



quality certificate

ROLL # **F14B077084**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:	2.64 mm	104 mil	TEST RESULTS	
OIT(Standard) ASTM D3895 minutes						198

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	.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	3,951 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	%	715.0
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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	600.5 N	135 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	858.5 N	193 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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12/23/05



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ROLL # **F14B077085**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:	2.74 mm	108 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	Density	g/cc	.936
ASTM D792			

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

Carbon Black Content	Range	%	2.24
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	406 ppi	3,951 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		715.0	
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	600.5 N	135 lbs
FTMS 101 Method 2065 (Modified)			

Puncture Resistance	Load	858.5 N	193 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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12/23/05



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ROLL # **F14B077086**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:	2.80 mm	110 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	26 mil	AVE:	2.67 mm	105 mil	TEST RESULTS	
				OIT(Standard) ASTM D3895	minutes	198

Specific Gravity	Density	g/cc	.936
ASTM D792			

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

Carbon Black Content	Range	%	2.24
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	415 ppi	3,951 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%	715.0		
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	600.5 N	135 lbs
FTMS 101 Method 2065 (Modified)			

Puncture Resistance	Load	858.5 N	193 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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12/23/05



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ROLL # **F14B077087**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:	2.79 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	.936
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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	3,951 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	%	715.0
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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	600.5 N	135 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	858.5 N	193 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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REV 02
12/23/05



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ROLL # **F14B077088**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:	2.79 mm	110 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
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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	.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	412 ppi	3,951 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	%	715.0
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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	600.5 N	135 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	858.5 N	193 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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REV 02
12/23/05



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ROLL # **F14B077089**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:	2.79 mm	110 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

Specific Gravity	Density	g/cc	.936
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	69 N/mm	393 ppi	3,784 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		671.0	
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	600.5 N	135 lbs
FTMS 101 Method 2065 (Modified)			

Puncture Resistance	Load	858.5 N	193 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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REV 02
12/23/05



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ROLL # **F14B077090**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:	2.73 mm	107 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	.936
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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	69 N/mm	392 ppi	3,784 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	%	671.0
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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	600.5 N	135 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	858.5 N	193 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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12/23/05



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ROLL # **F14B077091**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:	2.89 mm	114 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	.936
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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	69 N/mm	396 ppi	3,784 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	%	671.0
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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	600.5 N	135 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	858.5 N	193 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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REV 02
12/23/05



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ROLL # **F14B077092**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:	27 mil	AVE:	2.63 mm	104 mil		

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

Specific Gravity	Density	g/cc	.936
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	69 N/mm	392 ppi	3,784 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		671.0	
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	600.5 N		135 lbs	
FTMS 101 Method 2065 (Modified)					

Puncture Resistance	Load	858.5 N		193 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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REV 02
12/23/05



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ROLL # **F14B077093**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:	2.78 mm	109 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	28 mil	AVE:	2.66 mm	105 mil	TEST RESULTS	
OIT(Standard) ASTM D3895 minutes						198

Specific Gravity	Density	g/cc	.936
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	69 N/mm	396 ppi	3,784 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		671.0	
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	600.5 N	135 lbs
FTMS 101 Method 2065 (Modified)			

Puncture Resistance	Load	858.5 N	193 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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REV 02
12/23/05



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ROLL # **F14B077094**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:	26 mil AVE:	2.63 mm	104 mil			

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

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	.33
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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	72 N/mm	410 ppi	3,961 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	%	724.5
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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	335.8 N	75.500 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	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**

Date: **2/16/14**Signature: 
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12/23/05



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ROLL # **F14B077095**Lot #: **CDH810210**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:	2.79 mm	110 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	.936
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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	%	2.27
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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	3,961 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	%	724.5
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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	335.8 N	75.500 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	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**

Date: **2/16/14**Signature: 
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12/23/05



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ROLL # **F14B081001**Lot #: **CDH810210**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:	2.72 mm	107 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	.936
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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	%	2.27
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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	72 N/mm	409 ppi	3,961 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	%	724.5
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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	335.8 N	75.500 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	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**

Date:.....**2/17/14**.....Signature.....
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ROLL # **F14B081002**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	.936
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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	%	2.27
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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	3,961 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	%	724.5
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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	335.8 N	75.500 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	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 # **F14B081003**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:	2.74 mm	108 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	.936
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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	%	2.27
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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	72 N/mm	409 ppi	3,961 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	%	724.5
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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	335.8 N	75.500 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	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 # **F14B081004**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:	2.78 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	Density	g/cc	.936
ASTM D792			

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

Carbon Black Content	Range	%	2.24
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	385 ppi	3,702 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		692.5	
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	335.8 N		75.500 lbs	

Puncture Resistance	Load	596.0 N		134 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 # **F14B081005**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:	2.76 mm	109 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	29 mil AVE:	2.60 mm	102 mil			

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

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	.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	66 N/mm	379 ppi	3,702 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	%	692.5
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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	335.8 N	75.500 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	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 # **F14B081006**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:	2.76 mm	109 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	.936
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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	67 N/mm	383 ppi	3,702 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	%	692.5
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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	335.8 N	75.500 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	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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12/23/05



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ROLL # **F14B081007**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:	2.77 mm	109 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	29 mil	AVE: 2.64 mm	104 mil			

OIT(Standard) ASTM D3895 minutes **198** **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	.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	67 N/mm	385 ppi	3,702 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	%	692.5
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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	335.8 N	75.500 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	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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12/23/05



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ROLL # **F14B081008**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:	31 mil AVE:	2.62 mm	103 mil			

OIT(Standard) ASTM D3895 minutes **198** **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	.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	67 N/mm	382 ppi	3,702 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	%	692.5
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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	335.8 N	75.500 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	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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12/23/05



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ROLL # **F14B081009**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:	2.83 mm	111 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	30 mil	AVE:	2.68 mm	106 mil	TEST RESULTS	
OIT(Standard) ASTM D3895 minutes						198

Specific Gravity	Density	g/cc	.936
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	71 N/mm	408 ppi	3,866 psi	
(2 inches / minute)					

Elongation ASTM D6693					
ASTM D638 (Modified)					
(2 inches / minute)	Average Elongation @ Break	%		699.5	
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	351.4 N	79.000 lbs		

Puncture Resistance	Load	609.4 N	137 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 # **F14B081010**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:	2.78 mm	109 mil	Width.....	7.01 m	23.0 feet

Asperity ASTM D7466:	31 mil	AVE:	2.65 mm	104 mil	OIT(Standard) ASTM D3895 minutes	198	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	.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	71 N/mm	403 ppi	3,866 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	%	699.5
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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	351.4 N	79.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	609.4 N	137 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 # **F14B081011**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:	29 mil AVE:	2.61 mm	103 mil			

OIT(Standard) ASTM D3895 minutes **198** **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	.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	70 N/mm	397 ppi	3,866 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	%	699.5
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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	351.4 N	79.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	609.4 N	137 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 # **F14B081012**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:	2.81 mm	111 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	26 mil	AVE: 2.67 mm	105 mil			

OIT(Standard) ASTM D3895 minutes **198** **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	.33
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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	406 ppi	3,866 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	%	699.5
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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	351.4 N	79.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	609.4 N	137 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 # **F14B081013**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:	2.76 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	.936
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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	%	2.27
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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	70 N/mm	399 ppi	3,866 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	%	699.5
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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	351.4 N	79.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	609.4 N	137 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:.....**2/17/14**.....Signature.....
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ROLL # **F14B082014**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:	2.80 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

