



quality certificate

ROLL # **F14B066088**Lot #: **CDN810200**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.50 mm	98 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.81 mm	111 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	28 mil	AVE:	2.67 mm	105 mil	TEST RESULTS	
OIT(Standard) ASTM D3895 minutes						202

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	.34
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Carbon Black Content ASTM D4218	Range	%	2.08
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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	71 N/mm	403 ppi	3,837 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	%	705.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.35
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	344.7 N	77.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	440.4 N	99 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	840.7 N	189 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 ph1**
Destination **Cripple Creek, CO**

Date:.....**02/08/14**.....Signature.....
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ROLL # **F14B066089**Lot #: **CDN810200**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.49 mm	98 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.80 mm	110 mil	Width.....	7.01 m;	23.0 feet

Asperity ASTM D7466:	30 mil	AVE:	2.63 mm	104 mil	OIT(Standard) ASTM D3895 minutes	202	TEST RESULTS
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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	.34
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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	68 N/mm	389 ppi	3,758 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	%	682.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.35
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	344.7 N	77.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	640.5 N	144 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	840.7 N	189 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 ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14B066090**Lot #: **CDN810200**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.49 mm	98 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.79 mm	110 mil	Width.....	7.01 m;	23.0 feet
Asperity ASTM D7466:	29 mil AVE:	2.56 mm	101 mil			

OIT(Standard) ASTM D3895 minutes **202** **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	.34
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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	66 N/mm	379 ppi	3,758 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	%	682.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.35
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	344.7 N	77.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	640.5 N	144 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	840.7 N	189 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 ph1**
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ROLL # **F14B066091**Lot #: **CDN810200**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.54 mm	100 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.81 mm	111 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	30 mil	AVE:	2.67 mm	105 mil	TEST RESULTS	
OIT(Standard) ASTM D3895 minutes						202

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	.34
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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	69 N/mm	395 ppi	3,758 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	%	682.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.35
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	344.7 N	77.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	640.5 N	144 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	840.7 N	189 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 ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14B067092**Lot #: **CDN810200**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.51 mm	99 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.78 mm	109 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	30 mil AVE:	2.64 mm	104 mil			

OIT(Standard) ASTM D3895 minutes **202** **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	.34
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Carbon Black Content ASTM D4218	Range	%	2.34
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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	68 N/mm	391 ppi	3,758 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	%	682.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.35
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	344.7 N	77.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	640.5 N	144 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	840.7 N	189 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 ph1**
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ROLL # **F14B067093**Lot #: **CDN810200**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.51 mm	99 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.78 mm	109 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	32 mil	AVE: 2.63 mm	104 mil			

OIT(Standard) ASTM D3895 minutes **202** **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	.34
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Carbon Black Content ASTM D4218	Range	%	2.34
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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	68 N/mm	389 ppi	3,758 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	%	682.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.35
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	344.7 N	77.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	640.5 N	144 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	840.7 N	189 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 ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14B067094**Lot #: **CDN810200**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.47 mm	97 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.82 mm	111 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	29 mil AVE:	2.63 mm	104 mil			

OIT(Standard) ASTM D3895 minutes **202** **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	.34
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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	71 N/mm	403 ppi	3,893 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	%	691.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.35
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	344.7 N	77.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	640.5 N	144 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	840.7 N	189 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 ph1**
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ROLL # **F14B067095**Lot #: **CDN810200**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.48 mm	98 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.83 mm	111 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	32 mil	AVE:	2.63 mm	104 mil	OIT(Standard) ASTM D3895 minutes 202	
						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	.34
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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	71 N/mm	403 ppi	3,893 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	%	691.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.35
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	344.7 N	77.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	640.5 N	144 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	840.7 N	189 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 ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14B067096**Lot #: **CDN810200**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.48 mm	98 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.79 mm	110 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	32 mil	AVE:	2.64 mm	104 mil		

OIT(Standard) ASTM D3895 minutes **202** **TEST RESULTS**

Specific Gravity	Density	g/cc	.934
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.34
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	71 N/mm	405 ppi	3,893 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		691.5	
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.35
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	344.7 N		77.500 lbs	

Puncture Resistance	Load	640.5 N		144 lbs	
FTMS 101 Method 2065 (Modified)					

Puncture Resistance	Load	840.7 N		189 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 ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14B067097**Lot #: **CDN810200**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.50 mm	98 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.82 mm	111 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	27 mil AVE:	2.64 mm	104 mil			

OIT(Standard) ASTM D3895 minutes **202** **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	.34
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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	71 N/mm	405 ppi	3,893 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	%	691.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.35
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	344.7 N	77.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	640.5 N	144 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	840.7 N	189 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 ph1**
Destination **Cripple Creek, CO**

Date:..... **2/9/14**Signature.....
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ROLL # **F14B067098**Lot #: **CDN810200**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.46 mm	97 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.79 mm	110 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	27 mil AVE:	2.60 mm	102 mil			

OIT(Standard) ASTM D3895 minutes **202** **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	.34
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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	70 N/mm	398 ppi	3,893 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	%	691.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.35
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	344.7 N	77.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	640.5 N	144 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	840.7 N	189 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 ph1**
Destination **Cripple Creek, CO**

Date:..... **2/9/14**Signature.....
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ROLL # **F14B067099**Lot #: **CDN810200**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.49 mm	98 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.81 mm	111 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	29 mil AVE:	2.66 mm	105 mil			

OIT(Standard) ASTM D3895 minutes **202**

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	.34
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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	68 N/mm	391 ppi	3,735 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	%	678.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.35
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	346.9 N	78.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	649.4 N	146 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	822.9 N	185 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 ph1**
Destination **Cripple Creek, CO**

Date:..... **2/9/14**Signature.....
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ROLL # **F14B067100**Lot #: **CDN810200**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.47 mm	97 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.80 mm	110 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	26 mil	AVE:	2.64 mm	104 mil		

OIT(Standard) ASTM D3895 minutes **202** **TEST RESULTS**

Specific Gravity	Density	g/cc	.935
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.34
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	68 N/mm	388 ppi	3,735 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		678.0	
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.35
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	346.9 N		78.000 lbs	

Puncture Resistance	Load	649.4 N		146 lbs	
FTMS 101 Method 2065 (Modified)					

Puncture Resistance	Load	822.9 N		185 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 ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14B067101**Lot #: **CDH812030**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.47 mm	97 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.87 mm	113 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	27 mil	AVE: 2.65 mm	104 mil			

