	47 N/mm	268 psi	3352 psi
ASTM D6693				TD	44 N/mm	250 psi	3125 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	544.0
ASTM D6693				TD		%	594.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change					%	-0.15
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	306.9 N		69.0 lbs
ASTM D1004 (Modified)				TD	275.8 N		62.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				685.0 N		154.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/16/2015**

Signature


Quality Control Department



quality certificate

ROLL # F15B081007**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH		
Thickness	MIN	1.92 mm	76 mil	Thickness	2.03 mm	80 mil			
Measurement	MAX	2.17 mm	85 mil	Length	117.349 m	385 feet			
ASTM D5994				Width	7.01 m	23 feet			
(Modified)	AVE	2.06 mm	81 mil						
OIT(Standard) ASTM D 3895							210 minutes		
Asperity	Average	Top				25 mil			
ASTM D7466		Bottom				33 mil			
Specific Gravity	Average Density				g/cc	.934			
ASTM D792									
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.37		
Grade	7104								
Carbon Black Content ASTM D4218	Range				%	2.2			
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1		
Tensile Strength	Average Strength @ Break			MD	47 N/mm	268 psi	3352 psi		
ASTM D6693				TD	44 N/mm	250 psi	3125 psi		
(2 inches / minute)									
Tensile Elongation	Average Elongation @Break			MD		%	544.0		
ASTM D6693				TD		%	594.0		
(2 inches / minute)									
Lo = 1.3" Yield									
Lo = 2.0" Break									
Dimensional Stability	Average Dimensional Change						%	-0.15	
ASTM D1204 (Modified)									
Tear Resistance	Average Tear Resistance			MD	306.9 N	69.0 lbs			
ASTM D1004 (Modified)				TD	275.8 N	62.0 lbs			
Puncture Resistance							CERTIFIED		
FTMS 101 Method 2065 Modified									
Puncture Resistance	Average Peak Load						685.0 N	154.0 lbs	
ASTM D4833 (Modified)									
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/16/2015

Signature


Quality Control Department



quality certificate

ROLL # F15B081008**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.91 mm	75 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.15 mm	85 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.07 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							210 minutes
Asperity	Average	Top				26 mil	
ASTM D7466		Bottom				33 mil	
Specific Gravity	Average Density				g/cc	.934	
ASTM D792							
MFI ASTM D1238 COND. E			Melt Flow Index 190C/2160 g - g/10 min			.37	
Grade	7104						
Carbon Black Content ASTM D4218	Range				%	2.2	
Carbon Black Dispersion ASTM D5596	Category					10 in Category 1	
Tensile Strength	Average Strength @ Break			MD	47 N/mm	268 psi	3352 psi
ASTM D6693				TD	44 N/mm	250 psi	3125 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	544.0
ASTM D6693				TD		%	594.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change					%	-0.15
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	306.9 N	69.0 lbs	
ASTM D1004 (Modified)				TD	275.8 N	62.0 lbs	
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				685.0 N	154.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs	CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/16/2015**

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ROLL # F15B081009**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.89 mm	75 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.18 mm	86 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.05 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							210 minutes
Asperity	Average	Top				28 mil	
ASTM D7466		Bottom				34 mil	
Specific Gravity	Average Density				g/cc	.934	
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.37
Grade	7104						
Carbon Black Content ASTM D4218	Range				%	2.2	
Carbon Black Dispersion ASTM D5596	Category				10 in Category 1		
Tensile Strength	Average Strength @ Break	MD		47 N/mm	268 psi	3352 psi	
ASTM D6693		TD		44 N/mm	250 psi	3125 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	544.0	
ASTM D6693		TD			%	594.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%	-0.15	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		306.9 N	69.0 lbs		
ASTM D1004 (Modified)		TD		275.8 N	62.0 lbs		
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				685.0 N	154.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs	CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/16/2015**

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Quality Control Department



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ROLL # F15B081010**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.92 mm	76 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.21 mm	87 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.06 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							210 minutes
Asperity	Average	Top				28 mil	
ASTM D7466		Bottom				35 mil	
Specific Gravity	Average Density			g/cc		.934	
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min					.37	
Grade	7104						
Carbon Black Content ASTM D4218	Range			%		2.3	
Carbon Black Dispersion ASTM D5596	Category					10 in Category 1	
Tensile Strength	Average Strength @ Break	MD		45 N/mm	259 psi	3239 psi	
ASTM D6693		TD		47 N/mm	270 psi	3377 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	598.0	
ASTM D6693		TD			%	530.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change					%	-0.15
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		302.5 N	68.0 lbs		
ASTM D1004 (Modified)		TD		271.3 N	61.0 lbs		
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load			711.7 N	160.0 lbs		
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures			1500 Hrs	CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/16/2015**

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Quality Control Department



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ROLL # F15B081011**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.92 mm	76 mil	Thickness	2.03 mm	80 mil	
Measurement	MAX	2.14 mm	84 mil	Length	117.349 m	385 feet	
ASTM D5994	AVE	2.04 mm	80 mil	Width	7.01 m	23 feet	
(Modified)							
OIT(Standard) ASTM D 3895							210 minutes
Asperity	Average	Top				26 mil	
ASTM D7466		Bottom				34 mil	
Specific Gravity	Average Density				g/cc	.934	
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.37
Grade	7104						
Carbon Black Content ASTM D4218	Range				%	2.3	
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break	MD		45 N/mm	259 psi	3239 psi	
ASTM D6693		TD		47 N/mm	270 psi	3377 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	598.0	
ASTM D6693		TD			%	530.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%	-0.15	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		302.5 N	68.0 lbs		
ASTM D1004 (Modified)		TD		271.3 N	61.0 lbs		
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				711.7 N	160.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures		1500 Hrs				CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/16/2015

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Quality Control Department



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ROLL # F15B081012**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.98 mm	78 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.09 mm	82 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.04 mm	80 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							210 minutes
Asperity	Average	Top				27 mil	
ASTM D7466		Bottom				35 mil	
Specific Gravity	Average Density				g/cc		.934
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.37
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.3
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break	MD		45 N/mm	259 psi	3239 psi	
ASTM D6693		TD		47 N/mm	270 psi	3377 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	598.0	
ASTM D6693		TD			%	530.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%		-0.15
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		302.5 N	68.0 lbs		
ASTM D1004 (Modified)		TD		271.3 N	61.0 lbs		
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				711.7 N		160.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/16/2015**

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Quality Control Department



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ROLL # F15B081013**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.91 mm	75 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.09 mm	82 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.03 mm	80 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							210 minutes
Asperity	Average	Top				29 mil	
ASTM D7466		Bottom				35 mil	
Specific Gravity	Average Density				g/cc	.934	
ASTM D792							
MFI ASTM D1238 COND. E			Melt Flow Index 190C/2160 g - g/10 min				.37
Grade	7104						
Carbon Black Content ASTM D4218	Range				%	2.3	
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	45 N/mm	259 psi	3239 psi
ASTM D6693				TD	47 N/mm	270 psi	3377 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	598.0
ASTM D6693				TD		%	530.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%	-0.15	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	302.5 N	68.0 lbs	
ASTM D1004 (Modified)				TD	271.3 N	61.0 lbs	
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				711.7 N	160.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures		1500 Hrs				CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/16/2015

Signature


Quality Control Department



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ROLL # F15B081014**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.95 mm	77 mil		Thickness	2.03 mm	80 mil
Measurement	MAX	2.09 mm	82 mil		Length	117.349 m	385 feet
ASTM D5994	AVE	2.03 mm	80 mil		Width	7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							210 minutes
Asperity	Average	Top				28 mil	
ASTM D7466		Bottom				34 mil	
Specific Gravity	Average Density				g/cc		.934
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.37
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.3
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break	MD		45 N/mm	259 psi	3239 psi	
ASTM D6693		TD		47 N/mm	270 psi	3377 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	598.0	
ASTM D6693		TD			%	530.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%		-0.15
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		302.5 N			68.0 lbs
ASTM D1004 (Modified)		TD		271.3 N			61.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				711.7 N		160.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/16/2015

Signature


Quality Control Department



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ROLL # F15B081015**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.86 mm	73 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.18 mm	86 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.06 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							210 minutes
Asperity	Average	Top					25 mil
ASTM D7466		Bottom					33 mil
Specific Gravity	Average Density				g/cc		.934
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.37
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.3
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	44 N/mm	253 psi	3164 psi
ASTM D6693				TD	45 N/mm	258 psi	3224 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	541.0
ASTM D6693				TD		%	606.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change					%	-0.15
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	302.5 N		68.0 lbs
ASTM D1004 (Modified)				TD	271.3 N		61.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				711.7 N		160.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/16/2015**

Signature


Quality Control Department



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ROLL # F15B081016**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.93 mm	76 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.16 mm	85 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.04 mm	80 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							210 minutes
Asperity	Average	Top				28 mil	
ASTM D7466		Bottom				34 mil	
Specific Gravity	Average Density				g/cc		.934
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.37
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.3
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break	MD		44 N/mm	253 psi	3164 psi	
ASTM D6693		TD		45 N/mm	258 psi	3224 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	541.0	
ASTM D6693		TD			%	606.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%		-0.15
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		302.5 N			68.0 lbs
ASTM D1004 (Modified)		TD		271.3 N			61.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				711.7 N		160.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/16/2015**

Signature


Quality Control Department



quality certificate

ROLL # F15B081017**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.89 mm	74 mil	Thickness		2.03 mm	80 mil	
Measurement	MAX	2.24 mm	88 mil	Length		117.349 m	385 feet	
ASTM D5994	AVE	2.07 mm	82 mil	Width		7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							210 minutes	
Asperity	Average	Top				23 mil		
ASTM D7466		Bottom				36 mil		
Specific Gravity	Average Density				g/cc		.934	
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.37	
Grade	7104							
Carbon Black Content ASTM D4218	Range				%		2.3	
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1	
Tensile Strength	Average Strength @ Break			MD	44 N/mm	253 psi	3164 psi	
ASTM D6693				TD	45 N/mm	258 psi	3224 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break			MD		%	541.0	
ASTM D6693				TD		%	606.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change						%	-0.15
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance			MD	302.5 N	68.0 lbs		
ASTM D1004 (Modified)				TD	271.3 N	61.0 lbs		
Puncture Resistance						CERTIFIED		
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load						711.7 N	160.0 lbs
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/16/2015**

Signature


Quality Control Department



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ROLL # F15B082018**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.87 mm	73 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.15 mm	85 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.06 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							210 minutes
Asperity	Average	Top				24 mil	
ASTM D7466		Bottom				36 mil	
Specific Gravity	Average Density				g/cc		.934
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.37
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.3
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break	MD		44 N/mm	253 psi	3164 psi	
ASTM D6693		TD		45 N/mm	258 psi	3224 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	541.0	
ASTM D6693		TD			%	606.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%		-0.15
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		302.5 N	68.0 lbs		
ASTM D1004 (Modified)		TD		271.3 N	61.0 lbs		
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				711.7 N		160.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/17/2015**

Signature


Quality Control Department



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ROLL # F15B082019**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.94 mm	76 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.18 mm	86 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.04 mm	80 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							210 minutes
Asperity	Average	Top				30 mil	
ASTM D7466		Bottom				35 mil	
Specific Gravity	Average Density				g/cc	.934	
ASTM D792							
MFI ASTM D1238 COND. E			Melt Flow Index 190C/2160 g - g/10 min				.37
Grade	7104						
Carbon Black Content ASTM D4218	Range				%	2.3	
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	44 N/mm	253 psi	3164 psi
ASTM D6693				TD	45 N/mm	258 psi	3224 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	541.0
ASTM D6693				TD		%	606.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%	-0.15	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	302.5 N	68.0 lbs	
ASTM D1004 (Modified)				TD	271.3 N	61.0 lbs	
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				711.7 N	160.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures		1500 Hrs				CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/17/2015

Signature


Quality Control Department



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ROLL # F15B082020**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.95 mm	77 mil	Thickness	2.03 mm	80 mil	
Measurement	MAX	2.18 mm	86 mil	Length	117.349 m	385 feet	
ASTM D5994	AVE	2.08 mm	82 mil	Width	7.01 m	23 feet	
(Modified)							
OIT(Standard) ASTM D 3895							210 minutes
Asperity	Average	Top				26 mil	
ASTM D7466		Bottom				34 mil	
Specific Gravity	Average Density				g/cc		.933
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.37
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.3
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break	MD		44 N/mm	252 psi	3146 psi	
ASTM D6693		TD		44 N/mm	254 psi	3174 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	543.0	
ASTM D6693		TD			%	610.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%		-0.15
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		302.5 N			68.0 lbs
ASTM D1004 (Modified)		TD		280.2 N			63.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				689.4 N		155.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/17/2015

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ROLL # F15B082021**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH		
Thickness	MIN	1.96 mm	77 mil	Thickness		2.03 mm	80 mil		
Measurement	MAX	2.13 mm	84 mil	Length		117.349 m	385 feet		
ASTM D5994	AVE	2.04 mm	80 mil	Width		7.01 m	23 feet		
(Modified)									
OIT(Standard) ASTM D 3895							210 minutes		
Asperity	Average	Top				30 mil			
ASTM D7466		Bottom				34 mil			
Specific Gravity	Average Density				g/cc	.933			
ASTM D792									
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.37		
Grade	7104								
Carbon Black Content ASTM D4218	Range				%	2.3			
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1		
Tensile Strength	Average Strength @ Break		MD	44 N/mm	252 psi	3146 psi			
ASTM D6693				TD	44 N/mm	254 psi	3174 psi		
(2 inches / minute)									
Tensile Elongation	Average Elongation @Break		MD			%	543.0		
ASTM D6693				TD			%	610.0	
(2 inches / minute)									
Lo = 1.3" Yield									
Lo = 2.0" Break									
Dimensional Stability	Average Dimensional Change						%	-0.15	
ASTM D1204 (Modified)									
Tear Resistance	Average Tear Resistance		MD		302.5 N	68.0 lbs			
ASTM D1004 (Modified)			TD		280.2 N	63.0 lbs			
Puncture Resistance							CERTIFIED		
FTMS 101 Method 2065 Modified									
Puncture Resistance	Average Peak Load				689.4 N	155.0 lbs			
ASTM D4833 (Modified)									
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs	CERTIFIED			

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/17/2015

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ROLL # F15B082022**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.97 mm	78 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.17 mm	86 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.09 mm	82 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							210 minutes
Asperity	Average	Top				25 mil	
ASTM D7466		Bottom				32 mil	
Specific Gravity	Average Density				g/cc	.933	
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.37
Grade	7104						
Carbon Black Content ASTM D4218	Range				%	2.3	
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	44 N/mm	252 psi	3146 psi
ASTM D6693				TD	44 N/mm	254 psi	3174 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	543.0
ASTM D6693				TD		%	610.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%	-0.15	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	302.5 N	68.0 lbs	
ASTM D1004 (Modified)				TD	280.2 N	63.0 lbs	
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				689.4 N	155.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs	CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/17/2015

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ROLL # F15B082023**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.95 mm	77 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.16 mm	85 mil	Length		117.349 m	385 feet
ASTM D5994				Width			
(Modified)	AVE	2.08 mm	82 mil			7.01 m	23 feet
OIT(Standard) ASTM D 3895							210 minutes
Asperity	Average	Top				28 mil	
ASTM D7466		Bottom				34 mil	
Specific Gravity	Average Density				g/cc	.933	
ASTM D792							
MFI ASTM D1238 COND. E			Melt Flow Index 190C/2160 g - g/10 min				.37
Grade	7104						
Carbon Black Content ASTM D4218	Range				%	2.2	
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	44 N/mm	252 psi	3146 psi
ASTM D6693				TD	44 N/mm	254 psi	3174 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	543.0
ASTM D6693				TD		%	610.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%	-0.15	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	302.5 N	68.0 lbs	
ASTM D1004 (Modified)				TD	280.2 N	63.0 lbs	
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				689.4 N	155.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs	CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/17/2015

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ROLL # F15B082024**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.91 mm	75 mil	Thickness		2.03 mm	80 mil	
Measurement	MAX	2.19 mm	86 mil	Length		117.349 m	385 feet	
ASTM D5994	AVE	2.06 mm	81 mil	Width		7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							210 minutes	
Asperity	Average	Top				29 mil		
ASTM D7466		Bottom				32 mil		
Specific Gravity	Average Density				g/cc	.933		
ASTM D792								
MFI ASTM D1238 COND. E			Melt Flow Index 190C/2160 g - g/10 min				.37	
Grade	7104							
Carbon Black Content ASTM D4218	Range				%	2.2		
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1	
Tensile Strength	Average Strength @ Break		MD	44 N/mm	252 psi	3146 psi		
ASTM D6693				TD	44 N/mm	254 psi	3174 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break		MD			%	543.0	
ASTM D6693				TD			%	610.0
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change					%	-0.15	
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance		MD	302.5 N			68.0 lbs	
ASTM D1004 (Modified)			TD	280.2 N			63.0 lbs	
Puncture Resistance							CERTIFIED	
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load				689.4 N	155.0 lbs		
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures		1500 Hrs				CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/17/2015

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ROLL # F15B082025**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.85 mm	73 mil	Thickness		2.03 mm	80 mil	
Measurement	MAX	2.16 mm	85 mil	Length		117.349 m	385 feet	
ASTM D5994	AVE	2.05 mm	81 mil	Width		7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							210 minutes	
Asperity	Average	Top				29 mil		
ASTM D7466		Bottom				31 mil		
Specific Gravity	Average Density				g/cc		.933	
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.37	
Grade	7104							
Carbon Black Content ASTM D4218	Range				%		2.4	
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1	
Tensile Strength	Average Strength @ Break			MD	46 N/mm	264 psi	3297 psi	
ASTM D6693				TD	44 N/mm	250 psi	3130 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break			MD		%	538.0	
ASTM D6693				TD		%	591.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change						%	-0.15
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance			MD	302.5 N	68.0 lbs		
ASTM D1004 (Modified)				TD	280.2 N	63.0 lbs		
Puncture Resistance						CERTIFIED		
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load				689.4 N		155.0 lbs	
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/17/2015**

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ROLL # F15B082026**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.92 mm	75 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.21 mm	87 mil	Length		117.349 m	385 feet
ASTM D5994							
(Modified)	AVE	2.09 mm	82 mil	Width		7.01 m	23 feet
OIT(Standard) ASTM D 3895							210 minutes
Asperity	Average	Top				30 mil	
ASTM D7466		Bottom				30 mil	
Specific Gravity	Average Density				g/cc	.933	
ASTM D792							
MFI ASTM D1238 COND. E			Melt Flow Index 190C/2160 g - g/10 min				.37
Grade	7104						
Carbon Black Content ASTM D4218	Range				%	2.4	
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	46 N/mm	264 psi	3297 psi
ASTM D6693				TD	44 N/mm	250 psi	3130 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	538.0
ASTM D6693				TD		%	591.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%	-0.15	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	302.5 N	68.0 lbs	
ASTM D1004 (Modified)				TD	280.2 N	63.0 lbs	
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				689.4 N	155.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs	CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/17/2015

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Quality Control Department



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ROLL # F15B082027**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH		
Thickness	MIN	1.87 mm	74 mil		Thickness	2.03 mm	80 mil		
Measurement	MAX	2.19 mm	86 mil		Length	117.349 m	385 feet		
ASTM D5994	AVE	2.05 mm	81 mil		Width	7.01 m	23 feet		
(Modified)									
OIT(Standard) ASTM D 3895							210 minutes		
Asperity	Average	Top				31 mil			
ASTM D7466		Bottom				31 mil			
Specific Gravity	Average Density				g/cc		.933		
ASTM D792									
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.37		
Grade	7104								
Carbon Black Content ASTM D4218	Range				%		2.4		
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1		
Tensile Strength	Average Strength @ Break			MD	46 N/mm	264 psi	3297 psi		
ASTM D6693				TD	44 N/mm	250 psi	3130 psi		
(2 inches / minute)									
Tensile Elongation	Average Elongation @Break			MD		%	538.0		
ASTM D6693				TD		%	591.0		
(2 inches / minute)									
Lo = 1.3" Yield									
Lo = 2.0" Break									
Dimensional Stability	Average Dimensional Change						%	-0.15	
ASTM D1204 (Modified)									
Tear Resistance	Average Tear Resistance			MD	302.5 N	68.0 lbs			
ASTM D1004 (Modified)				TD	280.2 N	63.0 lbs			
Puncture Resistance							CERTIFIED		
FTMS 101 Method 2065 Modified									
Puncture Resistance	Average Peak Load				689.4 N		155.0 lbs		
ASTM D4833 (Modified)									
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/17/2015**