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	.33
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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	72 N/mm	411 ppi	3,971 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	%	702.0
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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	351.4 N	79.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	609.4 N	137 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 # **F14B082015**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:	27 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	.936
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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	%	2.28
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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	72 N/mm	411 ppi	3,971 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	%	702.0
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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	351.4 N	79.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	609.4 N	137 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 # **F14B082016**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:	2.85 mm	112 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	.936
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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	%	2.28
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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	72 N/mm	410 ppi	3,971 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	%	702.0
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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	351.4 N	79.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	609.4 N	137 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 # **F14B082017**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:	2.79 mm	110 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	29 mil AVE:	2.58 mm	102 mil			

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

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	.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	71 N/mm	403 ppi	3,971 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	%	702.0
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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	351.4 N	79.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	609.4 N	137 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 # **F14B082018**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:	2.78 mm	109 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	.936
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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	411 ppi	3,971 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	%	702.0
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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	351.4 N	79.000 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	609.4 N	137 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 # **F14B082019**Lot #: **CDH810210**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	2.54 mm	100 mil
ASTM D5994	MIN:	2.56 mm	101 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:	2.65 mm	104 mil			

OIT(Standard) ASTM D3895 minutes **198** **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	.33
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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	69 N/mm	394 ppi	3,780 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	%	677.5
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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	344.7 N	77.500 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	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 # **F14B082020**Lot #: **CDH810210**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:	2.74 mm	108 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	.936
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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	%	2.27
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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	68 N/mm	390 ppi	3,780 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	%	677.5
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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	344.7 N	77.500 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	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 # **F14B082021**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:	2.73 mm	107 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	32 mil AVE:	2.60 mm	102 mil			

OIT(Standard) ASTM D3895 minutes **198** **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	.33
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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	68 N/mm	387 ppi	3,780 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	%	677.5
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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	344.7 N	77.500 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	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 # **F14B082022**Lot #: **CDH810210**Liner Type: **SS MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)	METRIC MIN: 2.52 mm MAX: 2.83 mm AVE: 2.70 mm	ENGLISH 99 mil 111 mil 106 mil	Thickness..... 2.54 mm Length..... 99.061 m Width..... 7.01 m;	100 mil 325.0 feet 23.0 feet
Asperity ASTM D7466: 27 mil	OIT(Standard) ASTM D3895 minutes 198			
Specific Gravity ASTM D792	Density	g/cc		.936
MFI ASTM D1238 COND. E GRADE: 7104	Melt Flow Index 190°C /2160 g	g/10 min		.33
Carbon Black Content ASTM D4218	Range	%		2.24
Carbon Black Dispersion ASTM D5596	Category	10 IN CAT 1		
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	70 N/mm	402 ppi	3,780 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%		677.5
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-.25
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	344.7 N	77.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	627.2 N	141 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load	840.7 N	189 lbs	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch ph1**
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ROLL # **F14B082023**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:	2.79 mm	110 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	26 mil	AVE:	2.64 mm	104 mil	TEST RESULTS	
OIT(Standard) ASTM D3895 minutes						198

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	.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	69 N/mm	393 ppi	3,780 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	%	677.5
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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	344.7 N	77.500 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	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 # **F14B082024**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:	2.75 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						198

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	.33
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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	68 N/mm	390 ppi	3,792 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	%	675.0
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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	344.7 N	77.500 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	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 # **F14B082025**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:	2.82 mm	111 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

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	.33
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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	70 N/mm	400 ppi	3,792 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	%	675.0
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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	344.7 N	77.500 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	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:.....**2/18/14**.....Signature.....
Quality Control Department

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quality certificate

ROLL # **F14B082026**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:	28 mil AVE:	2.62 mm	103 mil			

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

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	.33
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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	68 N/mm	391 ppi	3,792 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	%	675.0
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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	344.7 N	77.500 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	627.2 N	141 lbs
--	------	----------------	----------------

Puncture Resistance ASTM D4833 (Modified)	Load	840.7 N	189 lbs
--	------	----------------	----------------

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:.....**2/18/14**.....Signature.....
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ROLL # **F14B082027**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:	2.77 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	.936
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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	68 N/mm	391 ppi	3,792 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	%	675.0
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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	344.7 N	77.500 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	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: **2/18/14**Signature: 
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ROLL # **F14B083028**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:	2.75 mm	108 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	.936
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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	68 N/mm	391 ppi	3,792 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	%	675.0
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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	344.7 N	77.500 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	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:..... **2/19/14**Signature.....
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ROLL # **F14B083029**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:	2.77 mm	109 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 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	.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	68 N/mm	391 ppi	3,792 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	%	675.0
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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	344.7 N	77.500 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	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:..... **2/19/14**Signature.....
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ROLL # **F14B083030**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:	2.83 mm	111 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	26 mil AVE:	2.68 mm	106 mil			

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

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	.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	3,792 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	%	675.0
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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	344.7 N	77.500 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	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: **2/19/14**Signature: 
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Appendix I.5

Primary (100-mil LLDPE Smooth) Geomembrane Roll Quality Control Certificates



quality certificate

ROLL # **F14C042031** Lot # **CDH811430** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.554 mm	ENGLISH 101 mil	Thickness Length Width	2.5mm 102.109 7.01	100mil m m	335 23.0	feet feet
	MAX:	2.986 mm	118 mil					
	AVE:	2.751 mm	108 mil	OIT(Standard) ASTM D3895		minutes	196	
Specific Gravity ASTM D792		Density		g/cc			.934	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min						.33
Carbon Black Content ASTM D4218		Range		%			2.32	
Carbon Black Dispersion ASTM D5596		Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)		Average Strength @ Break		67 N/mm	382 ppi		4,770 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break		Average Elongation @ Break		%			893.5	
Dimensional Stability ASTM D1204 (Modified)		Average Dimensional Change		%			-0.66	
Tear Resistance ASTM D1004 (Modified)		Average Tear Resistance		314 N			70.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)		Load		592 N			133 lbs	
Puncture Resistance ASTM D4833 (Modified)		Load		756 N			170 lbs	
ESCR ASTM D1693		Minimum Hrs w / o Failures		1500 hrs			CERTIFIED	

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch ph1**
Destination **Cripple Creek, CO**

Date: **01/21/14**

Signature: 
Quality Control Department

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quality certificate

ROLL # **F14C042032** Lot # **CDH811430** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.328 mm	ENGLISH 92 mil	Thickness Length Width	2.5mm 102.109 7.01	100mil m m	335 23.0	feet feet
	MAX:	2.968 mm	117 mil					
	AVE:	2.604 mm	103 mil	OIT(Standard) ASTM D3895		minutes		196
Specific Gravity ASTM D792		Density			g/cc			.934
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min						.33
Carbon Black Content ASTM D4218		Range			%			2.32
Carbon Black Dispersion ASTM D5596		Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)		Average Strength @ Break			67 N/mm	382 ppi	4,770 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break		Average Elongation @ Break			%		893.5	
Dimensional Stability ASTM D1204 (Modified)		Average Dimensional Change			%		-0.66	
Tear Resistance ASTM D1004 (Modified)		Average Tear Resistance			314 N		70.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)		Load			592 N		133 lbs	
Puncture Resistance ASTM D4833 (Modified)		Load			756 N		170 lbs	
ESCR ASTM D1693		Minimum Hrs w / o Failures			1500 hrs	CERTIFIED		

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch ph1**
Destination **Cripple Creek, CO**

