



quality certificate

ROLL # **F14C046092** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.435 mm	ENGLISH 96 mil	Thickness Length	2.5mm 102.109 m	100mil 335 feet	
	MAX:	2.945 mm	116 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			%		2.30	
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			60 N/mm	345 ppi	4,314 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		801.5	
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**
PO: **13012 CC & VMLE2 Squaw Gulch ph1**
Destination **Cripple Creek, CO**

Date: **1/25/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C046093** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.538 mm	ENGLISH 100 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:	2.693 mm	106 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			%		2.30	
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			60 N/mm	345 ppi	4,314 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		801.5	
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**
PO: **13012 CC & VMLE2 Squaw Gulch ph1**
Destination **Cripple Creek, CO**

Date: **1/25/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C046094** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.37 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:	2.534 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			%			2.30	
Carbon Black Dispersion ASTM D5596	Category						10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			60 N/mm	345 ppi		4,314 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%			801.5	
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**
PO: **13012 CC & VMLE2 Squaw Gulch ph1**
Destination **Cripple Creek, CO**

Date: **1/25/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C046095**

Lot #

CDH812050Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.427 mm	ENGLISH 96 mil	Thickness Length	2.5mm 102.109 m	100mil 335 feet	
	MAX:	2.891 mm	114 mil	Width	7.01 m	23.0 feet	
	AVE:	2.57 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			%		2.30	
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			60 N/mm	345 ppi	4,314 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		801.5	
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**
PO: **13012 CC & VMLE2 Squaw Gulch ph1**
Destination **Cripple Creek, CO**

Date: **1/25/14**Signature: 
Quality Control Department100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C046096**

Lot #

CDH812050Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.473 mm	ENGLISH 97 mil	Thickness Length	2.5mm 102.109 m	100mil m	335 feet
	MAX:	2.977 mm	117 mil	Width	7.01 m	23.0 m	feet
	AVE:	2.626 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			%			2.30
Carbon Black Dispersion ASTM D5596	Category						10 In Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			60 N/mm	345 ppi		4,314 psi
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%			801.5
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**
PO: **13012 CC & VMLE2 Squaw Gulch ph1**
Destination **Cripple Creek, CO**