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Quality Control Department



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ROLL # F15B082028**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.90 mm	75 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.17 mm	86 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.05 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							210 minutes
Asperity	Average	Top				31 mil	
ASTM D7466		Bottom				30 mil	
Specific Gravity	Average Density			g/cc		.933	
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min					.37	
Grade	7104						
Carbon Black Content ASTM D4218	Range			%		2.3	
Carbon Black Dispersion ASTM D5596	Category					10 in Category 1	
Tensile Strength	Average Strength @ Break	MD		46 N/mm	264 psi	3297 psi	
ASTM D6693		TD		44 N/mm	250 psi	3130 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	538.0	
ASTM D6693		TD			%	591.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change			%		-0.15	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		302.5 N		68.0 lbs	
ASTM D1004 (Modified)		TD		280.2 N		63.0 lbs	
Puncture Resistance						CERTIFIED	
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load			689.4 N		155.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures			1500 Hrs		CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/17/2015**

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Quality Control Department



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ROLL # F15B082029**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.91 mm	75 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.12 mm	84 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.05 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							210 minutes
Asperity	Average	Top				26 mil	
ASTM D7466		Bottom				30 mil	
Specific Gravity	Average Density				g/cc	.933	
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min					.37	
Grade	7104						
Carbon Black Content ASTM D4218	Range				%	2.3	
Carbon Black Dispersion ASTM D5596	Category					10 in Category 1	
Tensile Strength	Average Strength @ Break	MD		46 N/mm	264 psi	3297 psi	
ASTM D6693		TD		44 N/mm	250 psi	3130 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	538.0	
ASTM D6693		TD			%	591.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%	-0.15	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		302.5 N	68.0 lbs		
ASTM D1004 (Modified)		TD		280.2 N	63.0 lbs		
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load			689.4 N	155.0 lbs		
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures			1500 Hrs	CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/17/2015**

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Quality Control Department



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ROLL # F15B082030**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.93 mm	76 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.16 mm	85 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.05 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							210 minutes
Asperity	Average	Top					31 mil
ASTM D7466		Bottom					30 mil
Specific Gravity	Average Density				g/cc		.934
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.37
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.3
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	47 N/mm	266 psi	3329 psi
ASTM D6693				TD	47 N/mm	270 psi	3372 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	561.0
ASTM D6693				TD		%	649.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change					%	-0.15
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	284.7 N		64.0 lbs
ASTM D1004 (Modified)				TD	298.0 N		67.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				676.1 N		152.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/17/2015**

Signature


Quality Control Department



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ROLL # F15B082031**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH		
Thickness	MIN	1.93 mm	76 mil		Thickness	2.03 mm	80 mil		
Measurement	MAX	2.16 mm	85 mil		Length	117.349 m	385 feet		
ASTM D5994	AVE	2.03 mm	80 mil		Width	7.01 m	23 feet		
(Modified)									
OIT(Standard) ASTM D 3895							210 minutes		
Asperity	Average	Top				29 mil			
ASTM D7466		Bottom				35 mil			
Specific Gravity	Average Density				g/cc		.934		
ASTM D792									
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.37		
Grade	7104								
Carbon Black Content ASTM D4218	Range				%		2.3		
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1		
Tensile Strength	Average Strength @ Break			MD	47 N/mm	266 psi	3329 psi		
ASTM D6693				TD	47 N/mm	270 psi	3372 psi		
(2 inches / minute)									
Tensile Elongation	Average Elongation @Break			MD		%	561.0		
ASTM D6693				TD		%	649.0		
(2 inches / minute)									
Lo = 1.3" Yield									
Lo = 2.0" Break									
Dimensional Stability	Average Dimensional Change						%	-0.15	
ASTM D1204 (Modified)									
Tear Resistance	Average Tear Resistance			MD	284.7 N	64.0 lbs			
ASTM D1004 (Modified)				TD	298.0 N	67.0 lbs			
Puncture Resistance							CERTIFIED		
FTMS 101 Method 2065 Modified									
Puncture Resistance	Average Peak Load				676.1 N		152.0 lbs		
ASTM D4833 (Modified)									
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/17/2015**

Signature

Quality Control Department



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ROLL # F15B082032**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.93 mm	76 mil	Thickness		2.03 mm	80 mil	
Measurement	MAX	2.16 mm	85 mil	Length		117.349 m	385 feet	
ASTM D5994	AVE	2.03 mm	80 mil	Width		7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							210 minutes	
Asperity	Average	Top				30 mil		
ASTM D7466		Bottom				34 mil		
Specific Gravity	Average Density				g/cc		.934	
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.37	
Grade	7104							
Carbon Black Content ASTM D4218	Range				%		2.3	
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1	
Tensile Strength	Average Strength @ Break			MD	47 N/mm	266 psi	3329 psi	
ASTM D6693				TD	47 N/mm	270 psi	3372 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break			MD		%	561.0	
ASTM D6693				TD		%	649.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change						%	-0.15
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance			MD	284.7 N	64.0 lbs		
ASTM D1004 (Modified)				TD	298.0 N	67.0 lbs		
Puncture Resistance						CERTIFIED		
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load				676.1 N		152.0 lbs	
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/17/2015**

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ROLL # F15B082033**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.88 mm	74 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.19 mm	86 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.07 mm	82 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							210 minutes
Asperity	Average	Top				26 mil	
ASTM D7466		Bottom				34 mil	
Specific Gravity	Average Density				g/cc	.934	
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min					.37	
Grade	7104						
Carbon Black Content ASTM D4218	Range				%	2.3	
Carbon Black Dispersion ASTM D5596	Category					10 in Category 1	
Tensile Strength	Average Strength @ Break	MD		47 N/mm	266 psi	3329 psi	
ASTM D6693		TD		47 N/mm	270 psi	3372 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	561.0	
ASTM D6693		TD			%	649.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%	-0.15	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		284.7 N		64.0 lbs	
ASTM D1004 (Modified)		TD		298.0 N		67.0 lbs	
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load			676.1 N		152.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures			1500 Hrs		CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/17/2015**

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Quality Control Department



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ROLL # F15B083034**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.92 mm	76 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.11 mm	83 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.02 mm	80 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							210 minutes
Asperity	Average	Top					30 mil
ASTM D7466		Bottom					35 mil
Specific Gravity	Average Density				g/cc		.934
ASTM D792							
MFI ASTM D1238 COND. E		Melt Flow Index 190C/2160 g - g/10 min					.37
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.3
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break	MD	47 N/mm	266 psi			3329 psi
ASTM D6693		TD	47 N/mm	270 psi			3372 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%		561.0
ASTM D6693		TD			%		649.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%		-0.15
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD	284.7 N				64.0 lbs
ASTM D1004 (Modified)		TD	298.0 N				67.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load		676.1 N				152.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures		1500 Hrs				CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/18/2015**

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Quality Control Department



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ROLL # F15B083035**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.89 mm	74 mil	Thickness		2.03 mm	80 mil	
Measurement	MAX	2.14 mm	84 mil	Length		117.349 m	385 feet	
ASTM D5994	AVE	2.05 mm	81 mil	Width		7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							210 minutes	
Asperity	Average	Top				26 mil		
ASTM D7466		Bottom				31 mil		
Specific Gravity	Average Density			g/cc		.934		
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min					.37		
Grade	7104							
Carbon Black Content ASTM D4218	Range			%		2.2		
Carbon Black Dispersion ASTM D5596	Category					10 in Category 1		
Tensile Strength	Average Strength @ Break			MD	44 N/mm	253 psi	3161 psi	
ASTM D6693				TD	44 N/mm	251 psi	3141 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break			MD		%	544.0	
ASTM D6693				TD		%	608.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change					%	-0.15	
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance			MD	284.7 N		64.0 lbs	
ASTM D1004 (Modified)				TD	298.0 N		67.0 lbs	
Puncture Resistance							CERTIFIED	
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load					676.1 N	152.0 lbs	
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures			1500 Hrs			CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/18/2015

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Quality Control Department



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ROLL # F15B083036**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.91 mm	75 mil	Thickness	2.03 mm	80 mil		
Measurement	MAX	2.22 mm	87 mil	Length	117.349 m	385 feet		
ASTM D5994	AVE	2.10 mm	83 mil	Width	7.01 m	23 feet		
(Modified)								
OIT(Standard) ASTM D 3895							210 minutes	
Asperity	Average	Top				25 mil		
ASTM D7466		Bottom				34 mil		
Specific Gravity	Average Density				g/cc	.934		
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.37	
Grade	7104							
Carbon Black Content ASTM D4218	Range				%	2.2		
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1	
Tensile Strength	Average Strength @ Break		MD	44 N/mm	253 psi	3161 psi		
ASTM D6693				TD	44 N/mm	251 psi	3141 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break		MD			%	544.0	
ASTM D6693				TD			%	608.0
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change						% -0.15	
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance		MD	284.7 N		64.0 lbs		
ASTM D1004 (Modified)			TD	298.0 N		67.0 lbs		
Puncture Resistance							CERTIFIED	
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load				676.1 N		152.0 lbs	
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/18/2015

Signature


Quality Control Department



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ROLL # F15B083037**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.94 mm	76 mil	Thickness	2.03 mm	80 mil	
Measurement	MAX	2.16 mm	85 mil	Length	117.349 m	385 feet	
ASTM D5994	AVE	2.06 mm	81 mil	Width	7.01 m	23 feet	
(Modified)							
OIT(Standard) ASTM D 3895							210 minutes
Asperity	Average	Top				28 mil	
ASTM D7466		Bottom				33 mil	
Specific Gravity	Average Density				g/cc	.934	
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.37
Grade	7104						
Carbon Black Content ASTM D4218	Range				%	2.2	
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break		MD	44 N/mm	253 psi	3161 psi	
ASTM D6693				TD	44 N/mm	251 psi	3141 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break		MD		%	544.0	
ASTM D6693				TD		%	608.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change						% -0.15
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance		MD	284.7 N			64.0 lbs
ASTM D1004 (Modified)			TD	298.0 N			67.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				676.1 N	152.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs	CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/18/2015

Signature


Quality Control Department



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ROLL # F15B083038**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.97 mm	78 mil	Thickness	2.03 mm	80 mil	
Measurement	MAX	2.12 mm	84 mil	Length	117.349 m	385 feet	
ASTM D5994	AVE	2.04 mm	80 mil	Width	7.01 m	23 feet	
(Modified)							
OIT(Standard) ASTM D 3895							210 minutes
Asperity	Average	Top				29 mil	
ASTM D7466		Bottom				33 mil	
Specific Gravity	Average Density				g/cc	.934	
ASTM D792							
MFI ASTM D1238 COND. E			Melt Flow Index 190C/2160 g - g/10 min				.37
Grade	7104						
Carbon Black Content ASTM D4218	Range				%	2.2	
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	44 N/mm	253 psi	3161 psi
ASTM D6693				TD	44 N/mm	251 psi	3141 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	544.0
ASTM D6693				TD		%	608.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%	-0.15	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	284.7 N	64.0 lbs	
ASTM D1004 (Modified)				TD	298.0 N	67.0 lbs	
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				676.1 N	152.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs	CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/18/2015

Signature


Quality Control Department



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ROLL # F15B083039**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.89 mm	74 mil	Thickness		2.03 mm	80 mil	
Measurement	MAX	2.13 mm	84 mil	Length		117.349 m	385 feet	
ASTM D5994	AVE	2.05 mm	81 mil	Width		7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							210 minutes	
Asperity	Average	Top				31 mil		
ASTM D7466		Bottom				31 mil		
Specific Gravity	Average Density				g/cc	.934		
ASTM D792								
MFI ASTM D1238 COND. E			Melt Flow Index 190C/2160 g - g/10 min				.37	
Grade	7104							
Carbon Black Content ASTM D4218	Range				%	2.2		
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1	
Tensile Strength	Average Strength @ Break			MD	44 N/mm	253 psi	3161 psi	
ASTM D6693				TD	44 N/mm	251 psi	3141 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break			MD		%	544.0	
ASTM D6693				TD		%	608.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change					%	-0.15	
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance			MD	284.7 N	64.0 lbs		
ASTM D1004 (Modified)				TD	298.0 N	67.0 lbs		
Puncture Resistance							CERTIFIED	
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load				676.1 N	152.0 lbs		
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures		1500 Hrs				CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/18/2015

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Quality Control Department



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ROLL # F15B083040**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.88 mm	74 mil		Thickness	2.03 mm	80 mil	
Measurement	MAX	2.18 mm	86 mil		Length	117.349 m	385 feet	
ASTM D5994	AVE	2.06 mm	81 mil		Width	7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							210 minutes	
Asperity	Average	Top				32 mil		
ASTM D7466		Bottom				32 mil		
Specific Gravity	Average Density				g/cc		.934	
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.37	
Grade	7104							
Carbon Black Content ASTM D4218	Range				%		2.3	
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1	
Tensile Strength	Average Strength @ Break			MD	46 N/mm	263 psi	3286 psi	
ASTM D6693				TD	45 N/mm	257 psi	3207 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break			MD		%	531.0	
ASTM D6693				TD		%	610.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change						%	-0.15
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance			MD	298.0 N	67.0 lbs		
ASTM D1004 (Modified)				TD	275.8 N	62.0 lbs		
Puncture Resistance						CERTIFIED		
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load				689.4 N		155.0 lbs	
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/18/2015**

Signature


Quality Control Department



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ROLL # F15B083041**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.87 mm	73 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.13 mm	84 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.03 mm	80 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							210 minutes
Asperity	Average	Top				32 mil	
ASTM D7466		Bottom				31 mil	
Specific Gravity	Average Density			g/cc		.934	
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min					.37	
Grade	7104						
Carbon Black Content ASTM D4218	Range			%		2.3	
Carbon Black Dispersion ASTM D5596	Category					10 in Category 1	
Tensile Strength	Average Strength @ Break	MD		46 N/mm	263 psi	3286 psi	
ASTM D6693		TD		45 N/mm	257 psi	3207 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	531.0	
ASTM D6693		TD			%	610.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change			%		-0.15	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		298.0 N		67.0 lbs	
ASTM D1004 (Modified)		TD		275.8 N		62.0 lbs	
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load			689.4 N		155.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures			1500 Hrs		CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/18/2015**

Signature


Quality Control Department



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ROLL # F15B083042**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.84 mm	73 mil	Thickness	2.03 mm	80 mil	
Measurement	MAX	2.22 mm	87 mil	Length	117.349 m	385 feet	
ASTM D5994	AVE	2.06 mm	81 mil	Width	7.01 m	23 feet	
(Modified)							
OIT(Standard) ASTM D 3895							210 minutes
Asperity	Average	Top				32 mil	
ASTM D7466		Bottom				29 mil	
Specific Gravity	Average Density				g/cc		.934
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.37
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.3
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break	MD		46 N/mm	263 psi	3286 psi	
ASTM D6693		TD		45 N/mm	257 psi	3207 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	531.0	
ASTM D6693		TD			%	610.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%		-0.15
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		298.0 N			67.0 lbs
ASTM D1004 (Modified)		TD		275.8 N			62.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				689.4 N		155.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/18/2015

Signature


Quality Control Department



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ROLL # F15B083043**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.87 mm	74 mil		Thickness	2.03 mm	80 mil
Measurement	MAX	2.21 mm	87 mil		Length	117.349 m	385 feet
ASTM D5994							
(Modified)	AVE	2.08 mm	82 mil		Width	7.01 m	23 feet
OIT(Standard) ASTM D 3895							210 minutes
Asperity	Average	Top				30 mil	
ASTM D7466		Bottom				31 mil	
Specific Gravity	Average Density				g/cc	.934	
ASTM D792							
MFI ASTM D1238 COND. E			Melt Flow Index 190C/2160 g - g/10 min		.37		
Grade	7104						
Carbon Black Content ASTM D4218	Range				%	2.3	
Carbon Black Dispersion ASTM D5596	Category				10 in Category 1		
Tensile Strength	Average Strength @ Break			MD	46 N/mm	263 psi	3286 psi
ASTM D6693				TD	45 N/mm	257 psi	3207 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	531.0
ASTM D6693				TD		%	610.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change					%	-0.15
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	298.0 N	67.0 lbs	
ASTM D1004 (Modified)				TD	275.8 N	62.0 lbs	
Puncture Resistance					CERTIFIED		
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				689.4 N	155.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs	CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/18/2015**

Signature


Quality Control Department



quality certificate

ROLL # F15B083044**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.89 mm	75 mil		Thickness	2.03 mm	80 mil
Measurement	MAX	2.19 mm	86 mil		Length	117.349 m	385 feet
ASTM D5994	AVE	2.07 mm	82 mil		Width	7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							210 minutes
Asperity	Average	Top				31 mil	
ASTM D7466		Bottom				32 mil	
Specific Gravity	Average Density				g/cc		.934
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.37
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.3
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break	MD		46 N/mm	263 psi	3286 psi	
ASTM D6693		TD		45 N/mm	257 psi	3207 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	531.0	
ASTM D6693		TD			%	610.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%		-0.15
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		298.0 N			67.0 lbs
ASTM D1004 (Modified)		TD		275.8 N			62.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				689.4 N		155.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/18/2015**

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ROLL # F15B083045**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.91 mm	75 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.14 mm	84 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.05 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							210 minutes
Asperity	Average	Top				31 mil	
ASTM D7466		Bottom				30 mil	
Specific Gravity	Average Density				g/cc	.934	
ASTM D792							
MFI ASTM D1238 COND. E			Melt Flow Index 190C/2160 g - g/10 min				.37
Grade	7104						
Carbon Black Content ASTM D4218	Range				%	2.3	
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	44 N/mm	254 psi	3171 psi
ASTM D6693				TD	46 N/mm	264 psi	3300 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	516.0
ASTM D6693				TD		%	613.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%	-0.15	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	298.0 N	67.0 lbs	
ASTM D1004 (Modified)				TD	275.8 N	62.0 lbs	
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				689.4 N	155.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs	CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/18/2015

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ROLL # F15B083046**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH		
Thickness	MIN	1.88 mm	74 mil	Thickness		2.03 mm	80 mil		
Measurement	MAX	2.11 mm	83 mil	Length		117.349 m	385 feet		
ASTM D5994	AVE	2.04 mm	80 mil	Width		7.01 m	23 feet		
(Modified)									
OIT(Standard) ASTM D 3895							210 minutes		
Asperity	Average	Top				30 mil			
ASTM D7466		Bottom				31 mil			
Specific Gravity	Average Density				g/cc		.934		
ASTM D792									
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.37		
Grade	7104								
Carbon Black Content ASTM D4218	Range				%		2.3		
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1		
Tensile Strength	Average Strength @ Break			MD	44 N/mm	254 psi	3171 psi		
ASTM D6693				TD	46 N/mm	264 psi	3300 psi		
(2 inches / minute)									
Tensile Elongation	Average Elongation @Break			MD		%	516.0		
ASTM D6693				TD		%	613.0		
(2 inches / minute)									
Lo = 1.3" Yield									
Lo = 2.0" Break									
Dimensional Stability	Average Dimensional Change						%	-0.15	
ASTM D1204 (Modified)									
Tear Resistance	Average Tear Resistance			MD	298.0 N	67.0 lbs			
ASTM D1004 (Modified)				TD	275.8 N	62.0 lbs			
Puncture Resistance							CERTIFIED		
FTMS 101 Method 2065 Modified									
Puncture Resistance	Average Peak Load				689.4 N		155.0 lbs		
ASTM D4833 (Modified)									
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/18/2015**

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Quality Control Department



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ROLL # F15B083047**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.90 mm	75 mil	Thickness	2.03 mm	80 mil		
Measurement	MAX	2.19 mm	86 mil	Length	117.349 m	385 feet		
ASTM D5994	AVE	2.06 mm	81 mil	Width	7.01 m	23 feet		
(Modified)								
OIT(Standard) ASTM D 3895							210 minutes	
Asperity	Average	Top				31 mil		
ASTM D7466		Bottom				31 mil		
Specific Gravity	Average Density				g/cc	.934		
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.37	
Grade	7104							
Carbon Black Content ASTM D4218	Range				%	2.3		
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1	
Tensile Strength	Average Strength @ Break		MD	44 N/mm	254 psi	3171 psi		
ASTM D6693				TD	46 N/mm	264 psi	3300 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break		MD		%	516.0		
ASTM D6693				TD		%	613.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change				%	-0.15		
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance		MD	298.0 N	67.0 lbs			
ASTM D1004 (Modified)			TD	275.8 N	62.0 lbs			
Puncture Resistance							CERTIFIED	
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load				689.4 N	155.0 lbs		
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs	CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/18/2015