Date: **01/21/14**

Signature: 
Quality Control Department

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quality certificate

ROLL # **F14C042033** Lot # **CDH811430** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.548 mm	ENGLISH 100 mil	Thickness Length Width	2.5mm 102.109 7.01	100mil m m	335 23.0	feet feet
	MAX:	2.905 mm	114 mil					
	AVE:	2.721 mm	107 mil	OIT(Standard) ASTM D3895		minutes	196	
Specific Gravity ASTM D792		Density			g/cc		.934	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min						.33
Carbon Black Content ASTM D4218		Range			%		2.29	
Carbon Black Dispersion ASTM D5596		Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)		Average Strength @ Break			67 N/mm	382 ppi	4,770 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break		Average Elongation @ Break			%		893.5	
Dimensional Stability ASTM D1204 (Modified)		Average Dimensional Change			%		-0.66	
Tear Resistance ASTM D1004 (Modified)		Average Tear Resistance			314 N		70.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)		Load			592 N		133 lbs	
Puncture Resistance ASTM D4833 (Modified)		Load			756 N		170 lbs	
ESCR ASTM D1693		Minimum Hrs w / o Failures			1500 hrs	CERTIFIED		

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch ph1**
Destination **Cripple Creek, CO**

Date: **01/21/14**

Signature: 
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quality certificate

ROLL # **F14C042034** Lot # **CDH811430** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.477 mm	ENGLISH 98 mil	Thickness Length Width	2.5mm 102.109 7.01	100mil m m	335 23.0	feet feet
	MAX:	2.844 mm	112 mil					
	AVE:	2.664 mm	105 mil	OIT(Standard) ASTM D3895		minutes	196	
Specific Gravity ASTM D792		Density			g/cc		.934	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min						.33
Carbon Black Content ASTM D4218		Range			%		2.29	
Carbon Black Dispersion ASTM D5596		Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)		Average Strength @ Break			67 N/mm	382 ppi	4,770 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break		Average Elongation @ Break			%		893.5	
Dimensional Stability ASTM D1204 (Modified)		Average Dimensional Change			%		-0.66	
Tear Resistance ASTM D1004 (Modified)		Average Tear Resistance			314 N		70.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)		Load			592 N		133 lbs	
Puncture Resistance ASTM D4833 (Modified)		Load			756 N		170 lbs	
ESCR ASTM D1693		Minimum Hrs w / o Failures			1500 hrs	CERTIFIED		

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch ph1**
Destination **Cripple Creek, CO**

Date: **01/21/14**

Signature: 
Quality Control Department

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quality certificate

ROLL # **F14C042035** Lot # **CDH811430** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.432 mm	ENGLISH 96 mil	Thickness Length	2.5mm 102.109 m	100mil 335 feet	
	MAX:	3.004 mm	118 mil	Width	7.01 m	23.0 feet	
	AVE:	2.643 mm	104 mil	OIT(Standard) ASTM D3895	minutes	196	
Specific Gravity ASTM D792	Density			g/cc		.934	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min				.33	
Carbon Black Content ASTM D4218	Range			%		2.32	
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			68 N/mm	387 ppi	4,832 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		909.0	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.66	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			314 N		70.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			592 N		133 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			756 N		170 lbs	
ESCR ASTM D1693	Minimum Hrs w / o Failures			1500 hrs		CERTIFIED	

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch ph1**
Destination **Cripple Creek, CO**

Date: **01/21/14**

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ROLL # **F14C042036** Lot # **CDH811430** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.373 mm	ENGLISH 93 mil	Thickness Length	2.5mm 102.109 m	100mil 335 feet	
	MAX:	2.658 mm	105 mil	Width	7.01 m	23.0 feet	
	AVE:	2.54 mm	100 mil	OIT(Standard) ASTM D3895	minutes	196	
Specific Gravity ASTM D792	Density			g/cc		.934	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min				.33	
Carbon Black Content ASTM D4218	Range			%		2.32	
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			68 N/mm	387 ppi	4,832 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		909.0	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.66	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			314 N		70.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			592 N		133 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			756 N		170 lbs	
ESCR ASTM D1693	Minimum Hrs w / o Failures			1500 hrs		CERTIFIED	

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch ph1**
Destination **Cripple Creek, CO**

Date: **01/21/14**

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ROLL # **F14C042037** Lot # **CDH811430** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.53 mm	ENGLISH 100 mil	Thickness Length Width	2.5mm 102.109 7.01	100mil m m	335 23.0	feet feet
	MAX:	2.965 mm	117 mil					
	AVE:	2.703 mm	106 mil	OIT(Standard) ASTM D3895		minutes	196	
Specific Gravity ASTM D792	Density			g/cc			.934	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min					.33	
Carbon Black Content ASTM D4218	Range			%			2.32	
Carbon Black Dispersion ASTM D5596	Category						10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			68 N/mm	387 ppi		4,832 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%			909.0	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%			-0.66	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			314 N			70.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			592 N			133 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			756 N			170 lbs	
ESCR ASTM D1693	Minimum Hrs w / o Failures			1500 hrs			CERTIFIED	

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch ph1**
Destination **Cripple Creek, CO**

Date: **01/21/14**

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ROLL # **F14C043039** Lot # **CDH811430** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.426 mm	ENGLISH 96 mil	Thickness Length	2.5mm 102.109 m	100mil 335 feet	
	MAX:	2.984 mm	117 mil	Width	7.01 m	23.0 feet	
	AVE:	2.662 mm	105 mil	OIT(Standard) ASTM D3895	minutes	196	
Specific Gravity ASTM D792	Density			g/cc		.934	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min				.33	
Carbon Black Content ASTM D4218	Range			%		2.32	
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			68 N/mm	387 ppi	4,832 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		909.0	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.66	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			314 N		70.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			592 N		133 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			756 N		170 lbs	
ESCR ASTM D1693	Minimum Hrs w / o Failures			1500 hrs		CERTIFIED	

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14C043040** Lot # **CDH811430** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.422 mm	ENGLISH 95 mil	Thickness Length	2.5mm 102.109 m	100mil 335 feet	
	MAX:	2.96 mm	117 mil	Width	7.01 m	23.0 feet	
	AVE:	2.622 mm	103 mil	OIT(Standard) ASTM D3895	minutes	196	
Specific Gravity ASTM D792	Density			g/cc		.935	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min				.33	
Carbon Black Content ASTM D4218	Range			%		2.22	
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			65 N/mm	370 ppi	4,621 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		864.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.66	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			334 N		75.000 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			596 N		134 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			796 N		179 lbs	
ESCR ASTM D1693	Minimum Hrs w / o Failures			1500 hrs		CERTIFIED	

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14C043041** Lot # **CDH811430** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.473 mm	ENGLISH 97 mil	Thickness Length Width	2.5mm 102.109 7.01	100mil m m	335 23.0	feet feet
	MAX:	2.906 mm	114 mil					
	AVE:	2.617 mm	103 mil	OIT(Standard) ASTM D3895		minutes	196	
Specific Gravity ASTM D792		Density			g/cc		.935	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min						.33
Carbon Black Content ASTM D4218		Range			%		2.22	
Carbon Black Dispersion ASTM D5596		Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)		Average Strength @ Break			65 N/mm	370 ppi	4,621 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break		Average Elongation @ Break			%		864.5	
Dimensional Stability ASTM D1204 (Modified)		Average Dimensional Change			%		-0.66	
Tear Resistance ASTM D1004 (Modified)		Average Tear Resistance			334 N		75.000 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)		Load			596 N		134 lbs	
Puncture Resistance ASTM D4833 (Modified)		Load			796 N		179 lbs	
ESCR ASTM D1693		Minimum Hrs w / o Failures		1500 hrs	CERTIFIED			