Date: **1/25/14**Signature: 
Quality Control Department100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C046097** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.408 mm	ENGLISH 95 mil	Thickness Length Width	2.5mm 102.109 7.01	100mil m m	335 23.0	feet feet
	MAX:	2.913 mm	115 mil					
	AVE:	2.564 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			%		2.34	
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	386 ppi	4,824 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break		Average Elongation @ Break			%		871.0	
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			605 N		136 lbs	
Puncture Resistance ASTM D4833 (Modified)		Load			778 N		175 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: **1/25/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C046098** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.576 mm	ENGLISH 101 mil	Thickness Length	2.5mm 102.109 m	100mil m	335 feet
	MAX:	2.795 mm	110 mil	Width	7.01 m	23.0 m	feet
	AVE:	2.665 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			%			2.34
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	386 ppi		4,824 psi
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%			871.0
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			605 N			136 lbs
Puncture Resistance ASTM D4833 (Modified)	Load			778 N			175 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: **1/25/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C046099** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.48 mm	ENGLISH 98 mil	Thickness Length Width	2.5mm 102.109 7.01	100mil m m	335 23.0	feet feet
	MAX:	2.756 mm	109 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			%		2.34	
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	386 ppi	4,824 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break		Average Elongation @ Break			%		871.0	
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			605 N		136 lbs	
Puncture Resistance ASTM D4833 (Modified)		Load			778 N		175 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: **1/25/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C046100** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.488 mm	ENGLISH 98 mil	Thickness Length	2.5mm 102.109 m	100mil 335 feet	
	MAX:	2.922 mm	115 mil	Width	7.01 m	23.0 feet	
	AVE:	2.603 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			%		2.20	
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	386 ppi	4,824 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		871.0	
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			605 N		136 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			778 N		175 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: **1/25/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C046101** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.416 mm	ENGLISH 95 mil	Thickness Length Width	2.5mm 102.109 7.01	100mil m m	335 23.0	feet feet
	MAX:	2.838 mm	112 mil					
	AVE:	2.547 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			%			2.20	
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	386 ppi		4,824 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%			871.0	
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			605 N			136 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			778 N			175 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: **1/25/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C046102** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.514 mm	ENGLISH 99 mil	Thickness Length	2.5mm 102.109 m	100mil 335 feet	
	MAX:	2.752 mm	108 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		.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			%		2.29	
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	397 ppi	4,964 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		899.5	
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			605 N		136 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			778 N		175 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: **1/25/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C046103** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.567 mm	ENGLISH 101 mil	Thickness Length Width	2.5mm 102.109 7.01	100mil m m	335 23.0	feet feet
	MAX:	2.987 mm	118 mil					
	AVE:	2.683 mm	106 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		%			2.29	
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	397 ppi	4,964 psi		
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break		Average Elongation @ Break		%		899.5		
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		605 N		136 lbs		
Puncture Resistance ASTM D4833 (Modified)		Load		778 N		175 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: **1/25/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C046104** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.391 mm	ENGLISH 94 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:	2.537 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			%		2.29	
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	397 ppi	4,964 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		899.5	
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			605 N		136 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			778 N		175 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: **1/25/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C046105** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.343 mm	ENGLISH 92 mil	Thickness Length	2.5mm 102.109 m	100mil 335 feet	
	MAX:	2.814 mm	111 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		.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			%		2.24	
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	397 ppi	4,964 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		899.5	
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			605 N		136 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			778 N		175 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: **1/25/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C047106** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.379 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:	2.54 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			%		2.24	
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	397 ppi	4,964 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		899.5	
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			605 N		136 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			778 N		175 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: **1/26/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C047107** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.607 mm	ENGLISH 103 mil	Thickness Length	2.5mm 102.109 m	100mil m	335 feet
	MAX:	3.027 mm	119 mil	Width	7.01 m	23.0 m	feet
	AVE:	2.747 mm	108 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			%			2.26
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		4,782 psi
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%			874.0
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%			-0.26
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			349 N			78.500 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			641 N			144 lbs
Puncture Resistance ASTM D4833 (Modified)	Load			818 N			184 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: **1/26/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C047108** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.581 mm	ENGLISH 102 mil	Thickness Length	2.5mm 102.109 m	100mil m	335 feet
	MAX:	3.031 mm	119 mil	Width	7.01 m	23.0 m	feet
	AVE:	2.733 mm	108 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			%			2.26
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		4,782 psi
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%			874.0
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%			-0.26
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			349 N			78.500 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			641 N			144 lbs
Puncture Resistance ASTM D4833 (Modified)	Load			818 N			184 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: **1/26/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C047109** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.556 mm	ENGLISH 101 mil	Thickness Length	2.5mm 102.109 m	100mil m	335 feet
	MAX:	2.982 mm	117 mil	Width	7.01 m	23.0 m	feet
	AVE:	2.663 mm	105 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			%			2.26
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		4,782 psi
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%			874.0
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%			-0.26
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			349 N			78.500 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			641 N			144 lbs
Puncture Resistance ASTM D4833 (Modified)	Load			818 N			184 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: **1/26/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C047110** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.565 mm	ENGLISH 101 mil	Thickness Length	2.5mm 102.109 m	100mil m	335 feet
	MAX:	2.961 mm	117 mil	Width	7.01 m	23.0 m	feet
	AVE:	2.706 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			%			2.20
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		4,782 psi
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%			874.0
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%			-0.26
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			349 N			78.500 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			641 N			144 lbs
Puncture Resistance ASTM D4833 (Modified)	Load			818 N			184 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: **1/26/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C047111** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.481 mm	ENGLISH 98 mil	Thickness Length Width	2.5mm 102.109 7.01	100mil m m	335 23.0	feet feet
	MAX:	2.96 mm	117 mil					
	AVE:	2.646 mm	104 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			%			2.20	
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		4,782 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%			874.0	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%			-0.26	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			349 N			78.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			641 N			144 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			818 N			184 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: **1/26/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C047112** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.602 mm	ENGLISH 102 mil	Thickness Length	2.5mm 102.109 m	100mil m	335 feet
	MAX:	3.044 mm	120 mil	Width	7.01 m	23.0 m	feet
	AVE:	2.737 mm	108 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			%			2.22
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	394 ppi		4,922 psi
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%			908.5
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%			-0.26
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			349 N			78.500 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			641 N			144 lbs
Puncture Resistance ASTM D4833 (Modified)	Load			818 N			184 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: **1/26/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