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Quality Control Department



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ROLL # F15B083048**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.96 mm	77 mil	Thickness	2.03 mm	80 mil	
Measurement	MAX	2.14 mm	84 mil	Length	117.349 m	385 feet	
ASTM D5994	AVE	2.07 mm	81 mil	Width	7.01 m	23 feet	
(Modified)							
OIT(Standard) ASTM D 3895							210 minutes
Asperity	Average	Top				28 mil	
ASTM D7466		Bottom				32 mil	
Specific Gravity	Average Density				g/cc	.934	
ASTM D792							
MFI ASTM D1238 COND. E							
Grade	7104	Melt Flow Index 190C/2160 g - g/10 min				.37	
Carbon Black Content ASTM D4218	Range				%	2.3	
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	44 N/mm	254 psi	3171 psi
ASTM D6693				TD	46 N/mm	264 psi	3300 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	516.0
ASTM D6693				TD		%	613.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%	-0.15	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	298.0 N	67.0 lbs	
ASTM D1004 (Modified)				TD	275.8 N	62.0 lbs	
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				689.4 N	155.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures		1500 Hrs				CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/18/2015

Signature


Quality Control Department



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ROLL # F15B083049**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.89 mm	74 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.16 mm	85 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.06 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							210 minutes
Asperity	Average	Top				31 mil	
ASTM D7466		Bottom				32 mil	
Specific Gravity	Average Density				g/cc		.934
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.37
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.3
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break	MD		44 N/mm	254 psi	3171 psi	
ASTM D6693		TD		46 N/mm	264 psi	3300 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	516.0	
ASTM D6693		TD			%	613.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%		-0.15
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		298.0 N			67.0 lbs
ASTM D1004 (Modified)		TD		275.8 N			62.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				689.4 N		155.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/18/2015**

Signature


Quality Control Department



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ROLL # F15B084050**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.89 mm	74 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.10 mm	83 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.04 mm	80 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							210 minutes
Asperity	Average	Top				30 mil	
ASTM D7466		Bottom				31 mil	
Specific Gravity	Average Density				g/cc		.934
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.37
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.3
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break	MD		47 N/mm	267 psi	3342 psi	
ASTM D6693		TD		46 N/mm	260 psi	3252 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	541.0	
ASTM D6693		TD			%	618.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%		-0.15
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		298.0 N			67.0 lbs
ASTM D1004 (Modified)		TD		271.3 N			61.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				680.5 N		153.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/19/2015**

Signature


Quality Control Department



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ROLL # F15B084051**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.89 mm	74 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.08 mm	82 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.03 mm	80 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							210 minutes
Asperity	Average	Top				29 mil	
ASTM D7466		Bottom				31 mil	
Specific Gravity	Average Density				g/cc	.934	
ASTM D792							
MFI ASTM D1238 COND. E			Melt Flow Index 190C/2160 g - g/10 min				.37
Grade	7104						
Carbon Black Content ASTM D4218	Range				%	2.3	
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	47 N/mm	267 psi	3342 psi
ASTM D6693				TD	46 N/mm	260 psi	3252 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	541.0
ASTM D6693				TD		%	618.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%	-0.15	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	298.0 N	67.0 lbs	
ASTM D1004 (Modified)				TD	271.3 N	61.0 lbs	
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				680.5 N	153.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs	CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/19/2015

Signature


Quality Control Department



quality certificate

ROLL # F15B084052**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.97 mm	78 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.12 mm	83 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.05 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							210 minutes
Asperity	Average	Top					35 mil
ASTM D7466		Bottom					30 mil
Specific Gravity	Average Density				g/cc		.934
ASTM D792							
MFI ASTM D1238 COND. E		Melt Flow Index 190C/2160 g - g/10 min					.37
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.3
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break	MD	47 N/mm	267	ppi	3342	psi
ASTM D6693		TD	46 N/mm	260	ppi	3252	psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	541.0	
ASTM D6693		TD			%	618.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%	-0.15	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		298.0	N	67.0	lbs
ASTM D1004 (Modified)		TD		271.3	N	61.0	lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load			680.5	N	153.0	lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures			1500	Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/19/2015

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Quality Control Department



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ROLL # F15B084053**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.97 mm	78 mil	Thickness		2.03 mm	80 mil	
Measurement	MAX	2.14 mm	84 mil	Length		117.349 m	385 feet	
ASTM D5994	AVE	2.08 mm	82 mil	Width		7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							210 minutes	
Asperity	Average	Top				31 mil		
ASTM D7466		Bottom				29 mil		
Specific Gravity	Average Density			g/cc		.934		
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min					.37		
Grade	7104							
Carbon Black Content ASTM D4218	Range			%		2.3		
Carbon Black Dispersion ASTM D5596	Category					10 in Category 1		
Tensile Strength	Average Strength @ Break			MD	47 N/mm	267 psi	3342 psi	
ASTM D6693				TD	46 N/mm	260 psi	3252 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break			MD		%	541.0	
ASTM D6693				TD		%	618.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change					%	-0.15	
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance			MD	298.0 N	67.0 lbs		
ASTM D1004 (Modified)				TD	271.3 N	61.0 lbs		
Puncture Resistance						CERTIFIED		
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load					680.5 N	153.0 lbs	
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures			1500 Hrs		CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/19/2015

Signature


Quality Control Department



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ROLL # F15B084054**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.90 mm	75 mil		Thickness	2.03 mm	80 mil
Measurement	MAX	2.15 mm	85 mil		Length	117.349 m	385 feet
ASTM D5994	AVE	2.07 mm	81 mil		Width	7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							210 minutes
Asperity	Average	Top				29 mil	
ASTM D7466		Bottom				34 mil	
Specific Gravity	Average Density				g/cc		.934
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.37
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.3
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break	MD		47 N/mm	267 psi	3342 psi	
ASTM D6693		TD		46 N/mm	260 psi	3252 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	541.0	
ASTM D6693		TD			%	618.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%		-0.15
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		298.0 N			67.0 lbs
ASTM D1004 (Modified)		TD		271.3 N			61.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				680.5 N		153.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/19/2015**

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Quality Control Department



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ROLL # F15B084055**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.92 mm	76 mil	Thickness	2.03 mm	80 mil	
Measurement	MAX	2.15 mm	85 mil	Length	117.349 m	385 feet	
ASTM D5994				Width	7.01 m	23 feet	
(Modified)	AVE	2.04 mm	80 mil				
OIT(Standard) ASTM D 3895							210 minutes
Asperity	Average	Top				33 mil	
ASTM D7466		Bottom				31 mil	
Specific Gravity	Average Density				g/cc		.934
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.37
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.3
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break	MD		46 N/mm	264 psi	3305 psi	
ASTM D6693		TD		46 N/mm	265 psi	3313 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	532.0	
ASTM D6693		TD			%	614.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%		-0.15
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		298.0 N			67.0 lbs
ASTM D1004 (Modified)		TD		271.3 N			61.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				680.5 N		153.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/19/2015

Signature


Quality Control Department



quality certificate

ROLL # F15B084056**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.91 mm	75 mil		Thickness	2.03 mm	80 mil
Measurement	MAX	2.21 mm	87 mil		Length	117.349 m	385 feet
ASTM D5994							
(Modified)	AVE	2.06 mm	81 mil		Width	7.01 m	23 feet
OIT(Standard) ASTM D 3895							210 minutes
Asperity	Average	Top				29 mil	
ASTM D7466		Bottom				31 mil	
Specific Gravity	Average Density				g/cc		.934
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.37
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.3
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	46 N/mm	264 psi	3305 psi
ASTM D6693				TD	46 N/mm	265 psi	3313 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	532.0
ASTM D6693				TD		%	614.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change						%
ASTM D1204 (Modified)							-0.15
Tear Resistance	Average Tear Resistance			MD	298.0 N	67.0 lbs	
ASTM D1004 (Modified)				TD	271.3 N	61.0 lbs	
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				680.5 N		153.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/19/2015**

Signature


Quality Control Department



quality certificate

ROLL # F15B084057**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.88 mm	74 mil		Thickness	2.03 mm	80 mil
Measurement	MAX	2.14 mm	84 mil		Length	117.349 m	385 feet
ASTM D5994							
(Modified)	AVE	2.05 mm	81 mil		Width	7.01 m	23 feet
OIT(Standard) ASTM D 3895							210 minutes
Asperity	Average	Top				29 mil	
ASTM D7466		Bottom				34 mil	
Specific Gravity	Average Density				g/cc		.934
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.37
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.3
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break		MD	46 N/mm	264 psi	3305 psi	
ASTM D6693				TD	46 N/mm	265 psi	3313 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break		MD		%	532.0	
ASTM D6693				TD		%	614.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%		-0.15
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance		MD	298.0 N	67.0 lbs		
ASTM D1004 (Modified)			TD	271.3 N	61.0 lbs		
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				680.5 N		153.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/19/2015**

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ROLL # F15B084058**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.83 mm	72 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.18 mm	86 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.03 mm	80 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							210 minutes
Asperity	Average	Top				32 mil	
ASTM D7466		Bottom				31 mil	
Specific Gravity	Average Density				g/cc		.934
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.37
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.3
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break	MD		46 N/mm	264 psi	3305 psi	
ASTM D6693		TD		46 N/mm	265 psi	3313 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	532.0	
ASTM D6693		TD			%	614.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%		-0.15
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		298.0 N			67.0 lbs
ASTM D1004 (Modified)		TD		271.3 N			61.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				680.5 N		153.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/19/2015**

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ROLL # F15B084059**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.87 mm	74 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.17 mm	85 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.02 mm	80 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							210 minutes
Asperity	Average	Top				31 mil	
ASTM D7466		Bottom				31 mil	
Specific Gravity	Average Density			g/cc		.934	
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min					.37	
Grade	7104						
Carbon Black Content ASTM D4218	Range			%		2.3	
Carbon Black Dispersion ASTM D5596	Category					10 in Category 1	
Tensile Strength	Average Strength @ Break	MD		46 N/mm	264 psi	3305 psi	
ASTM D6693		TD		46 N/mm	265 psi	3313 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	532.0	
ASTM D6693		TD			%	614.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change			%		-0.15	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		298.0 N		67.0 lbs	
ASTM D1004 (Modified)		TD		271.3 N		61.0 lbs	
Puncture Resistance						CERTIFIED	
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load			680.5 N		153.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures			1500 Hrs		CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/19/2015**

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Quality Control Department



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ROLL # F15B084060**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.90 mm	75 mil		Thickness	2.03 mm	80 mil	
Measurement	MAX	2.17 mm	85 mil		Length	117.349 m	385 feet	
ASTM D5994								
(Modified)	AVE	2.04 mm	80 mil		Width	7.01 m	23 feet	
OIT(Standard) ASTM D 3895							210 minutes	
Asperity	Average	Top				31 mil		
ASTM D7466		Bottom				30 mil		
Specific Gravity	Average Density				g/cc		.933	
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.37	
Grade	7104							
Carbon Black Content ASTM D4218	Range				%		2.3	
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1	
Tensile Strength	Average Strength @ Break			MD	46 N/mm	264 psi	3294 psi	
ASTM D6693				TD	46 N/mm	264 psi	3298 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break			MD		%	551.0	
ASTM D6693				TD		%	627.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change						%	-0.15
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance			MD	280.2 N	63.0 lbs		
ASTM D1004 (Modified)				TD	262.4 N	59.0 lbs		
Puncture Resistance							CERTIFIED	
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load				662.8 N		149.0 lbs	
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/19/2015**

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Quality Control Department



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ROLL # F15B084061**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.87 mm	74 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.16 mm	85 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.06 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							210 minutes
Asperity	Average	Top					29 mil
ASTM D7466		Bottom					33 mil
Specific Gravity	Average Density				g/cc		.933
ASTM D792							
MFI ASTM D1238 COND. E		Melt Flow Index 190C/2160 g - g/10 min					.37
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.3
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break	MD	46 N/mm	264 psi			3294 psi
ASTM D6693		TD	46 N/mm	264 psi			3298 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%		551.0
ASTM D6693		TD			%		627.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%		-0.15
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD	280.2 N				63.0 lbs
ASTM D1004 (Modified)		TD	262.4 N				59.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load		662.8 N				149.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures		1500 Hrs				CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/19/2015**

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Quality Control Department



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ROLL # F15B084062**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH		
Thickness	MIN	1.88 mm	74 mil	Thickness		2.03 mm	80 mil		
Measurement	MAX	2.18 mm	86 mil	Length		117.349 m	385 feet		
ASTM D5994	AVE	2.04 mm	80 mil	Width		7.01 m	23 feet		
(Modified)									
OIT(Standard) ASTM D 3895							210 minutes		
Asperity	Average	Top				30 mil			
ASTM D7466		Bottom				31 mil			
Specific Gravity	Average Density				g/cc		.933		
ASTM D792									
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.37		
Grade	7104								
Carbon Black Content ASTM D4218	Range				%		2.3		
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1		
Tensile Strength	Average Strength @ Break			MD	46 N/mm	264 psi	3294 psi		
ASTM D6693				TD	46 N/mm	264 psi	3298 psi		
(2 inches / minute)									
Tensile Elongation	Average Elongation @Break			MD		%	551.0		
ASTM D6693				TD		%	627.0		
(2 inches / minute)									
Lo = 1.3" Yield									
Lo = 2.0" Break									
Dimensional Stability	Average Dimensional Change						%	-0.15	
ASTM D1204 (Modified)									
Tear Resistance	Average Tear Resistance			MD	280.2 N	63.0 lbs			
ASTM D1004 (Modified)				TD	262.4 N	59.0 lbs			
Puncture Resistance						CERTIFIED			
FTMS 101 Method 2065 Modified									
Puncture Resistance	Average Peak Load				662.8 N		149.0 lbs		
ASTM D4833 (Modified)									
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/19/2015**

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Quality Control Department



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ROLL # F15B084063**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.97 mm	77 mil		Thickness	2.03 mm	80 mil	
Measurement	MAX	2.12 mm	83 mil		Length	117.349 m	385 feet	
ASTM D5994								
(Modified)	AVE	2.03 mm	80 mil		Width	7.01 m	23 feet	
OIT(Standard) ASTM D 3895							210 minutes	
Asperity	Average	Top				27 mil		
ASTM D7466		Bottom				37 mil		
Specific Gravity	Average Density				g/cc		.933	
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.37	
Grade	7104							
Carbon Black Content ASTM D4218	Range				%		2.3	
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1	
Tensile Strength	Average Strength @ Break			MD	46 N/mm	264 psi	3294 psi	
ASTM D6693				TD	46 N/mm	264 psi	3298 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break			MD		%	551.0	
ASTM D6693				TD		%	627.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change						%	-0.15
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance			MD	280.2 N	63.0 lbs		
ASTM D1004 (Modified)				TD	262.4 N	59.0 lbs		
Puncture Resistance								
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load				662.8 N		149.0 lbs	
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/19/2015**

Signature


Quality Control Department



quality certificate

ROLL # F15B084064**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.96 mm	77 mil	Thickness	2.03 mm	80 mil		
Measurement	MAX	2.12 mm	84 mil	Length	117.349 m	385 feet		
ASTM D5994	AVE	2.03 mm	80 mil	Width	7.01 m	23 feet		
(Modified)								
OIT(Standard) ASTM D 3895							210 minutes	
Asperity	Average	Top				28 mil		
ASTM D7466		Bottom				34 mil		
Specific Gravity	Average Density				g/cc	.933		
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.37	
Grade	7104							
Carbon Black Content ASTM D4218	Range				%	2.3		
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1	
Tensile Strength	Average Strength @ Break		MD	46 N/mm	264 psi	3294 psi		
ASTM D6693				TD	46 N/mm	264 psi	3298 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break		MD		%	551.0		
ASTM D6693				TD		%	627.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change				%	-0.15		
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance		MD	280.2 N	63.0 lbs			
ASTM D1004 (Modified)			TD	262.4 N	59.0 lbs			
Puncture Resistance							CERTIFIED	
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load				662.8 N	149.0 lbs		
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs	CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/19/2015

Signature


Quality Control Department



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ROLL # F15B085065**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH		
Thickness	MIN	1.90 mm	75 mil	Thickness		2.03 mm	80 mil		
Measurement	MAX	2.15 mm	85 mil	Length		117.349 m	385 feet		
ASTM D5994	AVE	2.05 mm	81 mil	Width		7.01 m	23 feet		
(Modified)									
OIT(Standard) ASTM D 3895							210 minutes		
Asperity	Average	Top				30 mil			
ASTM D7466		Bottom				31 mil			
Specific Gravity	Average Density				g/cc		.933		
ASTM D792									
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.37		
Grade	7104								
Carbon Black Content ASTM D4218	Range				%		2.3		
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1		
Tensile Strength	Average Strength @ Break			MD	46 N/mm	264 psi	3299 psi		
ASTM D6693				TD	45 N/mm	256 psi	3201 psi		
(2 inches / minute)									
Tensile Elongation	Average Elongation @Break			MD		%	552.0		
ASTM D6693				TD		%	611.0		
(2 inches / minute)									
Lo = 1.3" Yield									
Lo = 2.0" Break									
Dimensional Stability	Average Dimensional Change						%	-0.15	
ASTM D1204 (Modified)									
Tear Resistance	Average Tear Resistance			MD	280.2 N		63.0 lbs		
ASTM D1004 (Modified)				TD	262.4 N		59.0 lbs		
Puncture Resistance							CERTIFIED		
FTMS 101 Method 2065 Modified									
Puncture Resistance	Average Peak Load				662.8 N		149.0 lbs		
ASTM D4833 (Modified)									
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/20/2015**

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Quality Control Department



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ROLL # F15B085066**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.96 mm	77 mil	Thickness	2.03 mm	80 mil	
Measurement	MAX	2.15 mm	85 mil	Length	117.349 m	385 feet	
ASTM D5994	AVE	2.07 mm	81 mil	Width	7.01 m	23 feet	
(Modified)							
OIT(Standard) ASTM D 3895						210 minutes	
Asperity	Average	Top				32 mil	
ASTM D7466		Bottom				31 mil	
Specific Gravity	Average Density				g/cc	.933	
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.37
Grade	7104						
Carbon Black Content ASTM D4218	Range				%	2.3	
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break	MD		46 N/mm	264 psi	3299 psi	
ASTM D6693		TD		45 N/mm	256 psi	3201 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	552.0	
ASTM D6693		TD			%	611.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%	-0.15	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		280.2 N			63.0 lbs
ASTM D1004 (Modified)		TD		262.4 N			59.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				662.8 N	149.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs	CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/20/2015

Signature


Quality Control Department



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ROLL # F15B085067**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH		
Thickness	MIN	1.91 mm	75 mil	Thickness		2.03 mm	80 mil		
Measurement	MAX	2.13 mm	84 mil	Length		117.349 m	385 feet		
ASTM D5994	AVE	2.04 mm	80 mil	Width		7.01 m	23 feet		
(Modified)									
OIT(Standard) ASTM D 3895							210 minutes		
Asperity	Average	Top				29 mil			
ASTM D7466		Bottom				31 mil			
Specific Gravity	Average Density				g/cc		.933		
ASTM D792									
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.37		
Grade	7104								
Carbon Black Content ASTM D4218	Range				%		2.3		
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1		
Tensile Strength	Average Strength @ Break			MD	46 N/mm	264 psi	3299 psi		
ASTM D6693				TD	45 N/mm	256 psi	3201 psi		
(2 inches / minute)									
Tensile Elongation	Average Elongation @Break			MD		%	552.0		
ASTM D6693				TD		%	611.0		
(2 inches / minute)									
Lo = 1.3" Yield									
Lo = 2.0" Break									
Dimensional Stability	Average Dimensional Change						%	-0.15	
ASTM D1204 (Modified)									
Tear Resistance	Average Tear Resistance			MD	280.2 N	63.0 lbs			
ASTM D1004 (Modified)				TD	262.4 N	59.0 lbs			
Puncture Resistance						CERTIFIED			
FTMS 101 Method 2065 Modified									
Puncture Resistance	Average Peak Load						662.8 N	149.0 lbs	
ASTM D4833 (Modified)									
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/20/2015**