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14C043042** Lot # **CDH811430** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.344 mm	ENGLISH 92 mil	Thickness Length	2.5mm 102.109 m	100mil 335 feet	
	MAX:	2.979 mm	117 mil	Width	7.01 m	23.0 feet	
	AVE:	2.59 mm	102 mil	OIT(Standard) ASTM D3895	minutes	196	
Specific Gravity ASTM D792	Density			g/cc		.935	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min				.33	
Carbon Black Content ASTM D4218	Range			%		2.22	
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			65 N/mm	370 ppi	4,621 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		864.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.66	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			334 N		75.000 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			596 N		134 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			796 N		179 lbs	
ESCR ASTM D1693	Minimum Hrs w / o Failures			1500 hrs		CERTIFIED	

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch ph1**
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ROLL # **F14C043043**

Lot #

CDH811430Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.42 mm	ENGLISH 95 mil	Thickness Length Width	2.5mm 102.109 7.01	100mil m m	335 23.0	feet feet
	MAX:	2.978 mm	117 mil					
	AVE:	2.618 mm	103 mil	OIT(Standard) ASTM D3895		minutes	196	
Specific Gravity ASTM D792		Density		g/cc			.935	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min						.33
Carbon Black Content ASTM D4218		Range		%			2.32	
Carbon Black Dispersion ASTM D5596		Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)		Average Strength @ Break		65 N/mm		370 ppi	4,621 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break		Average Elongation @ Break		%			864.5	
Dimensional Stability ASTM D1204 (Modified)		Average Dimensional Change		%			-0.66	
Tear Resistance ASTM D1004 (Modified)		Average Tear Resistance		334 N			75.000 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)		Load		596 N			134 lbs	
Puncture Resistance ASTM D4833 (Modified)		Load		796 N			179 lbs	
ESCR ASTM D1693		Minimum Hrs w / o Failures		1500 hrs		CERTIFIED		

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14C043044** Lot # **CDH811430** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.409 mm	ENGLISH 95 mil	Thickness Length	2.5mm 102.109 m	100mil 335 feet	
	MAX:	2.96 mm	117 mil	Width	7.01 m	23.0 feet	
	AVE:	2.615 mm	103 mil	OIT(Standard) ASTM D3895	minutes	196	
Specific Gravity ASTM D792	Density			g/cc		.935	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min				.33	
Carbon Black Content ASTM D4218	Range			%		2.32	
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			65 N/mm	370 ppi	4,621 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		864.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.66	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			334 N		75.000 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			596 N		134 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			796 N		179 lbs	
ESCR ASTM D1693	Minimum Hrs w / o Failures			1500 hrs		CERTIFIED	

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14C043045** Lot # **CDH811430** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.385 mm	ENGLISH 94 mil	Thickness Length	2.5mm 102.109 m	100mil 335 feet	
	MAX:	2.915 mm	115 mil	Width	7.01 m	23.0 feet	
	AVE:	2.606 mm	103 mil	OIT(Standard) ASTM D3895	minutes	196	
Specific Gravity ASTM D792	Density			g/cc		.935	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min				.33	
Carbon Black Content ASTM D4218	Range			%		2.32	
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			68 N/mm	387 ppi	4,839 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		917.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.66	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			334 N		75.000 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			596 N		134 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			796 N		179 lbs	
ESCR ASTM D1693	Minimum Hrs w / o Failures			1500 hrs		CERTIFIED	

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch ph1**
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ROLL # **F14C043046** Lot # **CDH811430** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.449 mm	ENGLISH 96 mil	Thickness Length Width	2.5mm 102.109 7.01	100mil m m	335 23.0	feet feet
	MAX:	2.978 mm	117 mil					
	AVE:	2.651 mm	104 mil	OIT(Standard) ASTM D3895		minutes	196	
Specific Gravity ASTM D792		Density			g/cc		.935	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min						.33
Carbon Black Content ASTM D4218		Range			%		2.32	
Carbon Black Dispersion ASTM D5596		Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)		Average Strength @ Break			68 N/mm	387 ppi	4,839 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break		Average Elongation @ Break			%		917.5	
Dimensional Stability ASTM D1204 (Modified)		Average Dimensional Change			%		-0.66	
Tear Resistance ASTM D1004 (Modified)		Average Tear Resistance			334 N		75.000 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)		Load			596 N		134 lbs	
Puncture Resistance ASTM D4833 (Modified)		Load			796 N		179 lbs	
ESCR ASTM D1693		Minimum Hrs w / o Failures		1500 hrs		CERTIFIED		

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14C043047** Lot # **CDH811430** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.366 mm	ENGLISH 93 mil	Thickness Length Width	2.5mm 102.109 7.01	100mil m m	335 23.0	feet feet
	MAX:	2.781 mm	109 mil					
	AVE:	2.565 mm	101 mil	OIT(Standard) ASTM D3895		minutes	196	
Specific Gravity ASTM D792		Density			g/cc		.935	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min						.33
Carbon Black Content ASTM D4218		Range			%		2.34	
Carbon Black Dispersion ASTM D5596		Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)		Average Strength @ Break			68 N/mm	387 ppi	4,839 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break		Average Elongation @ Break			%		917.5	
Dimensional Stability ASTM D1204 (Modified)		Average Dimensional Change			%		-0.66	
Tear Resistance ASTM D1004 (Modified)		Average Tear Resistance			334 N		75.000 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)		Load			596 N		134 lbs	
Puncture Resistance ASTM D4833 (Modified)		Load			796 N		179 lbs	
ESCR ASTM D1693		Minimum Hrs w / o Failures			1500 hrs	CERTIFIED		

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14C043048** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.506 mm	ENGLISH 99 mil	Thickness Length Width	2.5mm 102.109 7.01	100mil m m	335 23.0	feet feet
	MAX:	2.779 mm	109 mil					
	AVE:	2.657 mm	105 mil	OIT(Standard) ASTM D3895		minutes	200	
Specific Gravity ASTM D792		Density			g/cc		.936	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min						.32
Carbon Black Content ASTM D4218		Range			%		2.35	
Carbon Black Dispersion ASTM D5596		Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)		Average Strength @ Break			68 N/mm	387 ppi	4,839 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break		Average Elongation @ Break			%		917.5	
Dimensional Stability ASTM D1204 (Modified)		Average Dimensional Change			%		-0.26	
Tear Resistance ASTM D1004 (Modified)		Average Tear Resistance			334 N		75.000 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)		Load			596 N		134 lbs	
Puncture Resistance ASTM D4833 (Modified)		Load			796 N		179 lbs	
ESCR ASTM D1693		Minimum Hrs w / o Failures			1500 hrs	CERTIFIED		

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14C043049** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.418 mm	ENGLISH 95 mil	Thickness Length	2.5mm 102.109 m	100mil 335 feet	
	MAX:	2.907 mm	114 mil	Width	7.01 m	23.0 feet	
	AVE:	2.594 mm	102 mil	OIT(Standard) ASTM D3895	minutes	200	
Specific Gravity ASTM D792	Density			g/cc		.936	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min				.32	
Carbon Black Content ASTM D4218	Range			%		2.35	
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			68 N/mm	387 ppi	4,839 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		917.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.26	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			334 N		75.000 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			596 N		134 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			796 N		179 lbs	
ESCR ASTM D1693	Minimum Hrs w / o Failures			1500 hrs		CERTIFIED	

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14C043052** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.364 mm	ENGLISH 93 mil	Thickness Length Width	2.5mm 102.109 7.01	100mil m m	335 23.0	feet feet
	MAX:	2.867 mm	113 mil					
	AVE:	2.543 mm	100 mil	OIT(Standard) ASTM D3895		minutes	200	
Specific Gravity ASTM D792	Density			g/cc			.936	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min					.32	
Carbon Black Content ASTM D4218	Range			%			2.35	
Carbon Black Dispersion ASTM D5596	Category						10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			67 N/mm	383 ppi		4,784 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%			876.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%			-0.26	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			340 N			76.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			605 N			136 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			792 N			178 lbs	
ESCR ASTM D1693	Minimum Hrs w / o Failures			1500 hrs			CERTIFIED	