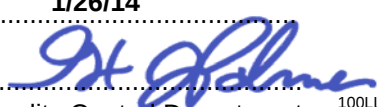
quality certificate

ROLL # **F14C047113** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.447 mm	ENGLISH 96 mil	Thickness Length Width	2.5mm 102.109 7.01	100mil m m	335 23.0	feet feet
	MAX:	2.774 mm	109 mil					
	AVE:	2.583 mm	102 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			%			2.22	
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	394 ppi		4,922 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%			908.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%			-0.26	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			349 N			78.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			641 N			144 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			818 N			184 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: **1/26/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C047114** 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:	3.005 mm	118 mil					
	AVE:	2.711 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		%			2.21	
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		394 ppi	4,922 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break		Average Elongation @ Break		%			908.5	
Dimensional Stability ASTM D1204 (Modified)		Average Dimensional Change		%			-0.26	
Tear Resistance ASTM D1004 (Modified)		Average Tear Resistance		349 N			78.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)		Load		641 N			144 lbs	
Puncture Resistance ASTM D4833 (Modified)		Load		818 N			184 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: **1/26/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C047115** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.448 mm	ENGLISH 96 mil	Thickness Length	2.5mm 102.109 m	100mil 335 feet	
	MAX:	2.918 mm	115 mil	Width	7.01 m	23.0 feet	
	AVE:	2.597 mm	102 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			%		2.21	
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	394 ppi	4,922 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		908.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.26	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			349 N		78.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			641 N		144 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			818 N		184 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: **1/26/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