OIT(Standard) ASTM D3895 minutes **201** **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	.30
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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	68 N/mm	390 ppi	3,735 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	%	678.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	346.9 N	78.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	649.4 N	146 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	822.9 N	185 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
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ROLL # **F14B067102**Lot #: **CDH812030**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.48 mm	98 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.76 mm	109 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	27 mil AVE:	2.63 mm	104 mil			

OIT(Standard) ASTM D3895 minutes **201** **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	.30
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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	68 N/mm	387 ppi	3,735 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	%	678.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	346.9 N	78.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	649.4 N	146 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	822.9 N	185 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 ph1**
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ROLL # **F14B067103**Lot #: **CDH812030**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.53 mm	100 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.81 mm	111 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	30 mil AVE:	2.66 mm	105 mil			

OIT(Standard) ASTM D3895 minutes **201** **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	.30
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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	68 N/mm	391 ppi	3,735 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	%	678.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	346.9 N	78.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	649.4 N	146 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	822.9 N	185 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
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ROLL # **F14B067104**Lot #: **CDH812030**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.47 mm	97 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.82 mm	111 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	34 mil	AVE:	2.63 mm	104 mil		

OIT(Standard) ASTM D3895 minutes **201** **TEST RESULTS**

Specific Gravity	Density	g/cc	.934
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.30
COND. E			
GRADE: 7104			

Carbon Black Content	Range	%	2.15
ASTM D4218			

Carbon Black Dispersion	Category	10 IN CAT 1
ASTM D5596		

Tensile Strength					
ASTM D6693					
ASTM D638 (Modified)	Average Strength @ Break	73 N/mm	416 ppi	4,015 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		681.5	
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.21
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	346.9 N		78.000 lbs	

Puncture Resistance	Load	649.4 N		146 lbs	
FTMS 101 Method 2065 (Modified)					

Puncture Resistance	Load	822.9 N		185 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 ph1**
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ROLL # **F14B067105**Lot #: **CDH812030**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.51 mm	99 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.78 mm	109 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	33 mil	AVE: 2.65 mm	104 mil			

OIT(Standard) ASTM D3895 minutes **201** **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	.30
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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	73 N/mm	419 ppi	4,015 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	%	681.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	346.9 N	78.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	649.4 N	146 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	822.9 N	185 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
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ROLL # **F14B071001**Lot #: **CDH812030**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.49 mm	98 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.77 mm	109 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	34 mil AVE:	2.62 mm	103 mil			

OIT(Standard) ASTM D3895 minutes **201** **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	.30
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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	73 N/mm	414 ppi	4,015 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	%	681.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	346.9 N	78.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	649.4 N	146 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	822.9 N	185 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 ph1**
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ROLL # **F14B071002**Lot #: **CDH812030**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.55 mm	100 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.88 mm	113 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	31 mil AVE:	2.66 mm	105 mil			

OIT(Standard) ASTM D3895 minutes **201** **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	.30
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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	74 N/mm	420 ppi	4,015 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	%	681.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	346.9 N	78.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	649.4 N	146 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	822.9 N	185 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
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ROLL # **F14B071003**Lot #: **CDH812030**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.52 mm	99 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.76 mm	109 mil	Width.....	7.01 m	23.0 feet

Asperity ASTM D7466:	33 mil	AVE:	2.63 mm	104 mil	OIT(Standard) ASTM D3895 minutes	201	TEST RESULTS
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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	.30
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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	73 N/mm	416 ppi	4,015 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	%	681.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	346.9 N	78.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	649.4 N	146 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	822.9 N	185 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
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ROLL # **F14B071004**Lot #: **CDH812030**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.50 mm	98 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.79 mm	110 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	31 mil	AVE: 2.60 mm	102 mil			

OIT(Standard) ASTM D3895 minutes **201** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.932
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.30
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Carbon Black Content ASTM D4218	Range	%	2.10
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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	69 N/mm	394 ppi	3,851 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	%	668.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	351.4 N	79.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	613.8 N	138 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	814.0 N	183 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
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ROLL # **F14B071005**Lot #: **CDH812030**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.51 mm	99 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.79 mm	110 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	27 mil	AVE:	2.67 mm	105 mil	TEST RESULTS	
OIT(Standard) ASTM D3895 minutes						201

Specific Gravity	Density	g/cc	.932
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.30
COND. E			
GRADE:	7104		

Carbon Black Content	Range	%	2.10
ASTM D4218			

Carbon Black Dispersion	Category	10 IN CAT 1
ASTM D5596		

Tensile Strength					
ASTM D6693					
ASTM D638 (Modified)	Average Strength @ Break	71 N/mm	405 ppi	3,851 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		668.0	
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.21
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	351.4 N	79.000 lbs		

Puncture Resistance	Load	613.8 N	138 lbs
FTMS 101 Method 2065 (Modified)			

Puncture Resistance	Load	814.0 N	183 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 ph1**
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ROLL # **F14B071006**Lot #: **CDH812030**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.46 mm	97 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.76 mm	109 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	28 mil	AVE: 2.61 mm	103 mil			

OIT(Standard) ASTM D3895 minutes **201** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.932
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.30
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Carbon Black Content ASTM D4218	Range	%	2.10
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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	69 N/mm	396 ppi	3,851 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	%	668.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	351.4 N	79.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	613.8 N	138 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	814.0 N	183 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
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ROLL # **F14B071007**Lot #: **CDH812030**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.51 mm	99 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.78 mm	109 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	27 mil	AVE: 2.63 mm	104 mil			

OIT(Standard) ASTM D3895 minutes **201** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.932
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.30
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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	70 N/mm	399 ppi	3,851 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	%	668.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	351.4 N	79.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	613.8 N	138 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	814.0 N	183 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 ph1**
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ROLL # **F14B071008**Lot #: **CDH812030**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.49 mm	98 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.74 mm	108 mil	Width.....	7.01 m;	23.0 feet
Asperity ASTM D7466:	28 mil AVE:	2.61 mm	103 mil			

OIT(Standard) ASTM D3895 minutes **201** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.932
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.30
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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	69 N/mm	396 ppi	3,851 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	%	668.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	351.4 N	79.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	613.8 N	138 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	814.0 N	183 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 ph1**
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ROLL # **F14B071009**Lot #: **CDH812030**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.54 mm	100 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.74 mm	108 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	29 mil AVE:	2.64 mm	104 mil			

OIT(Standard) ASTM D3895 minutes **201** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.932
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.30
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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	71 N/mm	405 ppi	3,893 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	%	705.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	351.4 N	79.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	613.8 N	138 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	814.0 N	183 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 ph1**
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ROLL # **F14B071010**Lot #: **CDH812030**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.50 mm	98 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.75 mm	108 mil	Width.....	7.01 m	23.0 feet