Signature


Quality Control Department



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ROLL # F15B085068**LOT # CEM810770****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH		
Thickness	MIN	2.01 mm	79 mil	Thickness		2.03 mm	80 mil		
Measurement	MAX	2.07 mm	82 mil	Length		117.349 m	385 feet		
ASTM D5994	AVE	2.04 mm	80 mil	Width		7.01 m	23 feet		
(Modified)									
OIT(Standard) ASTM D 3895							210 minutes		
Asperity	Average	Top				28 mil			
ASTM D7466		Bottom				34 mil			
Specific Gravity	Average Density				g/cc		.933		
ASTM D792									
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.37		
Grade	7104								
Carbon Black Content ASTM D4218	Range				%		2.1		
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1		
Tensile Strength	Average Strength @ Break		MD	46 N/mm	264 psi	3299 psi			
ASTM D6693				TD	45 N/mm	256 psi	3201 psi		
(2 inches / minute)									
Tensile Elongation	Average Elongation @Break		MD			%	552.0		
ASTM D6693				TD			%	611.0	
(2 inches / minute)									
Lo = 1.3" Yield									
Lo = 2.0" Break									
Dimensional Stability	Average Dimensional Change						%	-0.15	
ASTM D1204 (Modified)									
Tear Resistance	Average Tear Resistance		MD		280.2 N		63.0 lbs		
ASTM D1004 (Modified)			TD	262.4 N		59.0 lbs			
Puncture Resistance							CERTIFIED		
FTMS 101 Method 2065 Modified									
Puncture Resistance	Average Peak Load				662.8 N		149.0 lbs		
ASTM D4833 (Modified)									
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/20/2015**

Signature

Quality Control Department



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ROLL # F15B085069**LOT # CEM810870****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.98 mm	78 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.17 mm	85 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.07 mm	82 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							198 minutes
Asperity	Average	Top					31 mil
ASTM D7466		Bottom					31 mil
Specific Gravity	Average Density				g/cc		.933
ASTM D792							
MFI ASTM D1238 COND. E		Melt Flow Index 190C/2160 g - g/10 min					.36
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.1
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break	MD	46 N/mm	264 psi			3299 psi
ASTM D6693		TD	45 N/mm	256 psi			3201 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%		552.0
ASTM D6693		TD			%		611.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%		-0.41
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD	280.2 N				63.0 lbs
ASTM D1004 (Modified)		TD	262.4 N				59.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load		662.8 N				149.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures		1500 Hrs				CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/20/2015**

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ROLL # F15B085070**LOT # CEM810870****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	2.03 mm	80 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.10 mm	83 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.07 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							198 minutes
Asperity	Average	Top				26 mil	
ASTM D7466		Bottom				33 mil	
Specific Gravity	Average Density				g/cc	.934	
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min					.36	
Grade	7104						
Carbon Black Content ASTM D4218	Range				%	2.4	
Carbon Black Dispersion ASTM D5596	Category					10 in Category 1	
Tensile Strength	Average Strength @ Break	MD		46 N/mm	260 psi	3249 psi	
ASTM D6693		TD		48 N/mm	277 psi	3460 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	564.0	
ASTM D6693		TD			%	656.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%	-0.41	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		289.1 N		65.0 lbs	
ASTM D1004 (Modified)		TD		275.8 N		62.0 lbs	
Puncture Resistance						CERTIFIED	
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load			693.9 N		156.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures			1500 Hrs		CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/20/2015**

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ROLL # F15B085071**LOT # CEM810870****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.99 mm	78 mil	Thickness		2.03 mm	80 mil	
Measurement	MAX	2.16 mm	85 mil	Length		117.349 m	385 feet	
ASTM D5994	AVE	2.07 mm	81 mil	Width		7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							198 minutes	
Asperity	Average	Top				28 mil		
ASTM D7466		Bottom				34 mil		
Specific Gravity	Average Density				g/cc	.934		
ASTM D792								
MFI ASTM D1238 COND. E			Melt Flow Index 190C/2160 g - g/10 min				.36	
Grade	7104							
Carbon Black Content ASTM D4218	Range				%	2.4		
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1	
Tensile Strength	Average Strength @ Break			MD	46 N/mm	260 psi	3249 psi	
ASTM D6693				TD	48 N/mm	277 psi	3460 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break			MD		%	564.0	
ASTM D6693				TD		%	656.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change					%	-0.41	
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance			MD	289.1 N	65.0 lbs		
ASTM D1004 (Modified)				TD	275.8 N	62.0 lbs		
Puncture Resistance							CERTIFIED	
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load				693.9 N	156.0 lbs		
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs	CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/20/2015

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Quality Control Department



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ROLL # F15B085072**LOT # CEM810870****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.91 mm	75 mil		Thickness	2.03 mm	80 mil
Measurement	MAX	2.18 mm	86 mil		Length	117.349 m	385 feet
ASTM D5994	AVE	2.06 mm	81 mil		Width	7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							198 minutes
Asperity	Average	Top				28 mil	
ASTM D7466		Bottom				32 mil	
Specific Gravity	Average Density				g/cc	.934	
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.36
Grade	7104						
Carbon Black Content ASTM D4218	Range				%	2.4	
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	46 N/mm	260 psi	3249 psi
ASTM D6693				TD	48 N/mm	277 psi	3460 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	564.0
ASTM D6693				TD		%	656.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change					%	-0.41
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	289.1 N	65.0 lbs	
ASTM D1004 (Modified)				TD	275.8 N	62.0 lbs	
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				693.9 N	156.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs	CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/20/2015**

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ROLL # F15B085073**LOT # CEM810870****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.95 mm	77 mil	Thickness		2.03 mm	80 mil	
Measurement	MAX	2.16 mm	85 mil	Length		117.349 m	385 feet	
ASTM D5994	AVE	2.06 mm	81 mil	Width		7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							198 minutes	
Asperity	Average	Top				29 mil		
ASTM D7466		Bottom				35 mil		
Specific Gravity	Average Density				g/cc	.934		
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.36	
Grade	7104							
Carbon Black Content ASTM D4218	Range				%	2.3		
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1	
Tensile Strength	Average Strength @ Break		MD	46 N/mm	260 ppi	3249 psi		
ASTM D6693				TD	48 N/mm	277 ppi	3460 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break		MD			%	564.0	
ASTM D6693				TD			%	656.0
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change						% -0.41	
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance		MD	289.1 N			65.0 lbs	
ASTM D1004 (Modified)			TD	275.8 N			62.0 lbs	
Puncture Resistance							CERTIFIED	
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load				693.9 N	156.0 lbs		
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs	CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/20/2015

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ROLL # F15B085074**LOT # CEM810870****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH		
Thickness	MIN	1.83 mm	72 mil	Thickness		2.03 mm	80 mil		
Measurement	MAX	2.17 mm	85 mil	Length		117.349 m	385 feet		
ASTM D5994	AVE	2.03 mm	80 mil	Width		7.01 m	23 feet		
(Modified)									
OIT(Standard) ASTM D 3895							198 minutes		
Asperity	Average	Top				32 mil			
ASTM D7466		Bottom				31 mil			
Specific Gravity	Average Density				g/cc		.934		
ASTM D792									
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.36		
Grade	7104								
Carbon Black Content ASTM D4218	Range				%		2.3		
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1		
Tensile Strength	Average Strength @ Break			MD	46 N/mm	260 psi	3249 psi		
ASTM D6693				TD	48 N/mm	277 psi	3460 psi		
(2 inches / minute)									
Tensile Elongation	Average Elongation @Break			MD		%	564.0		
ASTM D6693				TD		%	656.0		
(2 inches / minute)									
Lo = 1.3" Yield									
Lo = 2.0" Break									
Dimensional Stability	Average Dimensional Change						%	-0.41	
ASTM D1204 (Modified)									
Tear Resistance	Average Tear Resistance			MD	289.1 N		65.0 lbs		
ASTM D1004 (Modified)				TD	275.8 N		62.0 lbs		
Puncture Resistance						CERTIFIED			
FTMS 101 Method 2065 Modified									
Puncture Resistance	Average Peak Load				693.9 N		156.0 lbs		
ASTM D4833 (Modified)									
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/20/2015**

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Quality Control Department



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ROLL # F15B085075**LOT # CEM810870****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.88 mm	74 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.13 mm	84 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.02 mm	80 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							198 minutes
Asperity	Average	Top				29 mil	
ASTM D7466		Bottom				34 mil	
Specific Gravity	Average Density				g/cc	.934	
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min					.36	
Grade	7104						
Carbon Black Content ASTM D4218	Range				%	2.5	
Carbon Black Dispersion ASTM D5596	Category					10 in Category 1	
Tensile Strength	Average Strength @ Break	MD		46 N/mm	264 psi	3300 psi	
ASTM D6693		TD		47 N/mm	269 psi	3364 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	539.0	
ASTM D6693		TD			%	631.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%	-0.41	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		289.1 N		65.0 lbs	
ASTM D1004 (Modified)		TD		275.8 N		62.0 lbs	
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load			693.9 N		156.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures			1500 Hrs		CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/20/2015**

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Quality Control Department



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ROLL # F15B085076**LOT # CEM810870****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.93 mm	76 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.12 mm	84 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.05 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							198 minutes
Asperity	Average	Top					29 mil
ASTM D7466		Bottom					33 mil
Specific Gravity	Average Density				g/cc		.934
ASTM D792							
MFI ASTM D1238 COND. E		Melt Flow Index 190C/2160 g - g/10 min					.36
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.5
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break	MD	46 N/mm	264 psi			3300 psi
ASTM D6693		TD	47 N/mm	269 psi			3364 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%		539.0
ASTM D6693		TD			%		631.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%		-0.41
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD	289.1 N				65.0 lbs
ASTM D1004 (Modified)		TD	275.8 N				62.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load		693.9 N				156.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures		1500 Hrs				CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/20/2015**

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Quality Control Department



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ROLL # F15B085077**LOT # CEM810870****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.90 mm	75 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.12 mm	84 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.03 mm	80 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							198 minutes
Asperity	Average	Top				29 mil	
ASTM D7466		Bottom				31 mil	
Specific Gravity	Average Density				g/cc	.934	
ASTM D792							
MFI ASTM D1238 COND. E			Melt Flow Index 190C/2160 g - g/10 min			.36	
Grade	7104						
Carbon Black Content ASTM D4218	Range			%		2.5	
Carbon Black Dispersion ASTM D5596	Category					10 in Category 1	
Tensile Strength	Average Strength @ Break			MD	46 N/mm	264 psi	3300 psi
ASTM D6693				TD	47 N/mm	269 psi	3364 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	539.0
ASTM D6693				TD		%	631.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change					%	-0.41
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	289.1 N	65.0 lbs	
ASTM D1004 (Modified)				TD	275.8 N	62.0 lbs	
Puncture Resistance						CERTIFIED	
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load					693.9 N	156.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures			1500 Hrs		CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/20/2015**

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Quality Control Department



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ROLL # F15B085078**LOT # CEM810870****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.91 mm	75 mil	Thickness		2.03 mm	80 mil	
Measurement	MAX	2.13 mm	84 mil	Length		117.349 m	385 feet	
ASTM D5994	AVE	2.04 mm	80 mil	Width		7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							198 minutes	
Asperity	Average	Top				30 mil		
ASTM D7466		Bottom				31 mil		
Specific Gravity	Average Density			g/cc		.934		
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min					.36		
Grade	7104							
Carbon Black Content ASTM D4218	Range			%		2.5		
Carbon Black Dispersion ASTM D5596	Category					10 in Category 1		
Tensile Strength	Average Strength @ Break			MD	46 N/mm	264 psi	3300 psi	
ASTM D6693				TD	47 N/mm	269 psi	3364 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break			MD		%	539.0	
ASTM D6693				TD		%	631.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change					%	-0.41	
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance			MD	289.1 N	65.0 lbs		
ASTM D1004 (Modified)				TD	275.8 N	62.0 lbs		
Puncture Resistance						CERTIFIED		
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load					693.9 N	156.0 lbs	
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures			1500 Hrs		CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/20/2015**

Signature


Quality Control Department



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ROLL # F15B085079**LOT # CEM810870****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.92 mm	76 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.10 mm	83 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.04 mm	80 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							198 minutes
Asperity	Average	Top					35 mil
ASTM D7466		Bottom					29 mil
Specific Gravity	Average Density				g/cc		.934
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.36
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.5
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	46 N/mm	264 psi	3300 psi
ASTM D6693				TD	47 N/mm	269 psi	3364 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	539.0
ASTM D6693				TD		%	631.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change					%	-0.41
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	289.1 N		65.0 lbs
ASTM D1004 (Modified)				TD	275.8 N		62.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				693.9 N		156.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/20/2015**

Signature


Quality Control Department



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ROLL # F15B085080**LOT # CEM810870****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.93 mm	76 mil	Thickness	2.03 mm	80 mil	
Measurement	MAX	2.15 mm	85 mil	Length	117.349 m	385 feet	
ASTM D5994	AVE	2.04 mm	80 mil	Width	7.01 m	23 feet	
(Modified)							
OIT(Standard) ASTM D 3895							198 minutes
Asperity	Average	Top				32 mil	
ASTM D7466		Bottom				30 mil	
Specific Gravity	Average Density				g/cc		.932
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.36
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.4
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break	MD		45 N/mm	258 psi	3222 psi	
ASTM D6693		TD		44 N/mm	253 psi	3157 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	530.0	
ASTM D6693		TD			%	607.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%		-0.41
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		289.1 N			65.0 lbs
ASTM D1004 (Modified)		TD		271.3 N			61.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				693.9 N		156.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/20/2015

Signature


Quality Control Department



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ROLL # F15B085081**LOT # CEM810870****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.94 mm	76 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.09 mm	82 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.03 mm	80 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							198 minutes
Asperity	Average	Top				27 mil	
ASTM D7466		Bottom				36 mil	
Specific Gravity	Average Density				g/cc	.932	
ASTM D792							
MFI ASTM D1238 COND. E			Melt Flow Index 190C/2160 g - g/10 min				.36
Grade	7104						
Carbon Black Content ASTM D4218	Range				%	2.4	
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	45 N/mm	258 psi	3222 psi
ASTM D6693				TD	44 N/mm	253 psi	3157 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	530.0
ASTM D6693				TD		%	607.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%	-0.41	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	289.1 N	65.0 lbs	
ASTM D1004 (Modified)				TD	271.3 N	61.0 lbs	
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				693.9 N	156.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs	CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/20/2015

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ROLL # F15B086082**LOT # CEM810870****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.94 mm	76 mil	Thickness	2.03 mm	80 mil		
Measurement	MAX	2.14 mm	84 mil	Length	117.349 m	385 feet		
ASTM D5994	AVE	2.04 mm	80 mil	Width	7.01 m	23 feet		
(Modified)								
OIT(Standard) ASTM D 3895							198 minutes	
Asperity	Average	Top				33 mil		
ASTM D7466		Bottom				29 mil		
Specific Gravity	Average Density				g/cc		.932	
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.36	
Grade	7104							
Carbon Black Content ASTM D4218	Range				%		2.4	
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1	
Tensile Strength	Average Strength @ Break		MD	45 N/mm	258 psi	3222 psi		
ASTM D6693			TD	44 N/mm	253 psi	3157 psi		
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break		MD		%	530.0		
ASTM D6693			TD		%	607.0		
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change				%		-0.41	
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance		MD	289.1 N	65.0 lbs			
ASTM D1004 (Modified)			TD	271.3 N	61.0 lbs			
Puncture Resistance								
FTMS 101 Method 2065 Modified							CERTIFIED	
Puncture Resistance	Average Peak Load				693.9 N		156.0 lbs	
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/21/2015

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Quality Control Department



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ROLL # F15B086083**LOT # CEM810870****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	2.00 mm	79 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.12 mm	84 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.03 mm	80 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							198 minutes
Asperity	Average	Top				28 mil	
ASTM D7466		Bottom				36 mil	
Specific Gravity	Average Density				g/cc		.932
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.36
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.4
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	45 N/mm	258 psi	3222 psi
ASTM D6693				TD	44 N/mm	253 psi	3157 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	530.0
ASTM D6693				TD		%	607.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change						%
ASTM D1204 (Modified)							-0.41
Tear Resistance	Average Tear Resistance			MD	289.1 N	65.0 lbs	
ASTM D1004 (Modified)				TD	271.3 N	61.0 lbs	
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load						693.9 N
ASTM D4833 (Modified)							156.0 lbs
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/21/2015**

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Quality Control Department



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ROLL # F15B086084**LOT # CEM810870****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.90 mm	75 mil	Thickness		2.03 mm	80 mil	
Measurement	MAX	2.13 mm	84 mil	Length		117.349 m	385 feet	
ASTM D5994	AVE	2.06 mm	81 mil	Width		7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							198 minutes	
Asperity	Average	Top				28 mil		
ASTM D7466		Bottom				31 mil		
Specific Gravity	Average Density			g/cc		.932		
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min					.36		
Grade	7104							
Carbon Black Content ASTM D4218	Range			%		2.4		
Carbon Black Dispersion ASTM D5596	Category					10 in Category 1		
Tensile Strength	Average Strength @ Break			MD	45 N/mm	258 psi	3222 psi	
ASTM D6693				TD	44 N/mm	253 psi	3157 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break			MD		%	530.0	
ASTM D6693				TD		%	607.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change					%	-0.41	
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance			MD	289.1 N	65.0 lbs		
ASTM D1004 (Modified)				TD	271.3 N	61.0 lbs		
Puncture Resistance						CERTIFIED		
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load					693.9 N	156.0 lbs	
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures			1500 Hrs		CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/21/2015

Signature


Quality Control Department



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ROLL # F15B086085**LOT # CEM810870****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.89 mm	75 mil	Thickness	2.03 mm	80 mil	
Measurement	MAX	2.14 mm	84 mil	Length	117.349 m	385 feet	
ASTM D5994	AVE	2.03 mm	80 mil	Width	7.01 m	23 feet	
(Modified)							
OIT(Standard) ASTM D 3895							198 minutes
Asperity	Average	Top				31 mil	
ASTM D7466		Bottom				31 mil	
Specific Gravity	Average Density				g/cc	.932	
ASTM D792							
MFI ASTM D1238 COND. E			Melt Flow Index 190C/2160 g - g/10 min				.36
Grade	7104						
Carbon Black Content ASTM D4218	Range				%	2.3	
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	45 N/mm	258 psi	3228 psi
ASTM D6693				TD	46 N/mm	262 psi	3279 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	533.0
ASTM D6693				TD		%	621.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%	-0.41	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	289.1 N	65.0 lbs	
ASTM D1004 (Modified)				TD	271.3 N	61.0 lbs	
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				693.9 N	156.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs	CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/21/2015

Signature


Quality Control Department



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ROLL # F15B086086**LOT # CEM810870****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.97 mm	78 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.18 mm	86 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.06 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							198 minutes
Asperity	Average	Top					34 mil
ASTM D7466		Bottom					29 mil
Specific Gravity	Average Density				g/cc		.932
ASTM D792							
MFI ASTM D1238 COND. E		Melt Flow Index 190C/2160 g - g/10 min					.36
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.3
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break	MD	45 N/mm	258	ppi	3228	psi
ASTM D6693		TD	46 N/mm	262	ppi	3279	psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	533.0	
ASTM D6693		TD			%	621.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%	-0.41	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		289.1	N	65.0	lbs
ASTM D1004 (Modified)		TD		271.3	N	61.0	lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load			693.9	N	156.0	lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures			1500	Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/21/2015

Signature


Quality Control Department



quality certificate

ROLL # F15B086087**LOT # CEM810870****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.97 mm	78 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.13 mm	84 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.04 mm	80 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							198 minutes
Asperity	Average	Top				28 mil	
ASTM D7466		Bottom				33 mil	
Specific Gravity	Average Density			g/cc		.932	
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min					.36	
Grade	7104						
Carbon Black Content ASTM D4218	Range			%		2.3	
Carbon Black Dispersion ASTM D5596	Category					10 in Category 1	
Tensile Strength	Average Strength @ Break	MD		45 N/mm	258 psi	3228 psi	
ASTM D6693		TD		46 N/mm	262 psi	3279 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	533.0	
ASTM D6693		TD			%	621.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change			%		-0.41	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		289.1 N	65.0 lbs		
ASTM D1004 (Modified)		TD		271.3 N	61.0 lbs		
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load			693.9 N	156.0 lbs		
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures			1500 Hrs	CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/21/2015**