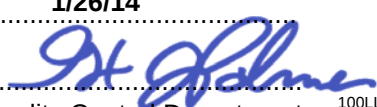
quality certificate

ROLL # **F14C047116** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.494 mm	ENGLISH 98 mil	Thickness Length Width	2.5mm 102.109 7.01	100mil m m	335 23.0	feet feet
	MAX:	2.957 mm	116 mil					
	AVE:	2.656 mm	105 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			%		2.21	
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	394 ppi	4,922 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break		Average Elongation @ Break			%		908.5	
Dimensional Stability ASTM D1204 (Modified)		Average Dimensional Change			%		-0.26	
Tear Resistance ASTM D1004 (Modified)		Average Tear Resistance			349 N		78.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)		Load			641 N		144 lbs	
Puncture Resistance ASTM D4833 (Modified)		Load			818 N		184 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: **1/26/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C047117** 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:	2.961 mm	117 mil					
	AVE:	2.661 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			%			2.31	
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	378 ppi		4,726 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%			858.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%			-0.26	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			342 N			77.000 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			632 N			142 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			752 N			169 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: **1/26/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C047118** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.522 mm	ENGLISH 99 mil	Thickness Length	2.5mm 102.109 m	100mil 335 feet	
	MAX:	2.977 mm	117 mil	Width	7.01 m	23.0 feet	
	AVE:	2.654 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			%		2.31	
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	378 ppi	4,726 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		858.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.26	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			342 N		77.000 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			632 N		142 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			752 N		169 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: **1/26/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C047119** 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:	2.866 mm	113 mil	Width	7.01 m	23.0 feet	
	AVE:	2.533 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			%		2.31	
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	378 ppi	4,726 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		858.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.26	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			342 N		77.000 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			632 N		142 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			752 N		169 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: **1/26/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C047120** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.403 mm	ENGLISH 95 mil	Thickness Length	2.5mm 102.109 m	100mil 335 feet	
	MAX:	2.898 mm	114 mil	Width	7.01 m	23.0 feet	
	AVE:	2.555 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			%		2.33	
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	378 ppi	4,726 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		858.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.26	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			342 N		77.000 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			632 N		142 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			752 N		169 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: **1/26/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C047121** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.467 mm	ENGLISH 97 mil	Thickness Length	2.5mm 102.109 m	100mil 335 feet	
	MAX:	2.921 mm	115 mil	Width	7.01 m	23.0 feet	
	AVE:	2.584 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			%		2.33	
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	378 ppi	4,726 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		858.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.26	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			342 N		77.000 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			632 N		142 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			752 N		169 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: **1/26/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C047122** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.599 mm	ENGLISH 102 mil	Thickness Length	2.5mm 102.109 m	100mil m	335 feet
	MAX:	2.852 mm	112 mil	Width	7.01 m	23.0 m	feet
	AVE:	2.673 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			%			2.32
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	386 ppi		4,827 psi
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%			883.5
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%			-0.26
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			342 N			77.000 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			632 N			142 lbs
Puncture Resistance ASTM D4833 (Modified)	Load			752 N			169 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: **1/26/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C047123** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.493 mm	ENGLISH 98 mil	Thickness Length	2.5mm 102.109 m	100mil m	335 feet
	MAX:	2.739 mm	108 mil	Width	7.01 m	23.0 m	feet
	AVE:	2.598 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			%			2.32
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	386 ppi		4,827 psi
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%			883.5
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%			-0.26
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			342 N			77.000 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			632 N			142 lbs
Puncture Resistance ASTM D4833 (Modified)	Load			752 N			169 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: **1/26/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C047124** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.631 mm	ENGLISH 104 mil	Thickness Length Width	2.5mm 102.109 7.01	100mil m m	335 23.0	feet feet
	MAX:	3.038 mm	120 mil					
	AVE:	2.736 mm	108 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				%	2.32		
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	386 ppi	4,827 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break				%	883.5		
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change				%	-0.26		
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance				342 N	77.000 lbs		
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load				632 N	142 lbs		
Puncture Resistance ASTM D4833 (Modified)	Load				752 N	169 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: **1/26/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C047125** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.547 mm	ENGLISH 100 mil	Thickness Length Width	2.5mm 102.109 7.01	100mil m m	335 23.0	feet feet
	MAX:	2.96 mm	117 mil					
	AVE:	2.743 mm	108 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			%			2.25	
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	386 ppi		4,827 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%			883.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%			-0.26	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			342 N			77.000 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			632 N			142 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			752 N			169 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: **1/26/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C051001** 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:	2.725 mm	107 mil	Width	7.01 m	23.0 feet	
	AVE:	2.538 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			%		2.25	