Asperity ASTM D7466:	28 mil	AVE:	2.63 mm	104 mil	OIT(Standard) ASTM D3895 minutes	201	TEST RESULTS
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Specific Gravity ASTM D792	Density	g/cc	.932
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.30
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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	71 N/mm	403 ppi	3,893 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	%	705.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	351.4 N	79.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	613.8 N	138 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	814.0 N	183 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
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ROLL # **F14B071011**Lot #: **CDH812030**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.52 mm	99 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.68 mm	106 mil	Width.....	7.01 m	23.0 feet

Asperity ASTM D7466:	27 mil	AVE:	2.60 mm	102 mil	OIT(Standard) ASTM D3895 minutes	201	TEST RESULTS
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Specific Gravity ASTM D792	Density	g/cc	.932
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.30
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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	70 N/mm	398 ppi	3,893 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	%	705.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	351.4 N	79.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	613.8 N	138 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	814.0 N	183 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 ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14B071012**Lot #: **CDH812030**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.54 mm	100 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.80 mm	110 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	31 mil	AVE: 2.66 mm	105 mil			

OIT(Standard) ASTM D3895 minutes **201** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.932
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.30
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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	71 N/mm	408 ppi	3,893 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	%	705.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	351.4 N	79.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	613.8 N	138 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	814.0 N	183 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 ph1**
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ROLL # **F14B071013**Lot #: **CDH812030**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.47 mm	97 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.81 mm	111 mil	Width.....	7.01 m;	23.0 feet
Asperity ASTM D7466:	30 mil AVE:	2.60 mm	102 mil			

OIT(Standard) ASTM D3895 minutes **201** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.932
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MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min	.30
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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	70 N/mm	398 ppi	3,893 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	%	705.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	351.4 N	79.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	613.8 N	138 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	814.0 N	183 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 ph1**
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ROLL # **F14B072014**Lot #: **CDH812030**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.45 mm	96 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.80 mm	110 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	29 mil	AVE:	2.62 mm	103 mil		

OIT(Standard) ASTM D3895 minutes **201** **TEST RESULTS**

Specific Gravity	Density	g/cc	.933
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.30
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	74 N/mm	420 ppi	4,074 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		705.0	
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.21
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	351.4 N		79.000 lbs	

Puncture Resistance	Load	622.7 N		140 lbs	
FTMS 101 Method 2065 (Modified)					

Puncture Resistance	Load	840.7 N		189 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 ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14B072015**Lot #: **CDH812030**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.47 mm	97 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.75 mm	108 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	30 mil	AVE:	2.61 mm	103 mil	TEST RESULTS	
OIT(Standard) ASTM D3895 minutes						201

Specific Gravity	Density	g/cc	.933
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.30
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	73 N/mm	419 ppi	4,074 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		705.0	
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.21
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	351.4 N	79.000 lbs		

Puncture Resistance	Load	622.7 N	140 lbs
FTMS 101 Method 2065 (Modified)			

Puncture Resistance	Load	840.7 N	189 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 ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14B072016**Lot #: **CDH812030**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.49 mm	98 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.73 mm	107 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	30 mil AVE:	2.62 mm	103 mil			

OIT(Standard) ASTM D3895 minutes **201** **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	.30
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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	74 N/mm	420 ppi	4,074 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	%	705.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	351.4 N	79.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	622.7 N	140 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	840.7 N	189 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 ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14B072017**Lot #: **CDH812030**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.48 mm	98 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.81 mm	111 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	30 mil AVE:	2.64 mm	104 mil			

OIT(Standard) ASTM D3895 minutes **201** **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	.30
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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	74 N/mm	423 ppi	4,074 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	%	705.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	351.4 N	79.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	622.7 N	140 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	840.7 N	189 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 ph1**
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ROLL # **F14B072019**Lot #: **CDH812030**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.50 mm	98 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.80 mm	110 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	28 mil AVE:	2.68 mm	106 mil			

OIT(Standard) ASTM D3895 minutes **201** **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	.30
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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	78 N/mm	444 ppi	4,207 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	%	755.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	351.4 N	79.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	622.7 N	140 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	840.7 N	189 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 ph1**
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ROLL # **F14B072020**Lot #: **CDH812030**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.50 mm	98 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.82 mm	111 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	29 mil	AVE: 2.62 mm	103 mil			

OIT(Standard) ASTM D3895 minutes **201** **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	.30
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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	76 N/mm	434 ppi	4,207 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	%	755.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	351.4 N	79.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	622.7 N	140 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	840.7 N	189 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 ph1**
Destination **Cripple Creek, CO**

Date:..... **2/11/14**Signature.....
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ROLL # **F14B072021**Lot #: **CDH812030**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.52 mm	99 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.75 mm	108 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	28 mil	AVE: 2.65 mm	104 mil			

OIT(Standard) ASTM D3895 minutes **201** **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	.30
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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	77 N/mm	439 ppi	4,207 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	%	755.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	351.4 N	79.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	622.7 N	140 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	840.7 N	189 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 ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14B072022**Lot #: **CDH812030**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.48 mm	98 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.72 mm	107 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	29 mil	AVE:	2.61 mm	103 mil	TEST RESULTS	
OIT(Standard) ASTM D3895 minutes						201

Specific Gravity	Density	g/cc	.933
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.30
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	76 N/mm	432 ppi	4,207 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		755.5	
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.21
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	351.4 N	79.000 lbs		

Puncture Resistance	Load	622.7 N	140 lbs
FTMS 101 Method 2065 (Modified)			

Puncture Resistance	Load	840.7 N	189 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 ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14B072023**Lot #: **CDH812030**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.50 mm	98 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.72 mm	107 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	30 mil AVE:	2.61 mm	103 mil			

OIT(Standard) ASTM D3895 minutes **201** **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	.30
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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	76 N/mm	432 ppi	4,207 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	%	755.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	351.4 N	79.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	622.7 N	140 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	840.7 N	189 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 ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14B072024**Lot #: **CDH812030**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.50 mm	98 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.70 mm	106 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	30 mil	AVE: 2.60 mm	102 mil			

OIT(Standard) ASTM D3895 minutes **201** **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	.30
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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	70 N/mm	402 ppi	3,932 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	%	695.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	360.3 N	81.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	658.3 N	148 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	880.7 N	198 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 ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14B072025**Lot #: **CDH812030**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement			METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.49 mm	98	mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.78 mm	109	mil	Width.....	7.01 m;	23.0 feet
Asperity ASTM D7466:	27 mil	AVE:	2.60 mm	102 mil	TEST RESULTS		
					OIT(Standard) ASTM D3895	minutes	201