Signature


Quality Control Department



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ROLL # F15B086088**LOT # CEM810870****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.99 mm	78 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.10 mm	83 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.04 mm	80 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							198 minutes
Asperity	Average	Top				30 mil	
ASTM D7466		Bottom				33 mil	
Specific Gravity	Average Density				g/cc	.932	
ASTM D792							
MFI ASTM D1238 COND. E			Melt Flow Index 190C/2160 g - g/10 min				.36
Grade	7104						
Carbon Black Content ASTM D4218	Range				%	2.3	
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	45 N/mm	258 psi	3228 psi
ASTM D6693				TD	46 N/mm	262 psi	3279 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	533.0
ASTM D6693				TD		%	621.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%	-0.41	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	289.1 N	65.0 lbs	
ASTM D1004 (Modified)				TD	271.3 N	61.0 lbs	
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				693.9 N	156.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs	CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/21/2015

Signature


Quality Control Department



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ROLL # F15B086089**LOT # CEM810870****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.87 mm	73 mil	Thickness		2.03 mm	80 mil	
Measurement	MAX	2.10 mm	83 mil	Length		117.349 m	385 feet	
ASTM D5994	AVE	2.03 mm	80 mil	Width		7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							198 minutes	
Asperity	Average	Top				31 mil		
ASTM D7466		Bottom				32 mil		
Specific Gravity	Average Density				g/cc	.932		
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min					.36		
Grade	7104							
Carbon Black Content ASTM D4218	Range				%	2.3		
Carbon Black Dispersion ASTM D5596	Category					10 in Category 1		
Tensile Strength	Average Strength @ Break			MD	45 N/mm	258 psi	3228 psi	
ASTM D6693				TD	46 N/mm	262 psi	3279 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break			MD		%	533.0	
ASTM D6693				TD		%	621.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change					%	-0.41	
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance			MD	289.1 N	65.0 lbs		
ASTM D1004 (Modified)				TD	271.3 N	61.0 lbs		
Puncture Resistance						CERTIFIED		
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load					693.9 N	156.0 lbs	
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures			1500 Hrs		CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/21/2015**

Signature


Quality Control Department



quality certificate

ROLL # F15B086090**LOT # CEM810870****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.96 mm	77 mil	Thickness		2.03 mm	80 mil	
Measurement	MAX	2.11 mm	83 mil	Length		117.349 m	385 feet	
ASTM D5994	AVE	2.02 mm	80 mil	Width		7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							198 minutes	
Asperity	Average	Top				30 mil		
ASTM D7466		Bottom				33 mil		
Specific Gravity	Average Density				g/cc	.934		
ASTM D792								
MFI ASTM D1238 COND. E			Melt Flow Index 190C/2160 g - g/10 min				.36	
Grade	7104							
Carbon Black Content ASTM D4218	Range				%	2.3		
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1	
Tensile Strength	Average Strength @ Break			MD	45 N/mm	258 psi	3230 psi	
ASTM D6693				TD	46 N/mm	262 psi	3276 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break			MD		%	536.0	
ASTM D6693				TD		%	641.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change						% -0.41	
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance			MD	284.7 N	64.0 lbs		
ASTM D1004 (Modified)				TD	271.3 N	61.0 lbs		
Puncture Resistance							CERTIFIED	
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load				689.4 N		155.0 lbs	
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures		1500 Hrs				CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/21/2015

Signature


Quality Control Department



quality certificate

ROLL # F15B086092**LOT # CEM810870****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.99 mm	78 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.10 mm	83 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.04 mm	80 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							198 minutes
Asperity	Average	Top				30 mil	
ASTM D7466		Bottom				32 mil	
Specific Gravity	Average Density				g/cc	.934	
ASTM D792							
MFI ASTM D1238 COND. E			Melt Flow Index 190C/2160 g - g/10 min				.36
Grade	7104						
Carbon Black Content ASTM D4218	Range				%	2.3	
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	45 N/mm	258 psi	3230 psi
ASTM D6693				TD	46 N/mm	262 psi	3276 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	536.0
ASTM D6693				TD		%	641.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%	-0.41	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	284.7 N	64.0 lbs	
ASTM D1004 (Modified)				TD	271.3 N	61.0 lbs	
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				689.4 N	155.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs	CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/21/2015

Signature


Quality Control Department



quality certificate

ROLL # F15B086093**LOT # CEM810870****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.95 mm	77 mil	Thickness	2.03 mm	80 mil	
Measurement	MAX	2.14 mm	84 mil	Length	117.349 m	385 feet	
ASTM D5994	AVE	2.04 mm	80 mil	Width	7.01 m	23 feet	
(Modified)							
OIT(Standard) ASTM D 3895							198 minutes
Asperity	Average	Top				28 mil	
ASTM D7466		Bottom				32 mil	
Specific Gravity	Average Density				g/cc	.934	
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.36
Grade	7104						
Carbon Black Content ASTM D4218	Range				%	2.3	
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break	MD		45 N/mm	258 psi	3230 psi	
ASTM D6693		TD		46 N/mm	262 psi	3276 psi	
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%	536.0	
ASTM D6693		TD			%	641.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%	-0.41	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		284.7 N	64.0 lbs		
ASTM D1004 (Modified)		TD		271.3 N	61.0 lbs		
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				689.4 N	155.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs	CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/21/2015

Signature


Quality Control Department



quality certificate

ROLL # F15B086094**LOT # CEM810870****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.97 mm	78 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.14 mm	84 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.04 mm	80 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							198 minutes
Asperity	Average	Top				34 mil	
ASTM D7466		Bottom				28 mil	
Specific Gravity	Average Density				g/cc	.934	
ASTM D792							
MFI ASTM D1238 COND. E			Melt Flow Index 190C/2160 g - g/10 min				.36
Grade	7104						
Carbon Black Content ASTM D4218	Range				%	2.3	
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	45 N/mm	258 psi	3230 psi
ASTM D6693				TD	46 N/mm	262 psi	3276 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	536.0
ASTM D6693				TD		%	641.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%	-0.41	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	284.7 N	64.0 lbs	
ASTM D1004 (Modified)				TD	271.3 N	61.0 lbs	
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				689.4 N	155.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs	CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/21/2015

Signature


Quality Control Department



quality certificate

ROLL # F15B086095**LOT # CEM810870****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.93 mm	76 mil		Thickness	2.03 mm	80 mil	
Measurement	MAX	2.17 mm	85 mil		Length	117.349 m	385 feet	
ASTM D5994	AVE	2.03 mm	80 mil		Width	7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							198 minutes	
Asperity	Average	Top				27 mil		
ASTM D7466		Bottom				34 mil		
Specific Gravity	Average Density				g/cc		.934	
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.36	
Grade	7104							
Carbon Black Content ASTM D4218	Range				%		2.3	
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1	
Tensile Strength	Average Strength @ Break			MD	45 N/mm	258 psi	3230 psi	
ASTM D6693				TD	46 N/mm	262 psi	3276 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break			MD		%	536.0	
ASTM D6693				TD		%	641.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change						%	-0.41
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance			MD	284.7 N	64.0 lbs		
ASTM D1004 (Modified)				TD	271.3 N	61.0 lbs		
Puncture Resistance						CERTIFIED		
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load				689.4 N		155.0 lbs	
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

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ROLL # F15B086096**LOT # CEM810870****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.96 mm	77 mil	Thickness		2.03 mm	80 mil	
Measurement	MAX	2.11 mm	83 mil	Length		117.349 m	385 feet	
ASTM D5994	AVE	2.03 mm	80 mil	Width		7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							198 minutes	
Asperity	Average	Top				27 mil		
ASTM D7466		Bottom				34 mil		
Specific Gravity	Average Density				g/cc	.934		
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.36	
Grade	7104							
Carbon Black Content ASTM D4218	Range				%	2.2		
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1	
Tensile Strength	Average Strength @ Break		MD	46 N/mm	265 psi	3313 psi		
ASTM D6693				TD	45 N/mm	258 psi	3220 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break		MD			%	548.0	
ASTM D6693				TD			%	615.0
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change						% -0.41	
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance		MD	284.7 N			64.0 lbs	
ASTM D1004 (Modified)			TD	271.3 N			61.0 lbs	
Puncture Resistance							CERTIFIED	
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load				689.4 N	155.0 lbs		
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs	CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
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Date 2/21/2015

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ROLL # F15B087097**LOT # CEM810870****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.97 mm	78 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.08 mm	82 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.03 mm	80 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							198 minutes
Asperity	Average	Top					26 mil
ASTM D7466		Bottom					31 mil
Specific Gravity	Average Density				g/cc		.934
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.36
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.2
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	46 N/mm	265 psi	3313 psi
ASTM D6693				TD	45 N/mm	258 psi	3220 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	548.0
ASTM D6693				TD		%	615.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change					%	-0.41
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	284.7 N		64.0 lbs
ASTM D1004 (Modified)				TD	271.3 N		61.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				689.4 N		155.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/22/2015**

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ROLL # F15B087098**LOT # CEM810870****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.97 mm	78 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.08 mm	82 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.03 mm	80 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							198 minutes
Asperity	Average	Top				27 mil	
ASTM D7466		Bottom				33 mil	
Specific Gravity	Average Density				g/cc	.934	
ASTM D792							
MFI ASTM D1238 COND. E			Melt Flow Index 190C/2160 g - g/10 min				.36
Grade	7104						
Carbon Black Content ASTM D4218	Range				%	2.2	
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	46 N/mm	265 psi	3313 psi
ASTM D6693				TD	45 N/mm	258 psi	3220 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	548.0
ASTM D6693				TD		%	615.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%	-0.41	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	284.7 N	64.0 lbs	
ASTM D1004 (Modified)				TD	271.3 N	61.0 lbs	
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				689.4 N	155.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures		1500 Hrs				CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/22/2015

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ROLL # F15B087099**LOT # CEM810870****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.96 mm	77 mil	Thickness		2.03 mm	80 mil	
Measurement	MAX	2.10 mm	83 mil	Length		117.349 m	385 feet	
ASTM D5994				Width				
(Modified)	AVE	2.03 mm	80 mil			7.01 m	23 feet	
OIT(Standard) ASTM D 3895							198 minutes	
Asperity	Average	Top				26 mil		
ASTM D7466		Bottom				32 mil		
Specific Gravity	Average Density				g/cc	.934		
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.36	
Grade	7104							
Carbon Black Content ASTM D4218	Range				%	2.2		
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1	
Tensile Strength	Average Strength @ Break			MD	46 N/mm	265 psi	3313 psi	
ASTM D6693				TD	45 N/mm	258 psi	3220 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break			MD		%	548.0	
ASTM D6693				TD		%	615.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change						% -0.41	
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance			MD	284.7 N	64.0 lbs		
ASTM D1004 (Modified)				TD	271.3 N	61.0 lbs		
Puncture Resistance							CERTIFIED	
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load				689.4 N	155.0 lbs		
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs	CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/22/2015

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ROLL # F15B087100**LOT # CEM810870****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.94 mm	76 mil	Thickness		2.03 mm	80 mil	
Measurement	MAX	2.13 mm	84 mil	Length		117.349 m	385 feet	
ASTM D5994	AVE	2.03 mm	80 mil	Width		7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							198 minutes	
Asperity	Average	Top				26 mil		
ASTM D7466		Bottom				33 mil		
Specific Gravity	Average Density				g/cc	.934		
ASTM D792								
MFI ASTM D1238 COND. E			Melt Flow Index 190C/2160 g - g/10 min				.36	
Grade	7104							
Carbon Black Content ASTM D4218	Range				%	2.2		
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1	
Tensile Strength	Average Strength @ Break			MD	46 N/mm	265 psi	3313 psi	
ASTM D6693				TD	45 N/mm	258 psi	3220 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break			MD		%	548.0	
ASTM D6693				TD		%	615.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change					%	-0.41	
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance			MD	284.7 N	64.0 lbs		
ASTM D1004 (Modified)				TD	271.3 N	61.0 lbs		
Puncture Resistance							CERTIFIED	
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load				689.4 N	155.0 lbs		
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures		1500 Hrs				CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/22/2015

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ROLL # F15B087101**LOT # CEM810870****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.96 mm	77 mil	Thickness		2.03 mm	80 mil	
Measurement	MAX	2.09 mm	82 mil	Length		117.349 m	385 feet	
ASTM D5994	AVE	2.03 mm	80 mil	Width		7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							198 minutes	
Asperity	Average	Top				26 mil		
ASTM D7466		Bottom				33 mil		
Specific Gravity	Average Density			g/cc		.935		
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min					.36		
Grade	7104							
Carbon Black Content ASTM D4218	Range			%		2.2		
Carbon Black Dispersion ASTM D5596	Category					10 in Category 1		
Tensile Strength	Average Strength @ Break			MD	47 N/mm	266 psi	3322 psi	
ASTM D6693				TD	47 N/mm	270 psi	3375 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break			MD		%	531.0	
ASTM D6693				TD		%	621.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change					%	-0.41	
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance			MD	298.0 N	67.0 lbs		
ASTM D1004 (Modified)				TD	275.8 N	62.0 lbs		
Puncture Resistance							CERTIFIED	
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load					716.1 N	161.0 lbs	
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures			1500 Hrs		CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/22/2015

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ROLL # F15B087102**LOT # CEM810870****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH		METRIC	ENGLISH
Thickness	MIN	2.00 mm	79 mil	Thickness	2.03 mm	80 mil
Measurement	MAX	2.09 mm	82 mil	Length	117.349 m	385 feet
ASTM D5994	AVE	2.04 mm	80 mil	Width	7.01 m	23 feet
(Modified)						
OIT(Standard) ASTM D 3895						198 minutes
Asperity	Average	Top				30 mil
ASTM D7466		Bottom				33 mil
Specific Gravity	Average Density				g/cc	.935
ASTM D792						
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min					.36
Grade	7104					
Carbon Black Content ASTM D4218	Range				%	2.2
Carbon Black Dispersion ASTM D5596	Category				10 in Category 1	
Tensile Strength	Average Strength @ Break		MD	47 N/mm	266 psi	3322 psi
ASTM D6693			TD	47 N/mm	270 psi	3375 psi
(2 inches / minute)						
Tensile Elongation	Average Elongation @Break		MD		%	531.0
ASTM D6693			TD		%	621.0
(2 inches / minute)						
Lo = 1.3" Yield						
Lo = 2.0" Break						
Dimensional Stability	Average Dimensional Change				%	-0.41
ASTM D1204 (Modified)						
Tear Resistance	Average Tear Resistance		MD	298.0 N	67.0 lbs	
ASTM D1004 (Modified)			TD	275.8 N	62.0 lbs	
Puncture Resistance					CERTIFIED	
FTMS 101 Method 2065 Modified						
Puncture Resistance	Average Peak Load				716.1 N	161.0 lbs
ASTM D4833 (Modified)						
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs	CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/22/2015**

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Quality Control Department



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ROLL # F15B087103**LOT # CEM810870****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.96 mm	77 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.12 mm	84 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.06 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							198 minutes
Asperity	Average	Top					24 mil
ASTM D7466		Bottom					33 mil
Specific Gravity	Average Density				g/cc		.935
ASTM D792							
MFI ASTM D1238 COND. E		Melt Flow Index 190C/2160 g - g/10 min					.36
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.2
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break	MD	47 N/mm	266 psi			3322 psi
ASTM D6693		TD	47 N/mm	270 psi			3375 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break	MD			%		531.0
ASTM D6693		TD			%		621.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%		-0.41
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance	MD		298.0 N			67.0 lbs
ASTM D1004 (Modified)		TD		275.8 N			62.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load			716.1 N			161.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures			1500 Hrs			CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/22/2015**

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Quality Control Department



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ROLL # F15B087104**LOT # CEM810870****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.97 mm	78 mil	Thickness		2.03 mm	80 mil	
Measurement	MAX	2.20 mm	87 mil	Length		117.349 m	385 feet	
ASTM D5994	AVE	2.05 mm	81 mil	Width		7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							198 minutes	
Asperity	Average	Top				25 mil		
ASTM D7466		Bottom				32 mil		
Specific Gravity	Average Density			g/cc		.935		
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min					.36		
Grade	7104							
Carbon Black Content ASTM D4218	Range			%		2.2		
Carbon Black Dispersion ASTM D5596	Category					10 in Category 1		
Tensile Strength	Average Strength @ Break		MD	47 N/mm	266 psi	3322 psi		
ASTM D6693				TD	47 N/mm	270 psi	3375 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break		MD			%	531.0	
ASTM D6693				TD			%	621.0
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change					%	-0.41	
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance		MD		298.0 N	67.0 lbs		
ASTM D1004 (Modified)			TD		275.8 N	62.0 lbs		
Puncture Resistance							CERTIFIED	
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load					716.1 N	161.0 lbs	
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures			1500 Hrs		CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/22/2015

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Quality Control Department



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ROLL # F15B087105**LOT # CEM810870****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.93 mm	76 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.17 mm	86 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.05 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							198 minutes
Asperity	Average	Top				25 mil	
ASTM D7466		Bottom				34 mil	
Specific Gravity	Average Density				g/cc		.935
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.36
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.2
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	47 N/mm	266 psi	3322 psi
ASTM D6693				TD	47 N/mm	270 psi	3375 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	531.0
ASTM D6693				TD		%	621.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change						%
ASTM D1204 (Modified)							-0.41
Tear Resistance	Average Tear Resistance			MD	298.0 N	67.0 lbs	
ASTM D1004 (Modified)				TD	275.8 N	62.0 lbs	
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				716.1 N		161.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/22/2015**

Signature


Quality Control Department



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ROLL # F15B087106**LOT # CEM810870****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.98 mm	78 mil		Thickness	2.03 mm	80 mil
Measurement	MAX	2.13 mm	84 mil		Length	117.349 m	385 feet
ASTM D5994							
(Modified)	AVE	2.05 mm	81 mil		Width	7.01 m	23 feet
OIT(Standard) ASTM D 3895							198 minutes
Asperity	Average	Top				29 mil	
ASTM D7466		Bottom				29 mil	
Specific Gravity	Average Density				g/cc		.935
ASTM D792							
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min						.36
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.2
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	47 N/mm	270 psi	3380 psi
ASTM D6693				TD	46 N/mm	261 psi	3260 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	556.0
ASTM D6693				TD		%	608.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change						%
ASTM D1204 (Modified)							-0.41
Tear Resistance	Average Tear Resistance			MD	298.0 N	67.0 lbs	
ASTM D1004 (Modified)				TD	275.8 N	62.0 lbs	
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				716.1 N		161.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500 Hrs		CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/22/2015**

Signature


Quality Control Department



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ROLL # F15B087107**LOT # CEM810870****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.91 mm	75 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.18 mm	86 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.05 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							198 minutes
Asperity	Average	Top				24 mil	
ASTM D7466		Bottom				33 mil	
Specific Gravity	Average Density				g/cc	.935	
ASTM D792							
MFI ASTM D1238 COND. E			Melt Flow Index 190C/2160 g - g/10 min				.36
Grade	7104						
Carbon Black Content ASTM D4218	Range				%	2.2	
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	47 N/mm	270 psi	3380 psi
ASTM D6693				TD	46 N/mm	261 psi	3260 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	556.0
ASTM D6693				TD		%	608.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change				%	-0.41	
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	298.0 N	67.0 lbs	
ASTM D1004 (Modified)				TD	275.8 N	62.0 lbs	
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load				716.1 N	161.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures		1500 Hrs				CERTIFIED

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/22/2015

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Quality Control Department



quality certificate

ROLL # F15B087108**LOT # CEM810870****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.96 mm	77 mil	Thickness		2.03 mm	80 mil
Measurement	MAX	2.18 mm	86 mil	Length		117.349 m	385 feet
ASTM D5994	AVE	2.06 mm	81 mil	Width		7.01 m	23 feet
(Modified)							
OIT(Standard) ASTM D 3895							198 minutes
Asperity	Average	Top					25 mil
ASTM D7466		Bottom					34 mil
Specific Gravity	Average Density				g/cc		.935
ASTM D792							
MFI ASTM D1238 COND. E		Melt Flow Index 190C/2160 g - g/10 min					.36
Grade	7104						
Carbon Black Content ASTM D4218	Range				%		2.2
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1
Tensile Strength	Average Strength @ Break			MD	47 N/mm	270 psi	3380 psi
ASTM D6693				TD	46 N/mm	261 psi	3260 psi
(2 inches / minute)							
Tensile Elongation	Average Elongation @Break			MD		%	556.0
ASTM D6693				TD		%	608.0
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability	Average Dimensional Change					%	-0.41
ASTM D1204 (Modified)							
Tear Resistance	Average Tear Resistance			MD	298.0 N		67.0 lbs
ASTM D1004 (Modified)				TD	275.8 N		62.0 lbs
Puncture Resistance							CERTIFIED
FTMS 101 Method 2065 Modified							
Puncture Resistance	Average Peak Load					716.1 N	161.0 lbs
ASTM D4833 (Modified)							
ESCR ASTM D1693	Minumum Hrs w/o Failures					1500 Hrs	CERTIFIED