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch ph1**
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ROLL # **F14C043053** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.378 mm	ENGLISH 94 mil	Thickness Length	2.5mm 102.109 m	100mil 335 feet	
	MAX:	2.89 mm	114 mil	Width	7.01 m	23.0 feet	
	AVE:	2.573 mm	101 mil	OIT(Standard) ASTM D3895	minutes	200	
Specific Gravity ASTM D792	Density			g/cc		.936	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min				.32	
Carbon Black Content ASTM D4218	Range			%		2.35	
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			67 N/mm	383 ppi	4,784 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		876.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.26	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			340 N		76.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			605 N		136 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			792 N		178 lbs	
ESCR ASTM D1693	Minimum Hrs w / o Failures			1500 hrs		CERTIFIED	

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch ph1**
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ROLL # **F14C043054** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.349 mm	ENGLISH 92 mil	Thickness Length Width	2.5mm 102.109 7.01	100mil m m	335 23.0	feet feet
	MAX:	2.97 mm	117 mil					
	AVE:	2.59 mm	102 mil	OIT(Standard) ASTM D3895		minutes	200	
Specific Gravity ASTM D792	Density			g/cc			.936	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min					.32	
Carbon Black Content ASTM D4218	Range			%			2.35	
Carbon Black Dispersion ASTM D5596	Category						10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			67 N/mm	383 ppi		4,784 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%			876.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%			-0.26	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			340 N			76.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			605 N			136 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			792 N			178 lbs	
ESCR ASTM D1693	Minimum Hrs w / o Failures			1500 hrs			CERTIFIED	

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch ph1**
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ROLL # **F14C043055** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.293 mm	ENGLISH 90 mil	Thickness Length	2.5mm 102.109 m	100mil 335 feet	
	MAX:	2.874 mm	113 mil	Width	7.01 m	23.0 feet	
	AVE:	2.536 mm	100 mil	OIT(Standard) ASTM D3895	minutes	200	
Specific Gravity ASTM D792	Density			g/cc		.936	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min				.32	
Carbon Black Content ASTM D4218	Range			%		2.38	
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			69 N/mm	392 ppi	4,897 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		898.0	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.26	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			340 N		76.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			605 N		136 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			792 N		178 lbs	
ESCR ASTM D1693	Minimum Hrs w / o Failures			1500 hrs		CERTIFIED	

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch ph1**
Destination **Cripple Creek, CO**

Date: **01/22/14**

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ROLL # **F14C043056** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.539 mm	ENGLISH 100 mil	Thickness Length Width	2.5mm 102.109 7.01	100mil m m	335 23.0	feet feet
	MAX:	3.006 mm	118 mil					
	AVE:	2.764 mm	109 mil	OIT(Standard) ASTM D3895		minutes	200	
Specific Gravity ASTM D792	Density				g/cc	.936		
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min					.32	
Carbon Black Content ASTM D4218	Range				%	2.38		
Carbon Black Dispersion ASTM D5596	Category				10 In Cat 1			
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break				69 N/mm	392 ppi	4,897 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break				%	898.0		
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change				%	-0.26		
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance				340 N	76.500 lbs		
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load				605 N	136 lbs		
Puncture Resistance ASTM D4833 (Modified)	Load				792 N	178 lbs		
ESCR ASTM D1693	Minimum Hrs w / o Failures	1500 hrs			CERTIFIED			

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch ph1**
Destination **Cripple Creek, CO**

Date: **01/22/14**

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ROLL # **F14C043057** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.525 mm	ENGLISH 99 mil	Thickness Length Width	2.5mm 102.109 7.01	100mil m m	335 23.0	feet feet
	MAX:	3.011 mm	119 mil					
	AVE:	2.724 mm	107 mil	OIT(Standard) ASTM D3895		minutes	200	
Specific Gravity ASTM D792	Density			g/cc			.936	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min					.32	
Carbon Black Content ASTM D4218	Range			%			2.38	
Carbon Black Dispersion ASTM D5596	Category						10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			69 N/mm	392 ppi		4,897 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%			898.0	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%			-0.26	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			340 N			76.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			605 N			136 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			792 N			178 lbs	
ESCR ASTM D1693	Minimum Hrs w / o Failures			1500 hrs			CERTIFIED	

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch ph1**
Destination **Cripple Creek, CO**

Date: **01/22/14**

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ROLL # **F14C043058** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.47 mm	ENGLISH 97 mil	Thickness Length Width	2.5mm 102.109 7.01	100mil m m	335 23.0	feet feet
	MAX:	2.972 mm	117 mil					
	AVE:	2.63 mm	104 mil	OIT(Standard) ASTM D3895		minutes	200	
Specific Gravity ASTM D792		Density			g/cc		.936	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min						.32
Carbon Black Content ASTM D4218		Range			%		2.27	
Carbon Black Dispersion ASTM D5596		Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)		Average Strength @ Break			69 N/mm	392 ppi	4,897 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break		Average Elongation @ Break			%		898.0	
Dimensional Stability ASTM D1204 (Modified)		Average Dimensional Change			%		-0.26	
Tear Resistance ASTM D1004 (Modified)		Average Tear Resistance			340 N		76.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)		Load			605 N		136 lbs	
Puncture Resistance ASTM D4833 (Modified)		Load			792 N		178 lbs	
ESCR ASTM D1693		Minimum Hrs w / o Failures			1500 hrs	CERTIFIED		

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch ph1**
Destination **Cripple Creek, CO**

Date: **01/22/14**

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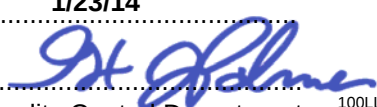
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ROLL # **F14C044059** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.35 mm	ENGLISH 93 mil	Thickness Length Width	2.5mm 102.109 7.01	100mil m m	335 23.0	feet feet
	MAX:	2.884 mm	114 mil					
	AVE:	2.576 mm	101 mil	OIT(Standard) ASTM D3895		minutes	200	
Specific Gravity ASTM D792		Density			g/cc		.936	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min						.32
Carbon Black Content ASTM D4218		Range			%		2.27	
Carbon Black Dispersion ASTM D5596		Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)		Average Strength @ Break			69 N/mm	392 ppi	4,897 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break		Average Elongation @ Break			%		898.0	
Dimensional Stability ASTM D1204 (Modified)		Average Dimensional Change			%		-0.26	
Tear Resistance ASTM D1004 (Modified)		Average Tear Resistance			340 N		76.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)		Load			605 N		136 lbs	
Puncture Resistance ASTM D4833 (Modified)		Load			792 N		178 lbs	
ESCR ASTM D1693		Minimum Hrs w / o Failures			1500 hrs	CERTIFIED		

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14C044060** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.509 mm	ENGLISH 99 mil	Thickness Length	2.5mm 102.109 m	100mil 335 feet	
	MAX:	2.97 mm	117 mil	Width	7.01 m	23.0 feet	
	AVE:	2.693 mm	106 mil	OIT(Standard) ASTM D3895	minutes	200	
Specific Gravity ASTM D792	Density			g/cc		.933	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min				.32	
Carbon Black Content ASTM D4218	Range			%		2.41	
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			68 N/mm	387 ppi	4,832 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		893.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.26	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			347 N		78.000 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			614 N		138 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			810 N		182 lbs	
ESCR ASTM D1693	Minimum Hrs w / o Failures			1500 hrs		CERTIFIED	