Specific Gravity	Density	g/cc	.936
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.30
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	70 N/mm	402 ppi	3,932 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		695.0	
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.21
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	360.3 N	81.000 lbs		

Puncture Resistance	Load	658.3 N	148 lbs
FTMS 101 Method 2065 (Modified)			

Puncture Resistance	Load	880.7 N	198 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 ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14B072026**Lot #: **CDH812030**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.53 mm	100 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.81 mm	111 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	31 mil AVE:	2.66 mm	105 mil			

OIT(Standard) ASTM D3895 minutes **201** **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	.30
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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	72 N/mm	412 ppi	3,932 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	%	695.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	360.3 N	81.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	658.3 N	148 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	880.7 N	198 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 ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14B072027**Lot #: **CDH812030**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.51 mm	99 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.77 mm	109 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	33 mil AVE:	2.63 mm	104 mil			

OIT(Standard) ASTM D3895 minutes **201** **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	.30
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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	71 N/mm	407 ppi	3,932 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	%	695.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	360.3 N	81.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	658.3 N	148 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	880.7 N	198 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 ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14B073028**Lot #: **CDH812030**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.51 mm	99 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.78 mm	109 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	31 mil AVE:	2.63 mm	104 mil			

OIT(Standard) ASTM D3895 minutes **201** **TEST RESULTS**

Specific Gravity	Density	g/cc	.936
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.30
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	71 N/mm	407 ppi	3,932 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%	695.0		
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.21
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	360.3 N	81.000 lbs		

Puncture Resistance	Load	658.3 N	148 lbs
FTMS 101 Method 2065 (Modified)			

Puncture Resistance	Load	880.7 N	198 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 ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14B073029**Lot #: **CDH812030**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.50 mm	98 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.73 mm	107 mil	Width.....	7.01 m	23.0 feet

Asperity ASTM D7466:	32 mil	AVE:	2.63 mm	104 mil	OIT(Standard) ASTM D3895 minutes	201	TEST RESULTS
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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	.30
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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	72 N/mm	413 ppi	3,989 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	%	701.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.21
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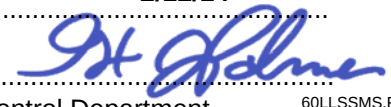
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	360.3 N	81.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	658.3 N	148 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	880.7 N	198 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 ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14B073030**Lot #: **CDH812030**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.51 mm	99 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.69 mm	106 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	32 mil AVE:	2.60 mm	102 mil			

OIT(Standard) ASTM D3895 minutes **201** **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	.30
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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	72 N/mm	408 ppi	3,989 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	%	701.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	360.3 N	81.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	658.3 N	148 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	880.7 N	198 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 ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14B073031**Lot #: **CDH812030**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.50 mm	98 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.78 mm	109 mil	Width.....	7.01 m;	23.0 feet

Asperity ASTM D7466:	32 mil	AVE:	2.65 mm	104 mil	OIT(Standard) ASTM D3895 minutes	201	TEST RESULTS
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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	.30
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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	73 N/mm	416 ppi	3,989 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	%	701.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.21
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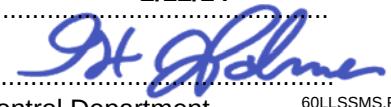
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	360.3 N	81.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	658.3 N	148 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	880.7 N	198 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 ph1**
Destination **Cripple Creek, CO**

Date:.....**2/12/14**.....Signature.....
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ROLL # **F14B073032**Lot #: **CDH812030**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.50 mm	98 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.79 mm	110 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	28 mil AVE:	2.60 mm	102 mil			

OIT(Standard) ASTM D3895 minutes **201** **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	.30
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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	72 N/mm	408 ppi	3,989 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	%	701.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	360.3 N	81.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	658.3 N	148 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	880.7 N	198 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 ph1**
Destination **Cripple Creek, CO**

Date:..... **2/12/14**Signature.....
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ROLL # **F14B073033**Lot #: **CDH812030**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.49 mm	98 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.80 mm	110 mil	Width.....	7.01 m	23.0 feet

Asperity ASTM D7466:	28 mil	AVE:	2.65 mm	104 mil	OIT(Standard) ASTM D3895 minutes	201	TEST RESULTS
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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	.30
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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	73 N/mm	416 ppi	3,989 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	%	701.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.21
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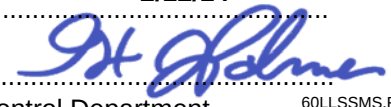
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	360.3 N	81.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	658.3 N	148 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	880.7 N	198 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
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ROLL # **F14B073034**Lot #: **CDH812030**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.49 mm	98 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.80 mm	110 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	29 mil AVE:	2.63 mm	104 mil			

OIT(Standard) ASTM D3895 minutes **201** **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	.30
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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	65 N/mm	374 ppi	3,610 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	%	654.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	342.5 N	77.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	627.2 N	141 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	854.0 N	192 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 ph1**
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ROLL # **F14B073035**Lot #: **CDH812030**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.52 mm	99 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.76 mm	109 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	28 mil AVE:	2.66 mm	105 mil			

OIT(Standard) ASTM D3895 minutes **201** **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	.30
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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	66 N/mm	378 ppi	3,610 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	%	654.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	342.5 N	77.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	627.2 N	141 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	854.0 N	192 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 ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14B073036**Lot #: **CDH812030**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.47 mm	97 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.80 mm	110 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	29 mil AVE:	2.60 mm	102 mil			

OIT(Standard) ASTM D3895 minutes **201** **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	.30
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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	65 N/mm	370 ppi	3,610 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	%	654.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.21
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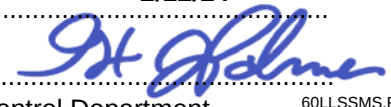
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	342.5 N	77.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	627.2 N	141 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	854.0 N	192 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 ph1**
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ROLL # **F14B073037**Lot #: **CDH812030**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.47 mm	97 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.72 mm	107 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	30 mil	AVE:	2.59 mm	102 mil	TEST RESULTS	
OIT(Standard) ASTM D3895 minutes						201

Specific Gravity	Density	g/cc	.936
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.30
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	64 N/mm	368 ppi	3,610 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		654.0	
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.21
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	342.5 N	77.000 lbs		

Puncture Resistance	Load	627.2 N	141 lbs
FTMS 101 Method 2065 (Modified)			