Customer Erosion Control Applications
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Date **2/22/2015**

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ROLL # F15B087109**LOT # CEM810870****LINER TYPE MICROSPIKE LL 80**

		METRIC		ENGLISH		METRIC		ENGLISH			
Thickness	MIN	1.99	mm	78	mil	Thickness	2.03	mm	80	mil	
Measurement	MAX	2.17	mm	85	mil	Length	117.349	m	385	feet	
ASTM D5994	AVE	2.07	mm	82	mil	Width	7.01	m	23	feet	
(Modified)											
OIT(Standard) ASTM D 3895									198 minutes		
Asperity	Average			Top					25 mil		
ASTM D7466				Bottom					34 mil		
Specific Gravity	Average Density				g/cc				.935		
ASTM D792											
MFI ASTM D1238 COND. E			Melt Flow Index 190C/2160 g - g/10 min						.36		
Grade	7104										
Carbon Black Content ASTM D4218	Range				%				2.2		
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1				
Tensile Strength	Average Strength @ Break			MD	47	N/mm	270	ppi	3380	psi	
ASTM D6693				TD	46	N/mm	261	ppi	3260	psi	
(2 inches / minute)											
Tensile Elongation	Average Elongation @Break			MD			%		556.0		
ASTM D6693				TD			%		608.0		
(2 inches / minute)											
Lo = 1.3" Yield											
Lo = 2.0" Break											
Dimensional Stability	Average Dimensional Change						%		-0.41		
ASTM D1204 (Modified)											
Tear Resistance	Average Tear Resistance			MD	298.0		N		67.0		lbs
ASTM D1004 (Modified)				TD	275.8		N		62.0		lbs
Puncture Resistance									CERTIFIED		
FTMS 101 Method 2065 Modified											
Puncture Resistance	Average Peak Load				716.1		N		161.0		lbs
ASTM D4833 (Modified)											
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500		Hrs		CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

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ROLL # F15B087110**LOT # CEM810870****LINER TYPE MICROSPIKE LL 80**

		METRIC		ENGLISH		METRIC		ENGLISH			
Thickness	MIN	1.87	mm	74	mil	Thickness	2.03	mm	80	mil	
Measurement	MAX	2.09	mm	82	mil	Length	117.349	m	385	feet	
ASTM D5994	AVE	2.02	mm	80	mil	Width	7.01	m	23	feet	
(Modified)											
OIT(Standard) ASTM D 3895									198 minutes		
Asperity	Average			Top					27 mil		
ASTM D7466				Bottom					33 mil		
Specific Gravity	Average Density				g/cc				.935		
ASTM D792											
MFI ASTM D1238 COND. E			Melt Flow Index 190C/2160 g - g/10 min						.36		
Grade	7104										
Carbon Black Content ASTM D4218	Range				%				2.2		
Carbon Black Dispersion ASTM D5596	Category						10 in Category 1				
Tensile Strength	Average Strength @ Break			MD	47	N/mm	270	ppi	3380	psi	
ASTM D6693				TD	46	N/mm	261	ppi	3260	psi	
(2 inches / minute)											
Tensile Elongation	Average Elongation @Break			MD			%		556.0		
ASTM D6693				TD			%		608.0		
(2 inches / minute)											
Lo = 1.3" Yield											
Lo = 2.0" Break											
Dimensional Stability	Average Dimensional Change						%		-0.41		
ASTM D1204 (Modified)											
Tear Resistance	Average Tear Resistance			MD	298.0		N		67.0		lbs
ASTM D1004 (Modified)				TD	275.8		N		62.0		lbs
Puncture Resistance									CERTIFIED		
FTMS 101 Method 2065 Modified											
Puncture Resistance	Average Peak Load				716.1		N		161.0		lbs
ASTM D4833 (Modified)											
ESCR ASTM D1693	Minumum Hrs w/o Failures				1500		Hrs		CERTIFIED		

Customer Erosion Control Applications
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ROLL # F15B087111**LOT # CEM810870****LINER TYPE MICROSPIKE LL 80**

		METRIC	ENGLISH			METRIC	ENGLISH	
Thickness	MIN	1.89 mm	75 mil	Thickness		2.03 mm	80 mil	
Measurement	MAX	2.10 mm	83 mil	Length		117.349 m	385 feet	
ASTM D5994	AVE	2.03 mm	80 mil	Width		7.01 m	23 feet	
(Modified)								
OIT(Standard) ASTM D 3895							198 minutes	
Asperity	Average	Top				28 mil		
ASTM D7466		Bottom				31 mil		
Specific Gravity	Average Density			g/cc		.933		
ASTM D792								
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min					.36		
Grade	7104							
Carbon Black Content ASTM D4218	Range			%		2.2		
Carbon Black Dispersion ASTM D5596	Category					10 in Category 1		
Tensile Strength	Average Strength @ Break			MD	46 N/mm	262 psi	3272 psi	
ASTM D6693				TD	47 N/mm	267 psi	3333 psi	
(2 inches / minute)								
Tensile Elongation	Average Elongation @Break			MD		%	542.0	
ASTM D6693				TD		%	639.0	
(2 inches / minute)								
Lo = 1.3" Yield								
Lo = 2.0" Break								
Dimensional Stability	Average Dimensional Change					%	-0.41	
ASTM D1204 (Modified)								
Tear Resistance	Average Tear Resistance			MD	293.6 N	66.0 lbs		
ASTM D1004 (Modified)				TD	271.3 N	61.0 lbs		
Puncture Resistance						CERTIFIED		
FTMS 101 Method 2065 Modified								
Puncture Resistance	Average Peak Load					671.6 N	151.0 lbs	
ASTM D4833 (Modified)								
ESCR ASTM D1693	Minumum Hrs w/o Failures			1500 Hrs		CERTIFIED		

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date **2/22/2015**

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ROLL	F15D094027	LOT #	CEM810870	LINER TYPE	MICROSPIKE LL 80		
		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	1.93 mm	76 mil	Thickness	2.03 mm	80 mil	
Measurement	MAX	2.23 mm	88 mil	Length	117.349 m	385 feet	
ASTM D5994	AVE	2.04 mm	80 mil	Width	7.01 m	23 feet	
(Modified)							
OIT(Standard) ASTM D 3895						198 minutes	
Asperity		Average	Top			29 mil	
ASTM D7466			Bottom			27 mil	
Specific Gravity		Average Density			g/cc	.938	
ASTM D792							
MFI ASTM D1238 COND. E		Melt Flow Index 190C/2160 g - g/10 min				.37	
Grade	7104						
Carbon Black Content ASTM D4218		Range			%	2.3	
Carbon Black Dispersion ASTM D5596		Category				10 in Category 1	
Tensile Strength		Average Strength @ Break	MD	43 N/mm	244 ppi	3047 psi	
ASTM D6693			TD	43 N/mm	244 ppi	3047 psi	
(2 inches / minute)							
Tensile Elongation		Average Elongation @Break	MD		%	526.0	
ASTM D6693			TD		%	582.0	
(2 inches / minute)							
Lo = 1.3" Yield							
Lo = 2.0" Break							
Dimensional Stability		Average Dimensional Change			%	-0.41	
ASTM D1204 (Modified)							
Tear Resistance		Average Tear Resistance	MD	306.9 N		69.0 lbs	
ASTM D1004 (Modified)			TD	284.7 N		64.0 lbs	
Puncture Resistance						CERTIFIED	
FTMS 101 Method 2065 Modified							
Puncture Resistance		Average Peak Load		707.2 N		159.0 lbs	
ASTM D4833 (Modified)							
ESCR ASTM D1693		Minumum Hrs w/o Failures		1500 Hrs		CERTIFIED	

Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 2/26/2015

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Appendix I.5

40-mil LLDPE Smooth Geomembrane Roll Quality Control Certificates

ROLL # F14D402025
LOT # CEH810040
LINER TYPE SMOOTH LL 40

		METRIC	ENGLISH		METRIC	ENGLISH
Thickness	MIN	.94 mm	37 mil	Thickness	1.02 mm	40 mil
Measurement				Length	254.511 m	835 feet
ASTM D5199	MAX	1.11 mm	44 mil	Width	7.01 m	23 feet
(Modified)	AVE	1.03 mm	41 mil			
OIT(Standard) ASTM D 3895						210 minutes
Specific Gravity		Average Density			g/cc	.935
ASTM D792						
MFI ASTM D1238 COND. E		Melt Flow Index 190C/2160 g - g/10 min				.32
Grade	7104					
Carbon Black Content ASTM D4218		Range			%	2.0
Carbon Black Dispersion ASTM D5596		Category				10 in Category 1

Tensile Strength		MD	37 N/mm	210 ppi	5243 psi
ASTM D6693	Average Strength @ Break	TD	34 N/mm	194 ppi	4849 psi
(2 inches / minute)					

Tensile Elongation		MD		%	810.0
ASTM D6693	Average Elongation @Break	TD		%	834.0
(2 inches / minute)					
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability				%	-0.57
ASTM D1204 (Modified)	Average Dimensional Change				

Tear Resistance		MD	169.0 N	38.0 lbs
ASTM D1004 (Modified)	Average Tear Resistance	TD	160.1 N	36.0 lbs

Puncture Resistance				CERTIFIED
FTMS 101 Method 2065 Modified				

Puncture Resistance			453.7 N	102.0 lbs
ASTM D4833 (Modified)	Average Peak Load			

ESCR ASTM D1693	Minumum Hrs w/o Failures	1500 Hrs	CERTIFIED
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Customer Erosion Control Applications
 PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
 Destination Cripple Creek, CO

Date 9/30/2014

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quality certificate

ROLL # F14D402026**LOT # CEH810040****LINER TYPE SMOOTH LL 40**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	.95 mm	37 mil	Thickness		1.02 mm	40 mil
Measurement				Length		254.511 m	835 feet
ASTM D5199	MAX	1.13 mm	45 mil	Width		7.01 m	23 feet
(Modified)	AVE	1.05 mm	41 mil				
OIT(Standard) ASTM D 3895							210 minutes
Specific Gravity		Average Density		g/cc		.935	
ASTM D792							
MFI ASTM D1238 COND. E		Melt Flow Index 190C/2160 g - g/10 min				.32	
Grade 7104							
Carbon Black Content ASTM D4218		Range		%		2.2	
Carbon Black Dispersion ASTM D5596		Category				10 in Category 1	

Tensile Strength	Average Strength @ Break	MD	36 N/mm	207 ppi	5186 psi
ASTM D6693		TD	36 N/mm	206 ppi	5144 psi
(2 inches / minute)					

Tensile Elongation	Average Elongation @Break	MD		%	813.0
ASTM D6693		TD		%	890.0
(2 inches / minute)					
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional Change		%	-0.57
ASTM D1204 (Modified)				

Tear Resistance	Average Tear Resistance	MD	169.0 N	38.0 lbs
ASTM D1004 (Modified)		TD	160.1 N	36.0 lbs

Puncture Resistance					CERTIFIED
FTMS 101 Method 2065 Modified					

Puncture Resistance	Average Peak Load		453.7 N	102.0 lbs
ASTM D4833 (Modified)				

ESCR ASTM D1693	Minumum Hrs w/o Failures	1500 Hrs	CERTIFIED
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Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
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Date 9/30/2014

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ROLL # F14D402027**LOT # CEH810040****LINER TYPE SMOOTH LL 40**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	.97 mm	38 mil	Thickness		1.02 mm	40 mil
Measurement				Length		254.511 m	835 feet
ASTM D5199	MAX	1.13 mm	45 mil	Width		7.01 m	23 feet
(Modified)	AVE	1.06 mm	42 mil				
OIT(Standard) ASTM D 3895							210 minutes
Specific Gravity		Average Density		g/cc		.936	
ASTM D792							
MFI ASTM D1238 COND. E		Melt Flow Index 190C/2160 g - g/10 min				.32	
Grade 7104							
Carbon Black Content ASTM D4218		Range		%		2.2	
Carbon Black Dispersion ASTM D5596		Category				10 in Category 1	

Tensile Strength	Average Strength @ Break	MD	36 N/mm	208 ppi	5197 psi
ASTM D6693		TD	36 N/mm	208 ppi	5208 psi
(2 inches / minute)					

Tensile Elongation	Average Elongation @Break	MD		%	810.0
ASTM D6693		TD		%	888.0
(2 inches / minute)					
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional Change		%	-0.57
ASTM D1204 (Modified)				

Tear Resistance	Average Tear Resistance	MD	151.2 N	34.0 lbs
ASTM D1004 (Modified)		TD	151.2 N	34.0 lbs

Puncture Resistance	CERTIFIED			
FTMS 101 Method 2065 Modified				

Puncture Resistance	Average Peak Load		435.9 N	98.0 lbs
ASTM D4833 (Modified)				

ESCR ASTM D1693	Minumum Hrs w/o Failures	1500 Hrs	CERTIFIED
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Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 9/30/2014

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Quality Control Department

ROLL # F14D402028
LOT # CEH810040
LINER TYPE SMOOTH LL 40

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	.97 mm	38 mil	Thickness		1.02 mm	40 mil
Measurement				Length		254.511 m	835 feet
ASTM D5199	MAX	1.12 mm	44 mil	Width		7.01 m	23 feet
(Modified)	AVE	1.05 mm	41 mil				
OIT(Standard) ASTM D 3895							210 minutes
Specific Gravity		Average Density		g/cc		.936	
ASTM D792							
MFI ASTM D1238 COND. E		Melt Flow Index 190C/2160 g - g/10 min				.32	
Grade	7104						
Carbon Black Content ASTM D4218		Range		%		2.2	
Carbon Black Dispersion ASTM D5596		Category				10 in Category 1	

Tensile Strength ASTM D6693 (2 inches / minute)	Average Strength @ Break	MD	36 N/mm	208 ppi	5197 psi
		TD	36 N/mm	208 ppi	5208 psi

Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @Break	MD		%	810.0
		TD		%	888.0

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change		%	-0.57
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Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	MD	151.2 N	34.0 lbs
		TD	151.2 N	34.0 lbs

Puncture Resistance FTMS 101 Method 2065 Modified				CERTIFIED
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Puncture Resistance ASTM D4833 (Modified)	Average Peak Load		435.9 N	98.0 lbs
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ESCR ASTM D1693	Minumum Hrs w/o Failures	1500 Hrs	CERTIFIED
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Customer Erosion Control Applications
PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
Destination Cripple Creek, CO

Date 9/30/2014

Signature


Quality Control Department

ROLL # F14D402030
LOT # CEH810040
LINER TYPE SMOOTH LL 40

		METRIC	ENGLISH		METRIC	ENGLISH
Thickness	MIN	.96 mm	38 mil	Thickness	1.02 mm	40 mil
Measurement				Length	254.511 m	835 feet
ASTM D5199	MAX	1.14 mm	45 mil	Width	7.01 m	23 feet
(Modified)	AVE	1.06 mm	42 mil			
OIT(Standard) ASTM D 3895						210 minutes
Specific Gravity		Average Density			g/cc	.936
ASTM D792						
MFI ASTM D1238 COND. E		Melt Flow Index 190C/2160 g - g/10 min				.32
Grade	7104					
Carbon Black Content ASTM D4218		Range			%	2.2
Carbon Black Dispersion ASTM D5596		Category				10 in Category 1

Tensile Strength		MD	36 N/mm	208 ppi	5197 psi
ASTM D6693	Average Strength @ Break	TD	36 N/mm	208 ppi	5208 psi
(2 inches / minute)					

Tensile Elongation		MD		%	810.0
ASTM D6693	Average Elongation @Break	TD		%	888.0
(2 inches / minute)					
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional Change		%	-0.57
ASTM D1204 (Modified)				

Tear Resistance	Average Tear Resistance	MD	151.2 N	34.0 lbs
ASTM D1004 (Modified)		TD	151.2 N	34.0 lbs

Puncture Resistance				CERTIFIED
FTMS 101 Method 2065 Modified				

Puncture Resistance	Average Peak Load		435.9 N	98.0 lbs
ASTM D4833 (Modified)				

ESCR ASTM D1693	Minumum Hrs w/o Failures	1500 Hrs	CERTIFIED
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Customer Erosion Control Applications
 PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
 Destination Cripple Creek, CO

Date 9/30/2014

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ROLL # F14D402031		LOT # CEH810040		LINER TYPE SMOOTH LL 40			
		METRIC	ENGLISH			METRIC	ENGLISH
Thickness	MIN	.99 mm	39 mil	Thickness	1.02 mm	40 mil	
Measurement							
ASTM D5199	MAX	1.13 mm	44 mil	Length	254.511 m	835 feet	
(Modified)	AVE	1.06 mm	42 mil	Width	7.01 m	23 feet	
OIT(Standard) ASTM D 3895							210 minutes
Specific Gravity		Average Density			g/cc		.936
ASTM D792							
MFI ASTM D1238 COND. E		Melt Flow Index 190C/2160 g - g/10 min					.32
Grade	7104						
Carbon Black Content ASTM D4218		Range			%		2.2
Carbon Black Dispersion ASTM D5596		Category					10 in Category 1

Tensile Strength ASTM D6693 (2 inches / minute)	Average Strength @ Break	MD	36 N/mm	208 ppi	5197 psi
		TD	36 N/mm	208 ppi	5208 psi

Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @Break	MD		%	810.0
		TD		%	888.0

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change		%	-0.57
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Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	MD	151.2 N	34.0 lbs
		TD	151.2 N	34.0 lbs

Puncture Resistance FTMS 101 Method 2065 Modified	CERTIFIED			
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Puncture Resistance ASTM D4833 (Modified)	Average Peak Load		435.9 N	98.0 lbs
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ESCR ASTM D1693	Minumum Hrs w/o Failures	1500 Hrs	CERTIFIED
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Customer Erosion Control Applications
 PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
 Destination Cripple Creek, CO

Date **9/30/2014**

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 Quality Control Department

ROLL # F14D403032
LOT # CEH810040
LINER TYPE SMOOTH LL 40

		METRIC	ENGLISH		METRIC	ENGLISH
Thickness	MIN	.94 mm	37 mil	Thickness	1.02 mm	40 mil
Measurement				Length	254.511 m	835 feet
ASTM D5199	MAX	1.13 mm	44 mil	Width	7.01 m	23 feet
(Modified)	AVE	1.06 mm	42 mil			
OIT(Standard) ASTM D 3895						210 minutes
Specific Gravity		Average Density			g/cc	.936
ASTM D792						
MFI ASTM D1238 COND. E		Melt Flow Index 190C/2160 g - g/10 min				.32
Grade	7104					
Carbon Black Content ASTM D4218		Range			%	2.2
Carbon Black Dispersion ASTM D5596		Category				10 in Category 1

Tensile Strength						
ASTM D6693		Average Strength @ Break	MD	36 N/mm	208 ppi	5197 psi
(2 inches / minute)			TD	36 N/mm	208 ppi	5208 psi

Tensile Elongation						
ASTM D6693		Average Elongation @Break	MD		%	810.0
(2 inches / minute)			TD		%	888.0
Lo = 1.3" Yield						
Lo = 2.0" Break						

Dimensional Stability		Average Dimensional Change			%	-0.57
ASTM D1204 (Modified)						

Tear Resistance		Average Tear Resistance	MD	151.2 N	34.0 lbs
ASTM D1004 (Modified)			TD	151.2 N	34.0 lbs

Puncture Resistance					CERTIFIED
FTMS 101 Method 2065 Modified					

Puncture Resistance		Average Peak Load		435.9 N	98.0 lbs
ASTM D4833 (Modified)					

ESCR ASTM D1693		Minumum Hrs w/o Failures		1500 Hrs	CERTIFIED
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Customer Erosion Control Applications
 PO 13012 CC & VMLE2 Squaw Gulch (ph 1, 2 & 3)
 Destination Cripple Creek, CO

Date 10/1/2014

Signature


 Quality Control Department

Appendix I.6

80-mil LLDPE DSMS Geomembrane Resin Quality Control Certificates



Certificate of Analysis

Shipped To: AGRU AMERICA INC:FERNLEY
2000 EAST NEWLANDS
FERNLEY NV 89408-8944
USA

Recipient: PALMER
Fax:

Delivery #: 88854031
PO #: 008268
Weight: 204300 LB
Ship Date: 05/15/2014
Package: BULK
Mode: Hopper Car
Car #: PSPX003119
Seal No: 553278

Product: PE 7104 BULK

Lot Number: CEE810230

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.35	g/10mi
HLMI	ASTM D1238	15.65	g/10mi
Pellet Count	ST-905	35	pel/g
Production date		20140510	
Density	D1505 or D4883	0.919	g/cm3

WAIVED G. NIEDERMOSER

The data set forth herein have been carefully compiled by Chevron Phillips Chemical Company LP (CPChem).
However, there is no warranty of any kind, either expressed or implied, applicable to its use, and the user assumes all risk and liability in connection therewith.