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch ph1**
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ROLL # **F14C044061** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.511 mm	ENGLISH 99 mil	Thickness Length Width	2.5mm 102.109 7.01	100mil m m	335 23.0	feet feet
	MAX:	2.983 mm	117 mil					
	AVE:	2.669 mm	105 mil	OIT(Standard) ASTM D3895		minutes	200	
Specific Gravity ASTM D792	Density			g/cc			.933	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min					.32	
Carbon Black Content ASTM D4218	Range			%			2.41	
Carbon Black Dispersion ASTM D5596	Category						10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			68 N/mm	387 ppi		4,832 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%			893.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%			-0.26	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			347 N			78.000 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			614 N			138 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			810 N			182 lbs	
ESCR ASTM D1693	Minimum Hrs w / o Failures			1500 hrs			CERTIFIED	

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14C044062** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.469 mm	ENGLISH 97 mil	Thickness Length Width	2.5mm 102.109 7.01	100mil m m	335 23.0	feet feet
	MAX:	2.972 mm	117 mil					
	AVE:	2.637 mm	104 mil	OIT(Standard) ASTM D3895		minutes	200	
Specific Gravity ASTM D792	Density			g/cc			.933	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min					.32	
Carbon Black Content ASTM D4218	Range			%			2.41	
Carbon Black Dispersion ASTM D5596	Category						10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			68 N/mm	387 ppi		4,832 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%			893.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%			-0.26	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			347 N			78.000 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			614 N			138 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			810 N			182 lbs	
ESCR ASTM D1693	Minimum Hrs w / o Failures			1500 hrs			CERTIFIED	

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch ph1**
Destination **Cripple Creek, CO**

Date: **1/23/14**

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ROLL # **F14C044063** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.4 mm	ENGLISH 94 mil	Thickness Length	2.5mm 102.109 m	100mil 335 feet	
	MAX:	2.889 mm	114 mil	Width	7.01 m	23.0 feet	
	AVE:	2.559 mm	101 mil	OIT(Standard) ASTM D3895	minutes	200	
Specific Gravity ASTM D792	Density			g/cc		.933	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min				.32	
Carbon Black Content ASTM D4218	Range			%		2.30	
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			68 N/mm	387 ppi	4,832 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		893.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.26	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			347 N		78.000 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			614 N		138 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			810 N		182 lbs	
ESCR ASTM D1693	Minimum Hrs w / o Failures			1500 hrs		CERTIFIED	

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch ph1**
Destination **Cripple Creek, CO**

Date: **1/23/14**

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ROLL # **F14C044064** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.326 mm	ENGLISH 92 mil	Thickness Length	2.5mm 102.109 m	100mil 335 feet	
	MAX:	2.89 mm	114 mil	Width	7.01 m	23.0 feet	
	AVE:	2.544 mm	100 mil	OIT(Standard) ASTM D3895	minutes	200	
Specific Gravity ASTM D792	Density			g/cc		.933	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min				.32	
Carbon Black Content ASTM D4218	Range			%		2.30	
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			68 N/mm	387 ppi	4,832 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		893.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.26	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			347 N		78.000 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			614 N		138 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			810 N		182 lbs	
ESCR ASTM D1693	Minimum Hrs w / o Failures			1500 hrs		CERTIFIED	

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14C044065** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.363 mm	ENGLISH 93 mil	Thickness Length Width	2.5mm 102.109 7.01	100mil m m	335 23.0	feet feet
	MAX:	2.892 mm	114 mil					
	AVE:	2.546 mm	100 mil	OIT(Standard) ASTM D3895		minutes	200	
Specific Gravity ASTM D792	Density				g/cc	.933		
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min					.32	
Carbon Black Content ASTM D4218	Range				%	2.42		
Carbon Black Dispersion ASTM D5596	Category				10 In Cat 1			
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break				69 N/mm	396 ppi	4,946 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break				%	889.5		
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change				%	-0.26		
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance				347 N	78.000 lbs		
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load				614 N	138 lbs		
Puncture Resistance ASTM D4833 (Modified)	Load				810 N	182 lbs		
ESCR ASTM D1693	Minimum Hrs w / o Failures	1500 hrs			CERTIFIED			

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14C044066** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.48 mm	ENGLISH 98 mil	Thickness Length	2.5mm 102.109 m	100mil 335 feet	
	MAX:	2.997 mm	118 mil	Width	7.01 m	23.0 feet	
	AVE:	2.657 mm	105 mil	OIT(Standard) ASTM D3895	minutes	200	
Specific Gravity ASTM D792	Density			g/cc		.933	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min				.32	
Carbon Black Content ASTM D4218	Range			%		2.42	
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			69 N/mm	396 ppi	4,946 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		889.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.26	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			347 N		78.000 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			614 N		138 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			810 N		182 lbs	
ESCR ASTM D1693	Minimum Hrs w / o Failures			1500 hrs		CERTIFIED	

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14C044067** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.603 mm	ENGLISH 102 mil	Thickness Length	2.5mm 102.109 m	100mil m	335 feet
	MAX:	2.787 mm	110 mil	Width	7.01 m	23.0 m	feet
	AVE:	2.704 mm	106 mil	OIT(Standard) ASTM D3895	minutes		200
Specific Gravity ASTM D792	Density			g/cc			.933
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min					.32
Carbon Black Content ASTM D4218	Range			%			2.42
Carbon Black Dispersion ASTM D5596	Category						10 In Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			69 N/mm	396 ppi		4,946 psi
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%			889.5
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%			-0.26
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			347 N			78.000 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			614 N			138 lbs
Puncture Resistance ASTM D4833 (Modified)	Load			810 N			182 lbs
ESCR ASTM D1693	Minimum Hrs w / o Failures			1500 hrs			CERTIFIED

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch ph1**
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ROLL # **F14C044068** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.54 mm	ENGLISH 100 mil	Thickness Length	2.5mm 102.109 m	100mil 335 feet	
	MAX:	2.99 mm	118 mil	Width	7.01 m	23.0 feet	
	AVE:	2.687 mm	106 mil	OIT(Standard) ASTM D3895	minutes	200	
Specific Gravity ASTM D792	Density			g/cc		.933	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min				.32	
Carbon Black Content ASTM D4218	Range			%		2.35	
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			69 N/mm	396 ppi	4,946 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		889.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.26	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			347 N		78.000 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			614 N		138 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			810 N		182 lbs	
ESCR ASTM D1693	Minimum Hrs w / o Failures			1500 hrs		CERTIFIED	

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch ph1**
Destination **Cripple Creek, CO**

Date: **1/23/14**

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ROLL # **F14C044069** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.405 mm	ENGLISH 95 mil	Thickness Length	2.5mm 102.109 m	100mil 335 feet	
	MAX:	2.863 mm	113 mil	Width	7.01 m	23.0 feet	
	AVE:	2.531 mm	100 mil	OIT(Standard) ASTM D3895	minutes	200	
Specific Gravity ASTM D792	Density			g/cc		.933	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min				.32	
Carbon Black Content ASTM D4218	Range			%		2.35	
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			69 N/mm	396 ppi	4,946 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		889.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.26	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			347 N		78.000 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			614 N		138 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			810 N		182 lbs	
ESCR ASTM D1693	Minimum Hrs w / o Failures			1500 hrs		CERTIFIED	

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14C044070** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.344 mm	ENGLISH 92 mil	Thickness Length	2.5mm 102.109 m	100mil 335 feet	
	MAX:	2.854 mm	112 mil	Width	7.01 m	23.0 feet	
	AVE:	2.55 mm	100 mil	OIT(Standard) ASTM D3895	minutes	200	
Specific Gravity ASTM D792	Density			g/cc		.934	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min				.32	
Carbon Black Content ASTM D4218	Range			%		2.32	
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			69 N/mm	393 ppi	4,919 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		896.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.26	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			322 N		72.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			623 N		140 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			805 N		181 lbs	
ESCR ASTM D1693	Minimum Hrs w / o Failures			1500 hrs		CERTIFIED	