Puncture Resistance	Load	854.0 N	192 lbs
ASTM D4833 (Modified)			

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

Customer: **Erosion Control Applications**
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ROLL # **F14B073038**Lot #: **CDH812030**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.47 mm	97 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.73 mm	107 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	28 mil AVE:	2.61 mm	103 mil			

OIT(Standard) ASTM D3895 minutes **201** **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	.30
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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	65 N/mm	371 ppi	3,610 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	%	654.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	342.5 N	77.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	627.2 N	141 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	854.0 N	192 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 ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14B073039**Lot #: **CDH810210**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.51 mm	99 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.84 mm	112 mil	Width.....	7.01 m	23.0 feet

Asperity ASTM D7466:	31 mil	AVE:	2.68 mm	106 mil	OIT(Standard) ASTM D3895 minutes	198	TEST RESULTS
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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	.33
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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	74 N/mm	420 ppi	3,984 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	%	738.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.25
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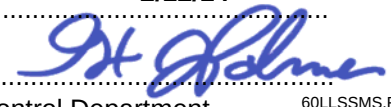
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	342.5 N	77.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	627.2 N	141 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	854.0 N	192 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
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ROLL # **F14B073040**Lot #: **CDH810210**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.47 mm	97 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.83 mm	111 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	27 mil	AVE: 2.64 mm	104 mil			

OIT(Standard) ASTM D3895 minutes **198** **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	.33
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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	73 N/mm	414 ppi	3,984 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	%	738.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.25
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	342.5 N	77.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	627.2 N	141 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	854.0 N	192 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
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ROLL # **F14B074041**Lot #: **CDH810210**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.47 mm	97 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.82 mm	111 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	27 mil AVE:	2.63 mm	104 mil			

OIT(Standard) ASTM D3895 minutes **198** **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	.33
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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	72 N/mm	413 ppi	3,984 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	%	738.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.25
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	342.5 N	77.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	627.2 N	141 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	854.0 N	192 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 ph1**
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ROLL # **F14B074042**Lot #: **CDH810210**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.45 mm	96 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.88 mm	113 mil	Width.....	7.01 m	23.0 feet

Asperity ASTM D7466:	27 mil	AVE:	2.69 mm	106 mil	OIT(Standard) ASTM D3895 minutes	198	TEST RESULTS
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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	.33
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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	74 N/mm	422 ppi	3,984 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	%	738.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.25
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	342.5 N	77.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	627.2 N	141 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	854.0 N	192 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 ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14B074043**Lot #: **CDH810210**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.48 mm	98 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.78 mm	109 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	27 mil	AVE:	2.63 mm	104 mil	OIT(Standard) ASTM D3895 minutes 198	
						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	.33
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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	72 N/mm	413 ppi	3,984 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	%	738.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.25
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	342.5 N	77.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	627.2 N	141 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	854.0 N	192 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
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ROLL # **F14B074044**Lot #: **CDH810210**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.47 mm	97 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.85 mm	112 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	30 mil AVE:	2.63 mm	104 mil			

OIT(Standard) ASTM D3895 minutes **198** **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	.33
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Carbon Black Content ASTM D4218	Range	%	2.12
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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	71 N/mm	406 ppi	3,922 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	%	705.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.25
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	338.0 N	76.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	631.6 N	142 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	791.7 N	178 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 ph1**
Destination **Cripple Creek, CO**

Date:..... **2/13/14**Signature.....
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ROLL # **F14B074045**Lot #: **CDH810210**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.49 mm	98 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.83 mm	111 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	26 mil AVE:	2.63 mm	104 mil			

OIT(Standard) ASTM D3895 minutes **198**

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	.33
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Carbon Black Content ASTM D4218	Range	%	2.12
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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	71 N/mm	406 ppi	3,922 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	%	705.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.25
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	338.0 N	76.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	631.6 N	142 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	791.7 N	178 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 ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14B074046**Lot #: **CDH810210**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.50 mm	98 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.82 mm	111 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	27 mil	AVE:	2.65 mm	104 mil		

OIT(Standard) ASTM D3895 minutes **198** **TEST RESULTS**

Specific Gravity	Density	g/cc	.934
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.33
COND. E			
GRADE:	7104		

Carbon Black Content	Range	%	2.12
ASTM D4218			

Carbon Black Dispersion	Category	10 IN CAT 1
ASTM D5596		

Tensile Strength					
ASTM D6693					
ASTM D638 (Modified)	Average Strength @ Break	72 N/mm	409 ppi	3,922 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		705.5	
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.25
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	338.0 N	76.000 lbs		

Puncture Resistance	Load	631.6 N	142 lbs
FTMS 101 Method 2065 (Modified)			

Puncture Resistance	Load	791.7 N	178 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 ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14B074047**Lot #: **CDH810210**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.46 mm	97 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.82 mm	111 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	29 mil	AVE:	2.58 mm	102 mil	TEST RESULTS	
OIT(Standard) ASTM D3895 minutes						198

Specific Gravity	Density	g/cc	.934
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.33
COND. E			
GRADE:	7104		

Carbon Black Content	Range	%	2.12
ASTM D4218			

Carbon Black Dispersion	Category	10 IN CAT 1
ASTM D5596		

Tensile Strength					
ASTM D6693					
ASTM D638 (Modified)	Average Strength @ Break	70 N/mm	398 ppi	3,922 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		705.5	
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.25
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	338.0 N	76.000 lbs		

Puncture Resistance	Load	631.6 N	142 lbs
FTMS 101 Method 2065 (Modified)			

Puncture Resistance	Load	791.7 N	178 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 ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14B074048**Lot #: **CDH810210**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.47 mm	97 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.75 mm	108 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	28 mil AVE:	2.61 mm	103 mil			

OIT(Standard) ASTM D3895 minutes **198**

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	.33
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Carbon Black Content ASTM D4218	Range	%	2.12
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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	71 N/mm	403 ppi	3,922 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	%	705.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.25
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	338.0 N	76.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	631.6 N	142 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	791.7 N	178 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 ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14B074049**

Lot #: **CDH810210**

Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.46 mm	97 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.80 mm	110 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	29 mil	AVE:	2.62 mm	103 mil		

OIT(Standard) ASTM D3895 minutes **198**

TEST RESULTS

Specific Gravity	Density	g/cc	.934
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.33
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	69 N/mm	396 ppi	3,837 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		704.5	
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.25
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	338.0 N		76.000 lbs	

Puncture Resistance	Load	631.6 N		142 lbs	
FTMS 101 Method 2065 (Modified)					

Puncture Resistance	Load	791.7 N		178 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 ph1**
Destination **Cripple Creek, CO**

Date:.....**2/13/14**.....