Kevin Ayres
Quality Control Supervisor

For CoA questions contact Customer Service Representative at +1-832-813-4806

Certificate of Analysis

Shipped To: AGRU AMERICA INC:FERNLEY
2000 EAST NEWLANDS
FERNLEY NV 89408-8944
USA

Recipient: PALMER
Fax:

Delivery #: 88850740
PO #: 008268
Weight: 188950 LB
Ship Date: 05/09/2014
Package: BULK
Mode: Hopper Car
Car #: SHPX464496
Seal No: 553272

Product: PE 7104 BULK

Lot Number: CEE810100

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.40	g/10mi
HLMI	ASTM D1238	19.64	g/10mi
Pellet Count	ST-905	33	pel/g
Production date		20140508	
Density	D1505 or D4883	0.919	g/cm3

The data set forth herein have been carefully compiled by Chevron Phillips Chemical Company LP (CPChem).
However, there is no warranty of any kind, either expressed or implied, applicable to its use, and the user assumes all risk and liability in connection therewith.



Kevin Ayres
Quality Control Supervisor

For CoA questions contact Customer Service Representative at +1-832-813-4806

Certificate of Analysis

Shipped To: AGRU AMERICA INC:FERNLEY
2000 EAST NEWLANDS
FERNLEY NV 89408-8944
USA

Recipient: PALMER
Fax:

Delivery #: 88850738
PO #: 008268
Weight: 188700 LB
Ship Date: 05/09/2014
Package: BULK
Mode: Hopper Car
Car #: CHVX896657
Seal No: 553023

Product: PE 7104 BULK

Lot Number: CEE810120

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.36	g/10mi
HLMI	ASTM D1238	15.30	g/10mi
Pellet Count	ST-905	35	pel/g
Production date		20140508	
Density	D1505 or D4883	0.920	g/cm3

The data set forth herein have been carefully compiled by Chevron Phillips Chemical Company LP (CPChem).
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Kevin Ayres
Quality Control Supervisor

For CoA questions contact Customer Service Representative at +1-832-813-4806



Certificate of Analysis

Shipped To: AGRU AMERICA INC:FERNLEY
2000 EAST NEWLANDS
FERNLEY NV 89408-8944
USA

Recipient: PALMER
Fax:

Delivery #: 88850737
PO #: 008268
Weight: 189350 LB
Ship Date: 05/09/2014
Package: BULK
Mode: Hopper Car
Car #: CEFX053933
Seal No: 553611

Product: PE 7104 BULK

Lot Number: CEE810110

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.38	g/10mi
HLMI	ASTM D1238	15.98	g/10mi
Pellet Count	ST-905	32	pel/g
Production date		20140508	
Density	D1505 or D4883	0.919	g/cm3

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Kevin Ayres
Quality Control Supervisor

For CoA questions contact Customer Service Representative at +1-832-813-4806



Certificate of Analysis

Shipped To: AGRU AMERICA INC:FERNLEY
2000 EAST NEWLANDS
FERNLEY NV 89408-8944
USA

Recipient: PALMER
Fax:

Delivery #: 88954476
PO #: 008853
Weight: 192150 LB
Ship Date: 11/10/2014
Package: BULK
Mode: Hopper Car
Car #: CPCX805125
Seal No: 8285

Product: PE 7104 BULK

Lot Number: CEK810150

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.35	g/10mi
HLMI	ASTM D1238	14.78	g/10mi
Pellet Count	ST-905	33	pel/g
Production date		20141013	
Density	D1505 or D4883	0.919	g/cm3

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Kevin Ayres
Quality Control Supervisor

For CoA questions contact Customer Service Representative at +1-832-813-4806



Lili Cui, Ph.D., Geomembrane Technical Service & Applications Development
Room 154 PTC ■ Bartlesville, OK 74004 ■
918-661-1897 ■ cuil@cpchem.com ■ Fax: 918-662-2220 ■ www.cpchem.com

June 8, 2012

Grant Palmer
Agru America
500 Garrison Road
Georgetown, SC 29440

Dear Grant:

This letter is to report the final results of oven-aging and UV-aging tests (according to GRI-GM13 and GRI-GM17) on Agru America sheet samples that you provided to us in 2011. These tests were performed by CPChem's Materials Evaluation Laboratory in Bartlesville, OK. The tests were completed April 2012.

The GRI-GM13 (HDPE) and GRI-GM17 (LLDPE) durability tests were done according to the following procedures.

Test	Exposure	Method
HP-OIT	150 °C, 500 psi oxygen	D5885
Oven Aging	90 days, 85 °C	D5721
UV Aging	1600 UV hrs (Conditions were 20 hours UVA-340 at 75 °C followed by 4 hrs dark with condensation at 60 °C. Irradiance was 0.72 W/m ² at 340 nm.)	D7238

Oven-Aging Results

Sample	Initial HP-OIT (min)	HP-OIT Value after Oven Aging (min)	% HP-OIT Retained	GRI-GM13 or GRI-GM17 % Retained Requirement
40 mil LLDPE Roll # 346550-11 from Marlex® 7104 Polyethylene Lot # CBC810430	659	572	87	60
60 mil HDPE Roll # 447108-11 from Marlex® K307 Polyethylene Lot # 71-1-1104	1136	994	88	80

UV-Aging Results

Sample	Initial HP-OIT (min)	HP-OIT Value after UV Aging (min)	% HP-OIT Retained	GRI-GM13 or GRI-GM17 % Retained Requirement
40 mil LLDPE Roll # 346550-11 from Marlex® 7104 Polyethylene Lot # CBC810430	659	449	68	35
60 mil HDPE Roll # 447108-11 from Marlex® K307 Polyethylene Lot # 71-1-1104	1136	924	81	50

According to these test results, the durability requirements are met.

If you have any questions, please call me at 918-661-1897.

Sincerely,

A handwritten signature in black ink, appearing to read "Lili Cui". The signature is fluid and cursive, with the first name "Lili" and last name "Cui" clearly distinguishable.

Lili Cui, Ph.D.
Geomembrane Technical Service & Applications Development

*Any technical advice, recommendations, results, or analysis ("Information") contained herein, including, without limitation, Information as it may relate to the selection of a specific product ("Product") for your use and application, is given **without warranty or guarantee** and is accepted at your sole risk. It is imperative that you test the Information (and Product, if applicable) to determine to your own satisfaction whether the Information (and Product, if applicable) are suitable for your intended use and application. **You expressly assume, and release Chevron Phillips Chemical Company, from all risk and liability, whether based in contract, tort or otherwise, in connection with the use of, or results obtained from, such Information (and Product, if applicable).***



Lili Cui, Polyethylene Tech Service and Applications Development
Room 154 PTC ■ Bartlesville, OK 74003 ■
918-977- 4685 ■ cuill@cpchem.com ■ Fax: 918-977-7599 ■ www.cpchem.com

July 10, 2013

Grant Palmer
Agru America
500 Garrison Road
Georgetown, SC 29440

Dear Grant:

Per your request for this information, there has been no change to the additive formulation specifications of Marlex® 7104 and Marlex® K307 polyethylene resins since GRI-GM13 and GRI-GM17 oven- and UV-aging testing was performed on Agru America sheet from these resins in December 2012.

If you have any questions, please call me at 918-977-4685.

Sincerely,

A handwritten signature in black ink that reads "Lili Cui". The signature is fluid and cursive, with the first name "Lili" and last name "Cui" clearly distinguishable.

Lili Cui, Ph.D.
Polyethylene Tech Service and Applications Development

*Any technical advice, recommendations, results, or analysis ("Information") contained herein, including, without limitation, Information as it may relate to the selection of a specific product ("Product") for your use and application, is given **without warranty or guarantee** and is accepted at your sole risk. It is imperative that you test the Information (and Product, if applicable) to determine to your own satisfaction whether the Information (and Product, if applicable) are suitable for your intended use and application. **You expressly assume, and release Chevron Phillips Chemical Company, from all risk and liability, whether based in contract, tort or otherwise, in connection with the use of, or results obtained from, such Information (and Product, if applicable).***



January 29, 2014

Mail To:

Grant Palmer
Agru America
500 Garrison Road
Georgetown, SC 29440

email: gp@AgruAmerica.com

Bill To:

<= Same

Dear Mr. Palmer:

Thank you for consulting TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report of the laboratory testing for the sample(s) listed below.

TRI Job Reference Number: E2386-59-09

Material(s) Tested: One Agru 80 mil Microspike LLDPE Geomembrane(s)

Test(s) Requested: 2% Secant (ASTM D5323 via ASTM D638, GM17)
Multi-axial Tensile (ASTM D 5617)

If you have any questions or require any additional information, please call us at 1-800-880-8378

Sincerely,

Mansukh Patel
Laboratory Manager
Geosynthetic Services Division
www.GeosyntheticTesting.com



GEOMEMBRANE TEST RESULTS

TRI Client: Agru America

Material: Agru 80 mil Microspike LLDPE Geomembrane

Sample Identification: G14D031009 , Chevron 7104 LLDPE Resin, Resin Lot # CDG810350

TRI Log #: E2386-59-09

PARAMETER											TEST REPLICATE NUMBER											MEAN	STD. DEV.	
											1	2	3	4	5	6	7	8	9	10				
2% Secant Modulus (ASTM D5323 via ASTM D638, GM17)																								
MD 2% Secant Modulus (psi)		30887	30305	30617	32594	31327																	31146	892
MD 2% Secant Modulus (ppi)		2662	2530	2596	2533	2444																	2553	82
TD 2% Secant Modulus (psi)		35037	35745	35187	37057	34833																	35572	897
TD 2% Secant Modulus (ppi)		2950	2760	3065	2827	2675																	2855	154
Multi-axial Tensile (ASTM D 5617)																								
Test Method A: Centerpoint Deflection Versus Pressure																								
Thickness (mils)		81.0	78.0	79.0																	79.3	1.5		
Maximum Stress (psi)		1873	1781	1899																	1851	62		
% Elongation @ Rupture (%)		77.6	77.0	85.0																	79.9	4.5		
Failure Description		MDT N-EF	MDT N-EF	MDT N-EF																				
MDT	A tear in the machine direction.																							
H	Circular or elliptical hole in the specimen.																							
H-CAT	Circular or elliptical hole in an area where the material has significantly necked down or thinned. The large thinned area resembles a pupil of a cat eye.																							
N-EF	No edge failure																							
MD Machine Direction		TD Transverse Direction																						

Appendix I.7

40-mil LLDPE Smooth Geomembrane Resin Quality Control Certificates



Certificate of Analysis

Shipped To: AGRU AMERICA INC:FERNLEY
2000 EAST NEWLANDS
FERNLEY NV 89408-8944
USA

Recipient: PALMER
Fax:

Delivery #: 88900867
PO #: 8546
Weight: 188950 LB
Ship Date: 08/06/2014
Package: BULK
Mode: Hopper Car
Car #: CEFX053814
Seal No: 7052

Product: PE 7104 BULK

Lot Number: CEH810040

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.32	g/10mi
HLMI	ASTM D1238	15.04	g/10mi
Pellet Count	ST-905	31	pel/g
Production date		20140801	
Density	D1505 or D4883	0.919	g/cm3

The data set forth herein have been carefully compiled by Chevron Phillips Chemical Company LP (CPChem).
However, there is no warranty of any kind, either expressed or implied, applicable to its use, and the user assumes all risk and liability in connection therewith.

Kevin Ayres
Quality Control Supervisor

For CoA questions contact Customer Service Representative at +1-832-813-4806



Lili Cui, Ph.D., Geomembrane Technical Service & Applications Development
Room 154 PTC ■ Bartlesville, OK 74004 ■
918-661-1897 ■ cuil@cpchem.com ■ Fax: 918-662-2220 ■ www.cpchem.com

June 8, 2012

Grant Palmer
Agru America
500 Garrison Road
Georgetown, SC 29440

Dear Grant:

This letter is to report the final results of oven-aging and UV-aging tests (according to GRI-GM13 and GRI-GM17) on Agru America sheet samples that you provided to us in 2011. These tests were performed by CPChem's Materials Evaluation Laboratory in Bartlesville, OK. The tests were completed April 2012.

The GRI-GM13 (HDPE) and GRI-GM17 (LLDPE) durability tests were done according to the following procedures.

Test	Exposure	Method
HP-OIT	150 °C, 500 psi oxygen	D5885
Oven Aging	90 days, 85 °C	D5721
UV Aging	1600 UV hrs (Conditions were 20 hours UVA-340 at 75 °C followed by 4 hrs dark with condensation at 60 °C. Irradiance was 0.72 W/m ² at 340 nm.)	D7238

Oven-Aging Results

Sample	Initial HP-OIT (min)	HP-OIT Value after Oven Aging (min)	% HP-OIT Retained	GRI-GM13 or GRI-GM17 % Retained Requirement
40 mil LLDPE Roll # 346550-11 from Marlex [®] 7104 Polyethylene Lot # CBC810430	659	572	87	60
60 mil HDPE Roll # 447108-11 from Marlex [®] K307 Polyethylene Lot # 71-1-1104	1136	994	88	80

UV-Aging Results

Sample	Initial HP-OIT (min)	HP-OIT Value after UV Aging (min)	% HP-OIT Retained	GRI-GM13 or GRI-GM17 % Retained Requirement
40 mil LLDPE Roll # 346550-11 from Marlex [®] 7104 Polyethylene Lot # CBC810430	659	449	68	35
60 mil HDPE Roll # 447108-11 from Marlex [®] K307 Polyethylene Lot # 71-1-1104	1136	924	81	50

According to these test results, the durability requirements are met.

If you have any questions, please call me at 918-661-1897.

Sincerely,

A handwritten signature in black ink, appearing to read "Lili Cui". The signature is fluid and cursive, with the first name "Lili" and last name "Cui" clearly distinguishable.

Lili Cui, Ph.D.
Geomembrane Technical Service & Applications Development

*Any technical advice, recommendations, results, or analysis ("Information") contained herein, including, without limitation, Information as it may relate to the selection of a specific product ("Product") for your use and application, is given **without warranty or guarantee** and is accepted at your sole risk. It is imperative that you test the Information (and Product, if applicable) to determine to your own satisfaction whether the Information (and Product, if applicable) are suitable for your intended use and application. **You expressly assume, and release Chevron Phillips Chemical Company, from all risk and liability, whether based in contract, tort or otherwise, in connection with the use of, or results obtained from, such Information (and Product, if applicable).***



Lili Cui, Polyethylene Tech Service and Applications Development
Room 154 PTC ■ Bartlesville, OK 74003 ■
918-977- 4685 ■ cuill@cpchem.com ■ Fax: 918-977-7599 ■ www.cpchem.com

July 10, 2013

Grant Palmer
Agru America
500 Garrison Road
Georgetown, SC 29440

Dear Grant:

Per your request for this information, there has been no change to the additive formulation specifications of Marlex[®] 7104 and Marlex[®] K307 polyethylene resins since GRI-GM13 and GRI-GM17 oven- and UV-aging testing was performed on Agru America sheet from these resins in December 2012.

If you have any questions, please call me at 918-977-4685.

Sincerely,

A handwritten signature in black ink that reads "Lili Cui". The signature is fluid and cursive, with the first name "Lili" and last name "Cui" clearly distinguishable.

Lili Cui, Ph.D.
Polyethylene Tech Service and Applications Development

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GEOMEMBRANE TEST RESULTS

TRI Client: Agru

Material: Agru 40 mil. Smooth LLDPE Geomembrane

Sample Identification: G14B115077

TRI Log #: E2390-04-04

PARAMETER	TEST REPLICATE NUMBER										STD.
	1	2	3	4	5	6	7	8	9	10	MEAN DEV.
2% Secant Modulus (ASTM D5323 via ASTM D638, GM17)											
MD 2% Secant Modulus (psi)	41601	44357	41428	43901	42505						42758 1326
MD 2% Secant Modulus (ppi)	1701	1805	1707	1809	1717						1748 54
TD 2% Secant Modulus (psi)	41415	40123	42319	39389	37559						40161 1844
TD 2% Secant Modulus (ppi)	1665	1637	1650	1599	1608						1632 28
Multi-axial Tensile (ASTM D 5617)											
Test Method A: Centerpoint Deflection Versus Pressure											
Thickness (mils)	41	41	39								40 2
Maximum Stress (psi)	1914	1793	1829								1845 62
% Elongation @ Rupture (%)	56	75	101								77 22
Failure Description	H	TDT	TDT								
	N-EF	N-EF	N-EF								
MDT	A tear in the machine direction.										
TDT	A tear in the transverse direction.										
H	Circular or elliptical hole in the specimen.										
H-CAT	Circular or elliptical hole in an area where the material has significantly necked down or thinned. The large thinned area resembles a pupil of a cat eye.										
N-EF	No edge failure										
MD Machine Direction	TD Transverse Direction										

Appendix I.8

Welding Rod Resin Quality Control Certificates



WELDING ROD CERTIFICATE OF CONFORMITY

Welding Rod Thickness : **5mm**

Lot Number : **CDN 810330**

Material: **7104**

		Test Results
Carbon Black Content : ASTM D4218		2.14 %
Melt Flow Index : Cond. E ASTM D1238	190°C / 2160g	.35 g / 10min
Specific Gravity : ASTM D792 / D1505		.935 g / cm ³

CUSTOMER : Erosion Control

P. O. # : 14084 CC&V Squaw Gulch VLF

DESTINATION : Cripple Creek, CO

Signature : 

Date : 3-4-14

Mgr., Quality Control Department



Certificate of Analysis

Shipped To: AGRU AMERICA INC:FERNLEY
2000 EAST NEWLANDS
FERNLEY NV 89408
USA

Recipient: PALMER
Fax:

Delivery #: 88775293
PO #: 007935
Weight: 188150 LB
Ship Date: 12/30/2013
Package: BULK
Mode: Hopper Car
Car #: CEFX053876
Seal No: 550295

Product: PE 7104 BULK

Lot Number: CDN810330

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.35	g/10mi
HLMI	ASTM D1238	14.36	g/10mi
Pellet Count	ST-905	32	pel/g
Production date		20131207	
Density	D1505 or D4883	0.919	g/cm3

The data set forth herein have been carefully compiled by Chevron Phillips Chemical Company LP (CPChem).
However, there is no warranty of any kind, either expressed or implied, applicable to its use, and the user assumes all risk and liability in connection therewith.

Kevin Ayres
Quality Control Supervisor

For CoA questions contact Customer Service Representative at +1-832-813-4806



WELDING ROD CERTIFICATE OF CONFORMITY

Welding Rod Thickness : **5mm**

Lot Number : **CDF 811450**

Material: **7104**

	Test Results
Carbon Black Content : ASTM D4218	2.22 %
Melt Flow Index : Cond. E ASTM D1238	190°C / 2160g .31 g / 10min
Specific Gravity : ASTM D792 / D1505	.936 g / cm ³

CUSTOMER : Erosion Control

P. O. # : 14084 CC&V Squaw Gulch VLF

DESTINATION : Cripple Creek, CO

Signature : 

Date : 3-4-14

Mgr., Quality Control Department

Certificate of Analysis

Shipped To: AGRU AMERICA INC:FERNLEY
2000 EAST NEWLANDS
FERNLEY NV 89408
USA

Recipient: PALMER
Fax:

Delivery #: 88686583
PO #: 007539
Weight: 189550 LB
Ship Date: 07/21/2013
Package: BULK
Mode: Hopper Car
Car #: NAHX610346
Seal No: 543532

Product: PE 7104 BULK

Lot Number: CDF811450

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.31	g/10mi
HLMI	ASTM D1238	13.88	g/10mi
Pellet Count	ST-905	33	pel/g
Production date		20130625	
Density	D1505 or D4883	0.919	g/cm3

WAIVED BY GUNTHER NIEDERMOSER

The data set forth herein have been carefully compiled by Chevron Phillips Chemical Company LP (CPChem).
However, there is no warranty of any kind, either expressed or implied, applicable to its use, and the user assumes all risk and liability in connection therewith.