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14C044071** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.509 mm	ENGLISH 99 mil	Thickness Length	2.5mm 102.109 m	100mil 335 feet	
	MAX:	3.012 mm	119 mil	Width	7.01 m	23.0 feet	
	AVE:	2.7 mm	106 mil	OIT(Standard) ASTM D3895	minutes	200	
Specific Gravity ASTM D792	Density			g/cc		.934	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min				.32	
Carbon Black Content ASTM D4218	Range			%		2.32	
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			69 N/mm	393 ppi	4,919 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		896.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.26	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			322 N		72.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			623 N		140 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			805 N		181 lbs	
ESCR ASTM D1693	Minimum Hrs w / o Failures			1500 hrs		CERTIFIED	

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14C044072** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.384 mm	ENGLISH 94 mil	Thickness Length	2.5mm 102.109 m	100mil 335 feet	
	MAX:	2.887 mm	114 mil	Width	7.01 m	23.0 feet	
	AVE:	2.54 mm	100 mil	OIT(Standard) ASTM D3895	minutes	200	
Specific Gravity ASTM D792	Density			g/cc		.934	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min				.32	
Carbon Black Content ASTM D4218	Range			%		2.32	
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			69 N/mm	393 ppi	4,919 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		896.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.26	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			322 N		72.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			623 N		140 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			805 N		181 lbs	
ESCR ASTM D1693	Minimum Hrs w / o Failures			1500 hrs		CERTIFIED	

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14C044073** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.526 mm	ENGLISH 99 mil	Thickness Length	2.5mm 102.109 m	100mil 335 feet	
	MAX:	3.012 mm	119 mil	Width	7.01 m	23.0 feet	
	AVE:	2.7 mm	106 mil	OIT(Standard) ASTM D3895	minutes	200	
Specific Gravity ASTM D792	Density			g/cc		.934	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min				.32	
Carbon Black Content ASTM D4218	Range			%		2.32	
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			69 N/mm	393 ppi	4,919 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		896.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.26	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			322 N		72.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			623 N		140 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			805 N		181 lbs	
ESCR ASTM D1693	Minimum Hrs w / o Failures			1500 hrs		CERTIFIED	

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14C044074** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.566 mm	ENGLISH 101 mil	Thickness Length Width	2.5mm 102.109 7.01	100mil m m	335 23.0	feet feet
	MAX:	3.024 mm	119 mil					
	AVE:	2.716 mm	107 mil	OIT(Standard) ASTM D3895		minutes	200	
Specific Gravity ASTM D792		Density		g/cc			.934	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min						.32
Carbon Black Content ASTM D4218		Range		%			2.32	
Carbon Black Dispersion ASTM D5596		Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)		Average Strength @ Break		69 N/mm	393 ppi		4,919 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break		Average Elongation @ Break		%			896.5	
Dimensional Stability ASTM D1204 (Modified)		Average Dimensional Change		%			-0.26	
Tear Resistance ASTM D1004 (Modified)		Average Tear Resistance		322 N			72.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)		Load		623 N			140 lbs	
Puncture Resistance ASTM D4833 (Modified)		Load		805 N			181 lbs	
ESCR ASTM D1693		Minimum Hrs w / o Failures		1500 hrs			CERTIFIED	

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14C044075** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.378 mm	ENGLISH 94 mil	Thickness Length	2.5mm 102.109 m	100mil 335 feet	
	MAX:	2.87 mm	113 mil	Width	7.01 m	23.0 feet	
	AVE:	2.534 mm	100 mil	OIT(Standard) ASTM D3895	minutes	200	
Specific Gravity ASTM D792	Density			g/cc		.934	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min				.32	
Carbon Black Content ASTM D4218	Range			%		2.14	
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			68 N/mm	387 ppi	4,842 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		872.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.26	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			322 N		72.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			623 N		140 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			805 N		181 lbs	
ESCR ASTM D1693	Minimum Hrs w / o Failures			1500 hrs		CERTIFIED	

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14C045078** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.528 mm	ENGLISH 100 mil	Thickness Length	2.5mm 102.109 m	100mil 335 m	feet
	MAX:	2.91 mm	115 mil	Width	7.01 m	23.0 m	feet
	AVE:	2.655 mm	105 mil	OIT(Standard) ASTM D3895	minutes	200	
Specific Gravity ASTM D792	Density			g/cc		.935	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min				.32	
Carbon Black Content ASTM D4218	Range			%		2.28	
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			66 N/mm	380 ppi	4,746 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		872.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.26	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			338 N		76.000 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			609 N		137 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			796 N		179 lbs	
ESCR ASTM D1693	Minimum Hrs w / o Failures			1500 hrs		CERTIFIED	

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch ph1**
Destination **Cripple Creek, CO**

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1/21/14



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ROLL # **F14C045079** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.451 mm	ENGLISH 96 mil	Thickness Length	2.5mm 102.109 m	100mil 335 feet	
	MAX:	2.88 mm	113 mil	Width	7.01 m	23.0 feet	
	AVE:	2.602 mm	102 mil	OIT(Standard) ASTM D3895	minutes	200	
Specific Gravity ASTM D792	Density			g/cc		.935	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min				.32	
Carbon Black Content ASTM D4218	Range			%		2.28	
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			66 N/mm	380 ppi	4,746 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		872.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.26	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			338 N		76.000 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			609 N		137 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			796 N		179 lbs	
ESCR ASTM D1693	Minimum Hrs w / o Failures			1500 hrs		CERTIFIED	

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14C045080** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.42 mm	ENGLISH 95 mil	Thickness Length	2.5mm 102.109 m	100mil 335 feet	
	MAX:	2.849 mm	112 mil	Width	7.01 m	23.0 feet	
	AVE:	2.591 mm	102 mil	OIT(Standard) ASTM D3895	minutes	200	
Specific Gravity ASTM D792	Density			g/cc		.935	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min				.32	
Carbon Black Content ASTM D4218	Range			%		2.28	
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			66 N/mm	380 ppi	4,746 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		872.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.26	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			338 N		76.000 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			609 N		137 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			796 N		179 lbs	
ESCR ASTM D1693	Minimum Hrs w / o Failures			1500 hrs		CERTIFIED	

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14C045081** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.4 mm	ENGLISH 94 mil	Thickness Length	2.5mm 102.109 m	100mil 335 feet	
	MAX:	2.93 mm	115 mil	Width	7.01 m	23.0 feet	
	AVE:	2.591 mm	102 mil	OIT(Standard) ASTM D3895	minutes	200	
Specific Gravity ASTM D792	Density			g/cc		.935	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min				.32	
Carbon Black Content ASTM D4218	Range			%		2.28	
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			66 N/mm	380 ppi	4,746 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		872.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.26	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			338 N		76.000 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			609 N		137 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			796 N		179 lbs	
ESCR ASTM D1693	Minimum Hrs w / o Failures			1500 hrs		CERTIFIED	

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch ph1**
Destination **Cripple Creek, CO**

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1/21/14



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ROLL # **F14C045082** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.347 mm	ENGLISH 92 mil	Thickness Length	2.5mm 102.109 m	100mil 335 feet	
	MAX:	2.866 mm	113 mil	Width	7.01 m	23.0 feet	
	AVE:	2.542 mm	100 mil	OIT(Standard) ASTM D3895	minutes	200	
Specific Gravity ASTM D792	Density			g/cc		.935	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min				.32	
Carbon Black Content ASTM D4218	Range			%		2.34	
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			68 N/mm	389 ppi	4,867 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		878.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.26	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			338 N		76.000 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			609 N		137 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			796 N		179 lbs	
ESCR ASTM D1693	Minimum Hrs w / o Failures			1500 hrs		CERTIFIED	