Signature.....*[Signature]*.....
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ROLL # **F14B074050**Lot #: **CDH810210**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.45 mm	96 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.79 mm	110 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	31 mil	AVE:	2.60 mm	102 mil	TEST RESULTS	
OIT(Standard) ASTM D3895 minutes						198

Specific Gravity	Density	g/cc	.934
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.33
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	69 N/mm	393 ppi	3,837 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		704.5	
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.25
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	338.0 N	76.000 lbs		

Puncture Resistance	Load	631.6 N	142 lbs
FTMS 101 Method 2065 (Modified)			

Puncture Resistance	Load	791.7 N	178 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 ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14B074051**Lot #: **CDH810210**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.49 mm	98 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.82 mm	111 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	27 mil	AVE:	2.64 mm	104 mil	OIT(Standard) ASTM D3895 minutes	198

TEST RESULTS

Specific Gravity	Density	g/cc	.934
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.33
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	70 N/mm	399 ppi	3,837 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		704.5	
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.25
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	338.0 N	76.000 lbs		

Puncture Resistance	Load	631.6 N	142 lbs
FTMS 101 Method 2065 (Modified)			

Puncture Resistance	Load	791.7 N	178 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 ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14B074052**Lot #: **CDH810210**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.42 mm	95 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.84 mm	112 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	28 mil	AVE:	2.63 mm	104 mil	TEST RESULTS	
				OIT(Standard) ASTM D3895	minutes	198

Specific Gravity	Density	g/cc	.934
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.33
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	70 N/mm	397 ppi	3,837 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		704.5	
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.25
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	338.0 N	76.000 lbs		

Puncture Resistance	Load	631.6 N	142 lbs
FTMS 101 Method 2065 (Modified)			

Puncture Resistance	Load	791.7 N	178 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 ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14B074053**Lot #: **CDH810210**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.46 mm	97 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.84 mm	112 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	31 mil	AVE:	2.64 mm	104 mil		

OIT(Standard) ASTM D3895 minutes **198** **TEST RESULTS**

Specific Gravity	Density	g/cc	.934
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.33
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	70 N/mm	399 ppi	3,837 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		704.5	
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.25
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	338.0 N	76.000 lbs		

Puncture Resistance	Load	631.6 N	142 lbs
FTMS 101 Method 2065 (Modified)			

Puncture Resistance	Load	791.7 N	178 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 ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14B074054**Lot #: **CDH810210**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.50 mm	98 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.82 mm	111 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	33 mil AVE:	2.65 mm	104 mil			

OIT(Standard) ASTM D3895 minutes **198** **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	.33
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Carbon Black Content ASTM D4218	Range	%	2.13
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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	75 N/mm	430 ppi	4,117 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	%	745.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.25
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	342.5 N	77.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	627.2 N	141 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	822.9 N	185 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 ph1**
Destination **Cripple Creek, CO**

Date:..... **2/13/14**Signature.....
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ROLL # **F14B075055**Lot #: **CDH810210**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.48 mm	98 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.79 mm	110 mil	Width.....	7.01 m	23.0 feet

Asperity ASTM D7466:	27 mil	AVE:	2.62 mm	103 mil	OIT(Standard) ASTM D3895 minutes	198	TEST RESULTS
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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	.33
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Carbon Black Content ASTM D4218	Range	%	2.13
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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	74 N/mm	425 ppi	4,117 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	%	745.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.25
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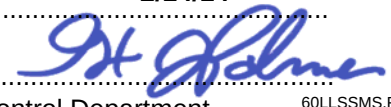
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	342.5 N	77.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	627.2 N	141 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	822.9 N	185 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 ph1**
Destination **Cripple Creek, CO**

Date:.....**2/14/14**.....Signature.....
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ROLL # **F14B075056**Lot #: **CDH810210**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.48 mm	98 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.78 mm	109 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	28 mil	AVE:	2.60 mm	102 mil	OIT(Standard) ASTM D3895 minutes 198	
						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	.33
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Carbon Black Content ASTM D4218	Range	%	2.13
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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	74 N/mm	421 ppi	4,117 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	%	745.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.25
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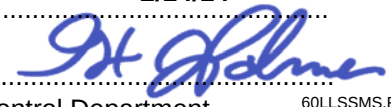
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	342.5 N	77.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	627.2 N	141 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	822.9 N	185 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 ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14B075057**Lot #: **CDH810210**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.51 mm	99 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.79 mm	110 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	32 mil AVE:	2.64 mm	104 mil			

OIT(Standard) ASTM D3895 minutes **198**

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	.33
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Carbon Black Content ASTM D4218	Range	%	2.13
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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	75 N/mm	428 ppi	4,117 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	%	745.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.25
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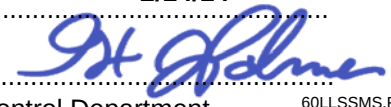
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	342.5 N	77.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	627.2 N	141 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	822.9 N	185 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
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ROLL # **F14B075058**Lot #: **CDH810210**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.46 mm	97 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.78 mm	109 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	27 mil AVE:	2.62 mm	103 mil			

OIT(Standard) ASTM D3895 minutes **198** **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	.33
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Carbon Black Content ASTM D4218	Range	%	2.13
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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	74 N/mm	425 ppi	4,117 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	%	745.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.25
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	342.5 N	77.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	627.2 N	141 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	822.9 N	185 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
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ROLL # **F14B075059**Lot #: **CDH810210**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.50 mm	98 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.77 mm	109 mil	Width.....	7.01 m	23.0 feet

Asperity ASTM D7466:	33 mil	AVE:	2.61 mm	103 mil	OIT(Standard) ASTM D3895 minutes	198	TEST RESULTS
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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	.33
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Carbon Black Content ASTM D4218	Range	%	2.11
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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	66 N/mm	374 ppi	3,641 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	%	674.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.25
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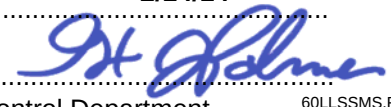
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	342.5 N	77.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	627.2 N	141 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	822.9 N	185 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
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ROLL # **F14B075060**Lot #: **CDH810210**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.47 mm	97 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.80 mm	110 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	31 mil	AVE:	2.67 mm	105 mil	TEST RESULTS	
OIT(Standard) ASTM D3895 minutes						198

Specific Gravity	Density	g/cc	.934
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.33
COND. E			
GRADE:	7104		