Kevin Ayres
Quality Control Supervisor

For CoA questions contact Customer Service Representative at +1-832-813-4806



WELDING ROD CERTIFICATE OF CONFORMITY

Welding Rod Thickness : **5mm**

Lot Number : **CFD810130**

Material: **7104**

		Test Results
Carbon Black Content : ASTM D4218		2.6 %
Melt Flow Index : Cond. E ASTM D1238	190°C / 2160g	.33 g / 10min
Specific Gravity : ASTM D792 / D1505		.936 g / cm ³

CUSTOMER : Erosion Control Applications, Inc.

P. O. # : 13012 Cripple Creek & VMLE2 Squaw Gulch Leach Fac.

DESTINATION : Cripple Creek, CO

Signature : 

Date : 8/4/15

Mgr., Quality Control Department

Certificate of Analysis

Shipped To: AGRU AMERICA INC:FERNLEY
2000 EAST NEWLANDS
FERNLEY NV 89408
USA

Recipient: PALMER
Fax:

Delivery #: 89035558
PO #: Verbal - Denise
Weight: 188650 LB
Ship Date: 04/08/2015
Package: BULK
Mode: Hopper Car
Car #: GPLX076673
Seal No: 32889

Product: PE 7104 BULK

Lot Number: CFD810130

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.33	g/10mi
HLMI	ASTM D1238	14.16	g/10mi
Pellet Count	ST-905	32	pel/g
Production date		20150403	
Density	D1505 or D4883	0.919	g/cm3

The data set forth herein have been carefully compiled by Chevron Phillips Chemical Company LP (CPChem).
However, there is no warranty of any kind, either expressed or implied, applicable to its use, and the user assumes all risk and liability in connection therewith.



Kevin Ayres
Quality Control Supervisor

For CoA questions contact Customer Service Representative at +1-832-813-4806



WELDING ROD CERTIFICATE OF CONFORMITY

Welding Rod Thickness : **5mm**

Lot Number : **CFD810310**

Material: **7104**

**Test
Results**

Carbon Black Content : **2.23 %**
ASTM D4218

Melt Flow Index : **.36 g / 10min**
190°C / 2160g
Cond. E
ASTM D1238

Specific Gravity : **.935 g / cm³**
ASTM D792 / D1505

CUSTOMER : Erosion Control Applications, Inc.

P. O. # : 13012 Cripple Creek & VMLE2 Squaw Gulch Leach Fac.

DESTINATION : Cripple Creek, CO

Signature : 

Date : **8/4/15**

Mgr., Quality Control Department

Certificate of Analysis

Shipped To: AGRU AMERICA INC:FERNLEY
2000 EAST NEWLANDS
FERNLEY NV 89408
USA

Recipient: PALMER
Fax:

Delivery #: 89095549
PO #: 009586
Weight: 187650 LB
Ship Date: 06/23/2015
Package: BULK
Mode: Hopper Car
Car #: CHVX889417
Seal No: 38489

Product: PE 7104 BULK

Lot Number: CFD810310

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.36	g/10mi
HLMI	ASTM D1238	15.36	g/10mi
Pellet Count	ST-905	32	pel/g
Production date		20150722	
Density	D1505 or D4883	0.920	g/cm3

The data set forth herein have been carefully compiled by Chevron Phillips Chemical Company LP (CPChem).
However, there is no warranty of any kind, either expressed or implied, applicable to its use, and the user assumes all risk and liability in connection therewith.



KEVIN AYRES
QUALITY ASSURANCE SUPERINTENDENT

For CoA questions contact Customer Service Representative at +1-832-813-4806

Appendix I.9

Geotextile Roll Quality Control Certificates



March 14, 2012

Ames Construction
Mr. Eric Marolf
PO Box 163

Project: Ball Mill Fill Earthwork
Victor Cripple Creek Mine

Victor, CO 80860

Ref: 12.0N (Lot # 8192011)

This letter is to certify that WEC 12.0N is a needle-punched nonwoven geotextile made of 100% polypropylene staple fibers, which are formed into a random network for dimensional stability. WEC 12.0N resists ultraviolet deterioration, rotting, biological degradation, naturally encountered basics and acids. Polypropylene is stable within a pH range of 2 to 13. Excel 12.0N meets or exceeds the physical property values listed below:

PROPERTY	TEST METHOD	UNIT	M.A.R.V. (Minimum Average Roll Value)
Weight	ASTM D 5261	oz	12.0
Grab Tensile	ASTM D 4632	lbs	300
Grab Elongation	ASTM D 4632	%	50
Trapezoid Tear Strength	ASTM D 4533	lbs	115
Puncture Resistance	ASTM D 4833	lbs	180
CBR Puncture	ASTM D 6241	lbs	850
Permittivity*	ASTM D 4491	sec ⁻¹	1
AOS*	ASTM D 4751	US Sieve (mm)	100
UV Resistance	ASTM D 4355	%/hrs	70/500

Sincerely,

A handwritten signature in blue ink, appearing to read "Keith Gregory".

Keith Gregory

I hereby certify under penalty of perjury that the material listed in this
Certified Test Report represents 1000sy (quantity) of pay item

Pay Item:

Project Name: Ball Mill Fill Earthwork Project Number: 09 0601-400

Bowman Supply
Contract Supplier - Bowman Construction Supply

3/14/12
Date



Certificate of Testing

March 14, 2012

Ames Construction
Mr. Eric Marolf
PO Box 163

Project: Ball Mill Fill Earthwork
Victor Cripple Creek Mine

Victor, CO 80860

Ref: 12.0N (Lot #8192011)

This letter is to certify that WEC 12.0N Geotextile stated herein, tested at following values:

WEC 12.0N	WEC 12.0N	Weight	Grab Tensile MD	Elongation MD	Grab Tensile CD	Elongation CD	Trap Tear MD	Trap Tear CD	Puncture	AOS	Flow Rate	Permittivity
Roll Number	Lot Number	ASTM D 5261	ASTM D4632	ASTM D4633	ASTM D4634	ASTM D4635	ASTM D4533	ASTM D4533	ASTM D4833	ASTM D4751	ASTM D4491	ASTM D4491
		oz/sy	lbs	%	lbs	lbs	lbs	lbs	lbs	US Std Sieve	gal/min/sf	sec-1
020272918	8192011	12.67	342	77	363	88	139	152	199	100	73	0.98
020272928	8192011	12.29	338	72	359	83	133	149	191	100	73	0.98

Sincerely,

Keith Gregory

I hereby certify under penalty of perjury that the material listed in this Certified Test Report represents <u>1000sy</u> (quantity) of pay item	
Pay Item:	
Project Name: <u>Ball Mill Fill Earthwork</u>	Project Number: <u>090601-400</u>
<u>Bullock-Johnson</u>	<u>3/14/12</u>
Contract Supplier - <u>Bowman Construction Supply</u>	Date



February 20, 2012

Bowman Construction Supply
Attn: Ken Kinnard
10801 E 54th St
Denver, CO 80239

Reference: American Recovery & Reinvestment Acts (ARRA)
Buy American Requirement FAR 25.6

Dear Ken:

This letter is to certify that the Western Excelsior nonwoven geotextiles meet the manufactured in the United States requirement of the American Recovery & Reinvestment Acts (ARRA) and the Buy American Requirement FAR 25.6

If you have any questions regarding this, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Keith Gregory". The signature is written in a cursive style with a large, stylized "K" and "G".

Keith Gregory
704-200-4912



Certificate of Compliance

February 16, 2012

Ames Construction
Mr. Eric Marolf
PO Box 163

Project: Ball Mill Fill Earthwork
Victor Cripple Creek Mine

Victor, CO 80860

Ref: 12.0N (Lot # 27218-03)

This letter is to certify that WEC 12.0N is a needle-punched nonwoven geotextile made of 100% polypropylene staple fibers, which are formed into a random network for dimensional stability. WEC 12.0N resists ultraviolet deterioration, rotting, biological degradation, naturally encountered basics and acids. Polypropylene is stable within a pH range of 2 to 13. Excel 12.0N meets or exceeds the physical property values listed below:

PROPERTY	TEST METHOD	UNIT	M.A.R.V. (Minimum Average Roll Value)
Weight	ASTM D 5261	oz	12.0
Grab Tensile	ASTM D 4632	lbs	300
Grab Elongation	ASTM D 4632	%	50
Trapezoid Tear Strength	ASTM D 4533	lbs	115
Puncture Resistance	ASTM D 4833	lbs	180
CBR Puncture	ASTM D 6241	lbs	850
Permittivity*	ASTM D 4491	sec ⁻¹	1
AOS*	ASTM D 4751	US Sieve (mm)	100
UV Resistance	ASTM D 4355	%/hrs	70/500

Sincerely,

Keith Gregory
Technical Sales Manager

I hereby certify under penalty of perjury that the material listed in this
Certified Test Report represents 1500sy (quantity) of pay item

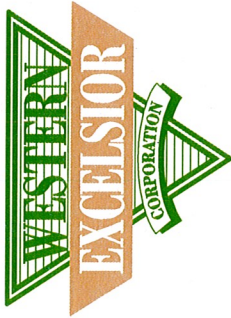
Pay Item:

Project Name: Ball Mill Fill Earthwork

Project Number: 090601-400

Bowman Construction Supply
Contract Supplier - Bowman Construction Supply

2/21/12
Date



Certificate of Testing

February 16, 2012

Ames Construction
Mr. Eric Marolf
PO Box 163

Victor, CO 80860

Project: Ball Mill Fill Earthwork
Victor Cripple Creek Mine

Ref: 12.0N (Lot # 27218-03)

This letter is to certify that WEC 12.0N Geotextile stated herein, tested at following values:

WEC 12.0N	WEC 12.0N	Weight	Grab Tensile MD	Elongation MD	Grab Tensile CD	Elongation CD	Trap Tear MD	Trap Tear CD	Puncture	AOS	Flow Rate	Permittivity
Roll Number	Lot Number	ASTM D 5261	ASTM D4632	ASTM D4633	ASTM D4634	ASTM D4635	ASTM D4633	ASTM D4633	ASTM D4833	ASTM D4751	ASTM D4491	ASTM D4491
		oz/sy	lbs	%	lbs	lbs	lbs	lbs	lbs	US Std Sieve	gal/min/sf	sec-1
30374164	27218-03	12.48	314	76	340	78	124	137	194	100	85	1.13
30374173	27218-03	12.36	309	78	336	80	120	143	186	100	85	1.13
30374174	27218-03	12.36	309	78	336	80	120	143	18	100	85	1.13

Sincerely,

Keith Gregory

Keith Gregory - Technical Sales Manager

I hereby certify under penalty of perjury that the material listed in this
Certified Test Report represents 1500sf (quantity) of pay item

Pay Item:

Project Name: Ball Mill Fill Earthwork Project Number: 090601-400

Bella Smith 2/24/12
Contract Supplier - Bowman Construction Supply Date



February 20, 2012

Bowman Construction Supply
Attn: Ken Kinnard
10801 E 54th St
Denver, CO 80239

Reference: American Recovery & Reinvestment Acts (ARRA)
Buy American Requirement FAR 25.6

Dear Ken:

This letter is to certify that the Western Excelsior nonwoven geotextiles meet the manufactured in the United States requirement of the American Recovery & Reinvestment Acts (ARRA) and the Buy American Requirement FAR 25.6

If you have any questions regarding this, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Keith Gregory". The signature is fluid and cursive, with the first name "Keith" and last name "Gregory" clearly distinguishable.

Keith Gregory
704-200-4912

TENCATE

MIRAFI 1120N Certification

TenCate Geosynthetics Americas

Page: 1

ATTN: ERIC MAROLF
AMES CONSTRUCTION, INC.
P.O. BOX 163
VICTOR, COLORADO 80860-0163

Project: 090601-400
Proj Name: BALL MILL FILL EARTHWORK
Contractor: AMES CONSTRUCTION, INC.
QTY: 3 ROLLS (SEE ATTACHED)

This is to certify that Mirafi® 1120N is a needlepunched nonwoven geotextile composed of polypropylene fibers, which are formed into a stable network such that the fibers retain their relative position. Mirafi® 1120N geotextile is inert to biological degradation and resists naturally encountered chemicals, alkalis, and acids.

Mechanical Properties	Test Code	Test Method	Minimum Average Roll Value			
GRAB TENSILE STRENGTH (MD)	GRABMD	ASTM D4632	300	LBS	1335	N
GRAB TENSILE STRENGTH (CD)	GRABCD	ASTM D4632	300	LBS	1335	N
ELONGATION (MD)	ELMD	ASTM D4632	50	%		
ELONGATION (CD)	ELCD	ASTM D4632	50	%		
TEAR STRENGTH (MD)	TTMD	ASTM D4533	115	LBS	512	N
TEAR STRENGTH (CD)	TTCD	ASTM D4533	115	LBS	512	N
CBR PUNCTURE	CBR	ASTM D6241	800	LBS	3560	N
APPARENT OPENING SIZE - SIEVE	AOS	ASTM D4751	100	#		
APPARENT OPENING SIZE - MM	AOS2	ASTM D4751	.15	MM		
PERMITTIVITY	PTVY	ASTM D4491	.80	SEC-1		
WATER FLOW RATE	FLOW	ASTM D4491	65	GPM/FT2	2648	L/MIN/M2
UV RESISTANCE @ 500 HOURS	UV	ASTM D4355	70	%		

* Customer requested specification.

Certification reflects test results at time of manufacturing and shipment. TenCate Geosynthetics is not responsible for environment or other factors which could alter the physical properties.

ASTM D 4751, AOS is a Maximum Opening Diameter Value

ASTM D4491 - Tested according to Constant Head procedure.

{ I hereby certify under penalty of perjury that the material listed in this }
{ Certificate of Compliance represents 1,500 SY (quantity) of pay item }
{ Pay Item for installation on project: _____ }
{ Ball Mill Fill Earthwork, Number: 090601-400 }
{ _____ }
{ Contract Supplier : Bowman Construction Supply }
{ Date: 2/7/12 Balman }
{ _____ }

* * * END OF REPORT * * *

This February 07, 2012



Chris Whitfield, Quality Manager CERT#: 1004459

Unless specified separately in writing, material results apply only to items tested. No portion of this document may be reproduced whole or in part without the expressed written consent of TenCate. TenCate warrants our products and services to be free from defects in material and workmanship when delivered to TenCate's customers and that our products meet our published specifications. Actual test data supplied is for the full width of the tested master roll.

American Association of Laboratory Accreditation Certificate Number: 1291.01 Accreditation #: GAI-LAP-25-1997

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365 South Holland Dr.
Pendergrass, GA 30567

Tel 706 693 2226
Tel 888 795 0808

Fax 706 693 2122
www.tencate.com



**MIRAFI 1120N Certification**

Attn: Eric Marolf
 Ames Construction, Inc
 P.O. Box 163
 Victor, Colorado 80860-0163

Proj Name: BALL MILL FILL EARTHWORK

ROLL: 921577001, 921576982 AND 921577018

This is to certify that Mirafi® 1120N is a needlepunched nonwoven geotextile composed of polypropylene fibers, which are formed into a stable network such that the fibers retain their relative position. Mirafi® 1120N geotextile is inert to biological degradation and resists naturally encountered chemicals, alkalis, and acids.

Mechanical Properties	Test Code	Test Method	Minimum Average Roll Value			
GRAB TENSILE STRENGTH (MD)	GRABMD	ASTM D4632	300	LBS	1335	N
GRAB TENSILE STRENGTH (CD)	GRABCD	ASTM D4632	300	LBS	1335	N
ELONGATION (MD)	ELMD	ASTM D4632	50	%		
ELONGATION (CD)	ELCD	ASTM D4632	50	%		
TEAR STRENGTH (MD)	TTMD	ASTM D4533	115	LBS	512	N
TEAR STRENGTH (CD)	TTCD	ASTM D4533	115	LBS	512	N
CBR PUNCTURE	CBR	ASTM D6241	800	LBS	3560	N
APPARENT OPENING SIZE - SIEVE	AOS	ASTM D4751	100	#		
APPARENT OPENING SIZE - MM	AOS2	ASTM D4751	.15	MM		
PERMITTIVITY	PTVY	ASTM D4491	.80	SEC-1		
WATER FLOW RATE	FLOW	ASTM D4491	65	GPM/FT2	2648	L/MIN/M2
UV RESISTANCE @ 500 HOURS	UV	ASTM D4355	70	%		

Physical Properties	Test Code	Test Method	Typical Value			
MASS/UNIT WEIGHT	WEIGHT	ASTM D5261	12.2	OZ/YD2	413.6	G/M2

* Customer requested specification.

Certification reflects test results at time of manufacturing and shipment. TenCate Geosynthetics is not responsible for environment or other factors which could alter the physical properties.

ASTM D 4751, AOS is a Maximum Opening Diameter Value

ASTM D4491 - Tested according to Constant Head procedure.

{ I hereby certify under penalty of perjury that the material listed in this }
 { Certificate of Compliance represents 1500 sy (quantity) of pay item }
 { Pay Item for installation on project: }
 { Ball Mill Fill Earthwork, Number: 090601-400 }
 { }
 { Contract Supplier : Bowman Construction Supply }
 { Date: 2/13/12 }
 { Bowman }

* * * END OF REPORT * * *

This February 13, 2012

Chris Whitfield

Chris Whitfield, Quality Manager CERT#: 1004504

Unless specified separately in writing, material results apply only to items tested. No portion of this document may be reproduced whole or in part without the expressed written consent of TenCate. TenCate warrants our products and services to be free from defects in material and workmanship when delivered to TenCate's customers and that our products meet our published specifications. Actual test data supplied is for the full width of the tested master roll.

American Association of Laboratory Accreditation Certificate Number: 1291.01 Accreditation #: GAI-LAP-25-1997

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365 South Holland Dr.
 Pendergrass, GA 30567

Tel 706 693 2226
 Tel 888 795 0808

Fax 706 693 2122
 www.tencate.com





TENCATE GEOSYNTHETICS
North America

Mirafi® Geotextile Testing Certification

Attn: Eric Marolf
Ames Construction, Inc.
P.O. Box 163
Victor, Colorado 80860-0163

Project: Ball Mill Fill Earthwork
Project#: 090601-400
Roll#: 921576982,921577001,921577018
Lot# 12951B

This is to certify that the Mirafi 1120N Geotextile stated herein, tested at the following values:

Style Mirafi 1120N	Grab Tensile MD	Elongation MD	Grab Tensile CD	Elongation CD	Trap Tear MD	Trap Tear CD	Puncture	Burst	Flow Rate	Permittivity	AOS	Production & Test Date
Roll Number	ASTM D4632	ASTM D4632	ASTM D4632	ASTM D4632	ASTM D4533	ASTM D4533	ASTM D4833	ASTM D3786	ASTM D4491	ASTM D4491	ASTM D4751	
	lbs	%	lbs	lbs	lbs	lbs	lbs	psi	gal/min/sf	sec-1	US Std Sieve	
921576982	314	64	303	85	121	117	154	450	94	1.28	100	12/14/11
921577001	314	64	303	85	121	117	154	450	94	1.28	100	12/15/11
921577018	320	64	346	83	168	120	193	510	94	1.28	100	12/15/11

I hereby certify under penalty of perjury that the material listed in this
Certified Test Report represents 1500 sy_(quantity) of pay item

Pay Item for Installation on Project: Ball Mill Fill Earthwork

Project Number: 090601-400

Bolton L. H.
Contract Supplier - Bowman Construction Supply

2/7/12
Date



August 19, 2011

RE: Buy America Act – Construction Materials Federal Acquisition Regulation 52.225-9

The following Mirafi® products are manufactured and produced in the United States:

N-Series Nonwoven Geotextiles: 135N, 140NL, 140NC, 140N, 170N, 180N, 1100N, 1120N, 1160N

S-Series Nonwoven Geotextiles: S600, S800, S1000, S1200, S1600

Paving Products: MPV, FG, FGC, MTK, 1450BB

Filterweave Geotextiles: FW300, FW402, FW403, FW500, FF101

G-Series: G100N, G100W, G200N

HP-Series Geotextiles: HP270, HP565, HP665, HP770, Miramesh

RSi Series Geotextiles: RS380i, RS580i

HS-Series Geotextiles: HS400, HS600, HS800, HS1150, HS1715

Miragrid XT Geogrids: 2XT, 3XT, 5XT, 7XT, 8XT, 10XT, 20XT, 22XT, 24XT

BXG Geogrids: BXG10, BXG11, BXG12

These products meet the requirements to be classified as a "Domestic Construction Material" under Section 52.225-9 Buy American Act – Construction Materials.

Sincerely,

A handwritten signature in cursive script that reads "Teri Krock".

Teri Krock
Senior Product Manager

TenCate Geosynthetics North America
365 South Holland Drive, Pendergrass, GA 30567 (706) 693-2226 Fax: (706) 693-4400