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch ph1**
Destination **Cripple Creek, CO**

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1/21/14



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ROLL # **F14C045083** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.499 mm	ENGLISH 98 mil	Thickness Length Width	2.5mm 102.109 7.01	100mil m m	335 23.0	feet feet
	MAX:	2.955 mm	116 mil					
	AVE:	2.634 mm	104 mil	OIT(Standard) ASTM D3895		minutes	200	
Specific Gravity ASTM D792	Density			g/cc			.935	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min					.32	
Carbon Black Content ASTM D4218	Range			%			2.34	
Carbon Black Dispersion ASTM D5596	Category						10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			68 N/mm	389 ppi		4,867 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%			878.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%			-0.26	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			338 N			76.000 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			609 N			137 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			796 N			179 lbs	
ESCR ASTM D1693	Minimum Hrs w / o Failures			1500 hrs			CERTIFIED	

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch ph1**
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ROLL # **F14C045084** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.383 mm	ENGLISH 94 mil	Thickness Length	2.5mm 102.109 m	100mil 335 feet	
	MAX:	2.843 mm	112 mil	Width	7.01 m	23.0 feet	
	AVE:	2.535 mm	100 mil	OIT(Standard) ASTM D3895	minutes	200	
Specific Gravity ASTM D792	Density			g/cc		.935	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min				.32	
Carbon Black Content ASTM D4218	Range			%		2.34	
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			68 N/mm	389 ppi	4,867 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		878.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.26	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			338 N		76.000 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			609 N		137 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			796 N		179 lbs	
ESCR ASTM D1693	Minimum Hrs w / o Failures			1500 hrs		CERTIFIED	

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14C045085** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.542 mm	ENGLISH 100 mil	Thickness Length	2.5mm 102.109 m	100mil 335 feet	
	MAX:	2.794 mm	110 mil	Width	7.01 m	23.0 feet	
	AVE:	2.664 mm	105 mil	OIT(Standard) ASTM D3895	minutes	200	
Specific Gravity ASTM D792	Density			g/cc		.935	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min				.32	
Carbon Black Content ASTM D4218	Range			%		2.25	
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			68 N/mm	389 ppi	4,867 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		878.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.26	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			338 N		76.000 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			609 N		137 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			796 N		179 lbs	
ESCR ASTM D1693	Minimum Hrs w / o Failures			1500 hrs		CERTIFIED	

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch ph1**
Destination **Cripple Creek, CO**

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ROLL # **F14C046086** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.492 mm	ENGLISH 98 mil	Thickness Length	2.5mm 102.109 m	100mil 335 feet	
	MAX:	2.866 mm	113 mil	Width	7.01 m	23.0 feet	
	AVE:	2.615 mm	103 mil	OIT(Standard) ASTM D3895	minutes	200	
Specific Gravity ASTM D792	Density			g/cc		.935	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min				.32	
Carbon Black Content ASTM D4218	Range			%		2.25	
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			68 N/mm	389 ppi	4,867 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		878.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.26	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			338 N		76.000 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			609 N		137 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			796 N		179 lbs	
ESCR ASTM D1693	Minimum Hrs w / o Failures			1500 hrs		CERTIFIED	

Customer: **Erosion Control Applications**
PO: **13012 CC & VMLE2 Squaw Gulch ph1**
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ROLL # **F14C046087** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.564 mm	ENGLISH 101 mil	Thickness Length	2.5mm 102.109 m	100mil m	335 feet
	MAX:	2.994 mm	118 mil	Width	7.01 m	23.0 m	feet
	AVE:	2.707 mm	107 mil	OIT(Standard) ASTM D3895	minutes		200
Specific Gravity ASTM D792	Density			g/cc			.935
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min					.32
Carbon Black Content ASTM D4218	Range			%			2.37
Carbon Black Dispersion ASTM D5596	Category						10 In Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			69 N/mm	392 ppi		4,897 psi
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%			885.5
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%			-0.26
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			340 N			76.500 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			592 N			133 lbs
Puncture Resistance ASTM D4833 (Modified)	Load			805 N			181 lbs
ESCR ASTM D1693	Minimum Hrs w / o Failures			1500 hrs			CERTIFIED

Customer: **Erosion Control Applications**
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ROLL # **F14C046088** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.432 mm	ENGLISH 96 mil	Thickness Length	2.5mm 102.109 m	100mil 335 feet	
	MAX:	2.858 mm	113 mil	Width	7.01 m	23.0 feet	
	AVE:	2.578 mm	101 mil	OIT(Standard) ASTM D3895	minutes	200	
Specific Gravity ASTM D792	Density			g/cc		.935	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min				.32	
Carbon Black Content ASTM D4218	Range			%		2.37	
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			69 N/mm	392 ppi	4,897 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		885.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.26	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			340 N		76.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			592 N		133 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			805 N		181 lbs	
ESCR ASTM D1693	Minimum Hrs w / o Failures			1500 hrs		CERTIFIED	

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ROLL # **F14C046089** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.497 mm	ENGLISH 98 mil	Thickness Length	2.5mm 102.109 m	100mil 335 feet	
	MAX:	2.969 mm	117 mil	Width	7.01 m	23.0 feet	
	AVE:	2.669 mm	105 mil	OIT(Standard) ASTM D3895	minutes	200	
Specific Gravity ASTM D792	Density			g/cc		.935	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min				.32	
Carbon Black Content ASTM D4218	Range			%		2.37	
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			69 N/mm	392 ppi	4,897 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		885.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.26	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			340 N		76.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			592 N		133 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			805 N		181 lbs	
ESCR ASTM D1693	Minimum Hrs w / o Failures			1500 hrs		CERTIFIED	

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ROLL # **F14C046090** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.5 mm	ENGLISH 98 mil	Thickness Length Width	2.5mm 102.109 7.01	100mil m m	335 23.0	feet feet
	MAX:	3.029 mm	119 mil					
	AVE:	2.718 mm	107 mil	OIT(Standard) ASTM D3895		minutes	200	
Specific Gravity ASTM D792	Density			g/cc			.935	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min					.32	
Carbon Black Content ASTM D4218	Range			%			2.26	
Carbon Black Dispersion ASTM D5596	Category						10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			69 N/mm	392 ppi		4,897 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%			885.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%			-0.26	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			340 N			76.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			592 N			133 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			805 N			181 lbs	
ESCR ASTM D1693	Minimum Hrs w / o Failures			1500 hrs			CERTIFIED	

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ROLL # **F14C046091** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.593 mm	ENGLISH 102 mil	Thickness Length	2.5mm 102.109 m	100mil m	335 feet
	MAX:	3.025 mm	119 mil	Width	7.01 m	23.0 m	feet
	AVE:	2.722 mm	107 mil	OIT(Standard) ASTM D3895	minutes		200
Specific Gravity ASTM D792	Density			g/cc			.935
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min					.32
Carbon Black Content ASTM D4218	Range			%			2.26
Carbon Black Dispersion ASTM D5596	Category						10 In Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			69 N/mm	392 ppi		4,897 psi
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%			885.5
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%			-0.26
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			340 N			76.500 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			592 N			133 lbs
Puncture Resistance ASTM D4833 (Modified)	Load			805 N			181 lbs
ESCR ASTM D1693	Minimum Hrs w / o Failures			1500 hrs			CERTIFIED

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