Carbon Black Content	Range	%	2.11
ASTM D4218			

Carbon Black Dispersion	Category	10 IN CAT 1
ASTM D5596		

Tensile Strength					
ASTM D6693					
ASTM D638 (Modified)	Average Strength @ Break	67 N/mm	383 ppi	3,641 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		674.0	
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.25
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	342.5 N	77.000 lbs		

Puncture Resistance	Load	627.2 N	141 lbs
FTMS 101 Method 2065 (Modified)			

Puncture Resistance	Load	822.9 N	185 lbs
ASTM D4833 (Modified)			

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

Customer: **Erosion Control Applications**
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ROLL # **F14B075061**Lot #: **CDH810210**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.51 mm	99 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.82 mm	111 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	30 mil	AVE:	2.66 mm	105 mil		

OIT(Standard) ASTM D3895 minutes **198** **TEST RESULTS**

Specific Gravity	Density	g/cc	.934
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.33
COND. E			
GRADE:	7104		

Carbon Black Content	Range	%	2.11
ASTM D4218			

Carbon Black Dispersion	Category	10 IN CAT 1
ASTM D5596		

Tensile Strength					
ASTM D6693					
ASTM D638 (Modified)	Average Strength @ Break	67 N/mm	381 ppi	3,641 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		674.0	
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.25
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	342.5 N		77.000 lbs	

Puncture Resistance	Load	627.2 N		141 lbs	
FTMS 101 Method 2065 (Modified)					

Puncture Resistance	Load	822.9 N		185 lbs	
ASTM D4833 (Modified)					

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

Customer: **Erosion Control Applications**
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ROLL # **F14B075062**Lot #: **CDH810210**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.48 mm	98 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.76 mm	109 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	29 mil	AVE:	2.60 mm	102 mil	TEST RESULTS	
OIT(Standard) ASTM D3895 minutes						198

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	.33
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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	65 N/mm	373 ppi	3,641 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	%	674.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.25
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	342.5 N	77.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	627.2 N	141 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	822.9 N	185 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
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ROLL # **F14B075063**Lot #: **CDH810210**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.34 mm	92 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.85 mm	112 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	29 mil AVE:	2.65 mm	104 mil			

OIT(Standard) ASTM D3895 minutes **198** **TEST RESULTS**

Specific Gravity	Density	g/cc	.934
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.33
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	67 N/mm	380 ppi	3,641 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%	674.0		
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.25
ASTM D1204 (Modified)			

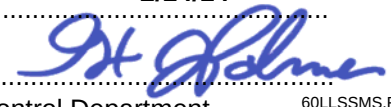
Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	342.5 N	77.000 lbs		

Puncture Resistance	Load	627.2 N	141 lbs
FTMS 101 Method 2065 (Modified)			

Puncture Resistance	Load	822.9 N	185 lbs
ASTM D4833 (Modified)			

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

Customer: **Erosion Control Applications**
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ROLL # **F14B075064**Lot #: **CDH810210**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.47 mm	97 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.79 mm	110 mil	Width.....	7.01 m	23.0 feet

Asperity ASTM D7466:	29 mil	AVE:	2.63 mm	104 mil	OIT(Standard) ASTM D3895 minutes	198	TEST RESULTS
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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	.33
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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	71 N/mm	406 ppi	3,924 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	%	719.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.25
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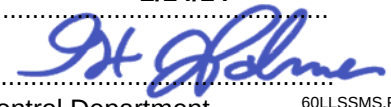
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	340.3 N	76.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	631.6 N	142 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	822.9 N	185 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
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ROLL # **F14B075065**Lot #: **CDH810210**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.46 mm	97 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.77 mm	109 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	30 mil AVE:	2.59 mm	102 mil			

OIT(Standard) ASTM D3895 minutes **198** **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	.33
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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	70 N/mm	400 ppi	3,924 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	%	719.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.25
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	340.3 N	76.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	631.6 N	142 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	822.9 N	185 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
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ROLL # **F14B075066**Lot #: **CDH810210**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.44 mm	96 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.83 mm	111 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	29 mil AVE:	2.67 mm	105 mil			

OIT(Standard) ASTM D3895 minutes **198** **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	.33
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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	72 N/mm	412 ppi	3,924 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	%	719.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.25
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	340.3 N	76.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	631.6 N	142 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	822.9 N	185 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
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ROLL # **F14B075067**Lot #: **CDH810210**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.49 mm	98 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.80 mm	110 mil	Width.....	7.01 m	23.0 feet

Asperity ASTM D7466:	28 mil	AVE:	2.63 mm	104 mil	OIT(Standard) ASTM D3895 minutes	198	TEST RESULTS
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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	.33
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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	71 N/mm	406 ppi	3,924 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	%	719.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.25
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	340.3 N	76.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	631.6 N	142 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	822.9 N	185 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 ph1**
Destination **Cripple Creek, CO**

Date:.....**2/14/14**.....Signature.....*[Signature]*.....
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ROLL # **F14B075068**Lot #: **CDH810210**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.49 mm	98 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.82 mm	111 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	27 mil	AVE:	2.62 mm	103 mil		

OIT(Standard) ASTM D3895 minutes **198** **TEST RESULTS**

Specific Gravity	Density	g/cc	.934
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.33
COND. E			
GRADE:	7104		

Carbon Black Content	Range	%	2.21
ASTM D4218			

Carbon Black Dispersion	Category	10 IN CAT 1
ASTM D5596		

Tensile Strength					
ASTM D6693					
ASTM D638 (Modified)	Average Strength @ Break	71 N/mm	405 ppi	3,924 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		719.0	
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.25
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	340.3 N	76.500 lbs		

Puncture Resistance	Load	631.6 N	142 lbs
FTMS 101 Method 2065 (Modified)			

Puncture Resistance	Load	822.9 N	185 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 ph1**
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ROLL # **F14B076069**Lot #: **CDH810210**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.49 mm	98 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.81 mm	111 mil	Width.....	7.01 m;	23.0 feet
Asperity ASTM D7466:	28 mil AVE:	2.66 mm	105 mil			

OIT(Standard) ASTM D3895 minutes **198**

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	.33
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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	74 N/mm	423 ppi	4,037 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	%	730.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.25
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	340.3 N	76.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	631.6 N	142 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	822.9 N	185 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
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ROLL # **F14B076070**Lot #: **CDH810210**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.46 mm	97 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.81 mm	111 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	27 mil	AVE:	2.62 mm	103 mil		

OIT(Standard) ASTM D3895 minutes **198** **TEST RESULTS**

Specific Gravity	Density	g/cc	.934
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.33
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	73 N/mm	416 ppi	4,037 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		730.0	
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.25
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	340.3 N		76.500 lbs	

Puncture Resistance	Load	631.6 N		142 lbs	
FTMS 101 Method 2065 (Modified)					

Puncture Resistance	Load	822.9 N		185 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 ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14B076071**Lot #: **CDH810210**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.50 mm	98 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.76 mm	109 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	26 mil AVE:	2.62 mm	103 mil			

OIT(Standard) ASTM D3895 minutes **198**

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	.33
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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	73 N/mm	416 ppi	4,037 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	%	730.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.25
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	340.3 N	76.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	631.6 N	142 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	822.9 N	185 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 ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14B076072**Lot #: **CDH810210**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.47 mm	97 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.79 mm	110 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	27 mil AVE:	2.64 mm	104 mil			

OIT(Standard) ASTM D3895 minutes **198** **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	.33
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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	73 N/mm	420 ppi	4,037 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	%	730.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.25
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	340.3 N	76.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	631.6 N	142 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	822.9 N	185 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 ph1**
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ROLL # **F14B076073**Lot #: **CDH810210**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.48 mm	98 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.86 mm	113 mil	Width.....	7.01 m	23.0 feet

Asperity ASTM D7466:	33 mil	AVE:	2.63 mm	104 mil	OIT(Standard) ASTM D3895 minutes	198	TEST RESULTS
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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	.33
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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	73 N/mm	418 ppi	4,037 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	%	730.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.25
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	340.3 N	76.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	631.6 N	142 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	822.9 N	185 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
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Destination **Cripple Creek, CO**

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ROLL # **F14B076074**Lot #: **CDH810210**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.47 mm	97 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.81 mm	111 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	30 mil	AVE: 2.63 mm	104 mil			

OIT(Standard) ASTM D3895 minutes **198** **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	.33
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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	71 N/mm	407 ppi	3,935 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	%	711.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.25
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	349.2 N	78.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	596.0 N	134 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	849.6 N	191 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 ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14B076075**Lot #: **CDH810210**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.49 mm	98 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.81 mm	111 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	28 mil AVE:	2.63 mm	104 mil			

OIT(Standard) ASTM D3895 minutes **198** **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	.33
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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	71 N/mm	407 ppi	3,935 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	%	711.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.25
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	349.2 N	78.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	596.0 N	134 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	849.6 N	191 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 ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14B076076**

Lot #: **CDH810210**

Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.54 mm	100 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.77 mm	109 mil	Width.....	7.01 m;	23.0 feet

Asperity ASTM D7466: **28 mil** AVE: **2.62 mm** **103 mil** OIT(Standard) ASTM D3895 minutes **198** **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	.33
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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	71 N/mm	406 ppi	3,935 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	%	711.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.25
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	349.2 N	78.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	596.0 N	134 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	849.6 N	191 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 ph1**
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ROLL # **F14B076077**Lot #: **CDH810210**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.49 mm	98 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.83 mm	111 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	27 mil AVE:	2.69 mm	106 mil			

OIT(Standard) ASTM D3895 minutes **198** **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	.33
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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	73 N/mm	417 ppi	3,935 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	%	711.0
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.25
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	349.2 N	78.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	596.0 N	134 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	849.6 N	191 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 ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14B076078**Lot #: **CDH810210**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.53 mm	100 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.78 mm	109 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	28 mil	AVE:	2.65 mm	104 mil	OIT(Standard) ASTM D3895 minutes 198	
						TEST RESULTS

Specific Gravity	Density	g/cc	.934
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.33
COND. E			
GRADE:	7104		

Carbon Black Content	Range	%	2.35
ASTM D4218			

Carbon Black Dispersion	Category	10 IN CAT 1
ASTM D5596		

Tensile Strength					
ASTM D6693					
ASTM D638 (Modified)	Average Strength @ Break	72 N/mm	410 ppi	3,935 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		711.0	
Lo = 1.3" Yield					
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-.25
ASTM D1204 (Modified)			

Tear Resistance					
ASTM D-1004 (Modified)	Average Tear Resistance	349.2 N	78.500 lbs		

Puncture Resistance	Load	596.0 N	134 lbs
FTMS 101 Method 2065 (Modified)			

Puncture Resistance	Load	849.6 N	191 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 ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14B076079**Lot #: **CDH810210**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.50 mm	98 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.81 mm	111 mil	Width.....	7.01 m	23.0 feet

Asperity ASTM D7466:	30 mil	AVE:	2.64 mm	104 mil	OIT(Standard) ASTM D3895 minutes	198	TEST RESULTS
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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	.33
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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	72 N/mm	411 ppi	3,957 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	%	707.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.25
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	349.2 N	78.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	596.0 N	134 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	849.6 N	191 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 ph1**
Destination **Cripple Creek, CO**

Date:.....**2/15/14**.....Signature.....
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ROLL # **F14B076080**Lot #: **CDH810210**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.47 mm	97 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.79 mm	110 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	27 mil	AVE:	2.66 mm	105 mil	OIT(Standard) ASTM D3895 minutes 198	
						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	.33
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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	73 N/mm	414 ppi	3,957 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	%	707.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.25
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	349.2 N	78.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	596.0 N	134 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	849.6 N	191 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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ROLL # **F14B076081**Lot #: **CDH810210**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.48 mm	98 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.76 mm	109 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	27 mil	AVE:	2.64 mm	104 mil	OIT(Standard) ASTM D3895 minutes 198	
						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	.33
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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	72 N/mm	411 ppi	3,957 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	%	707.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.25
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	349.2 N	78.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	596.0 N	134 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	849.6 N	191 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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ROLL # **F14B077082**Lot #: **CDH810210**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.50 mm	98 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.76 mm	109 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	26 mil	AVE:	2.61 mm	103 mil	OIT(Standard) ASTM D3895 minutes 198	
						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	.33
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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	71 N/mm	407 ppi	3,957 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	%	707.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.25
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	349.2 N	78.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	596.0 N	134 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	849.6 N	191 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
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ROLL # **F14B077083**Lot #: **CDH810210**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.49 mm	98 mil	Length.....	99.061 m	325.0 feet
(Modified)	MAX:	2.85 mm	112 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	26 mil AVE:	2.69 mm	106 mil			

OIT(Standard) ASTM D3895 minutes **198**

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	.33
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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	73 N/mm	419 ppi	3,957 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	%	707.5
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.25
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	349.2 N	78.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	596.0 N	134 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	849.6 N	191 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Customer: **Erosion Control Applications**
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