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	386 ppi	4,827 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		883.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.26	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			342 N		77.000 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			632 N		142 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			752 N		169 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: **1/27/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C051002** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.52 mm	ENGLISH 99 mil	Thickness Length	2.5mm 102.109 m	100mil 335 feet	
	MAX:	2.927 mm	115 mil	Width	7.01 m	23.0 feet	
	AVE:	2.658 mm	105 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			%		2.21	
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	399 ppi	4,992 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		895.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.26	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			329 N		74.000 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			623 N		140 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: **1/27/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C051003** Lot # **CDH812050** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.521 mm	ENGLISH 99 mil	Thickness Length	2.5mm 102.109 m	100mil 335 feet	
	MAX:	2.798 mm	110 mil	Width	7.01 m	23.0 feet	
	AVE:	2.653 mm	104 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			%		2.21	
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	399 ppi	4,992 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		895.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.26	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			329 N		74.000 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			623 N		140 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: **1/27/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C051004** Lot # **CDH812020** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.371 mm	ENGLISH 93 mil	Thickness Length	2.5mm 102.109 m	100mil 335 feet	
	MAX:	2.817 mm	111 mil	Width	7.01 m	23.0 feet	
	AVE:	2.567 mm	101 mil	OIT(Standard) ASTM D3895	minutes	193	
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				.31	
Carbon Black Content ASTM D4218	Range			%		2.21	
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			70 N/mm	399 ppi	4,992 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		895.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.18	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			329 N		74.000 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			623 N		140 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: **1/27/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C051005** Lot # **CDH812020** 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:	2.744 mm	108 mil	Width	7.01 m	23.0 feet	
	AVE:	2.566 mm	101 mil	OIT(Standard) ASTM D3895	minutes	193	
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				.31	
Carbon Black Content ASTM D4218	Range			%		2.15	
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	399 ppi	4,992 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		895.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.18	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			329 N		74.000 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			623 N		140 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: **1/27/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C051006** Lot # **CDH812020** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.356 mm	ENGLISH 93 mil	Thickness Length	2.5mm 102.109 m	100mil 335 feet	
	MAX:	2.785 mm	110 mil	Width	7.01 m	23.0 feet	
	AVE:	2.528 mm	100 mil	OIT(Standard) ASTM D3895	minutes	193	
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				.31	
Carbon Black Content ASTM D4218	Range			%		2.15	
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	399 ppi	4,992 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		895.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.18	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			329 N		74.000 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			623 N		140 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: **1/27/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C051007** Lot # **CDH812020** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.438 mm	ENGLISH 96 mil	Thickness Length	2.5mm 102.109 m	100mil 335 feet	
	MAX:	2.891 mm	114 mil	Width	7.01 m	23.0 feet	
	AVE:	2.581 mm	102 mil	OIT(Standard) ASTM D3895	minutes	193	
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				.31	
Carbon Black Content ASTM D4218	Range			%		2.20	
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	386 ppi	4,820 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		862.0	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.18	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			329 N		74.000 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			623 N		140 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: **1/27/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C051008** Lot # **CDH812020** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.387 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:	2.583 mm	102 mil	OIT(Standard) ASTM D3895	minutes	193	
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				.31	
Carbon Black Content ASTM D4218	Range			%		2.20	
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	386 ppi	4,820 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		862.0	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.18	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			329 N		74.000 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			623 N		140 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: **1/27/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C051009** Lot # **CDH812020** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.541 mm	ENGLISH 100 mil	Thickness Length	2.5mm 102.109 m	100mil m	335 feet
	MAX:	2.983 mm	117 mil	Width	7.01 m	23.0 m	feet
	AVE:	2.687 mm	106 mil	OIT(Standard) ASTM D3895	minutes		193
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					.31
Carbon Black Content ASTM D4218	Range			%			2.20
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	386 ppi		4,820 psi
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%			862.0
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%			-0.18
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			329 N			74.000 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			623 N			140 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: **1/27/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C051010** Lot # **CDH812020** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.611 mm	ENGLISH 103 mil	Thickness Length	2.5mm 102.109 m	100mil m	335 feet
	MAX:	3.034 mm	119 mil	Width	7.01 m	23.0 m	feet
	AVE:	2.747 mm	108 mil	OIT(Standard) ASTM D3895	minutes		193
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					.31
Carbon Black Content ASTM D4218	Range			%			2.20
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	386 ppi		4,820 psi
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%			862.0
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%			-0.18
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			329 N			74.000 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			623 N			140 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: **1/27/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C051011** Lot # **CDH812020** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.355 mm	ENGLISH 93 mil	Thickness Length Width	2.5mm 102.109 7.01	100mil m m	335 23.0	feet feet
	MAX:	2.857 mm	112 mil					
	AVE:	2.532 mm	100 mil	OIT(Standard) ASTM D3895		minutes	193	
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						.31
Carbon Black Content ASTM D4218		Range			%		2.20	
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	386 ppi	4,820 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break		Average Elongation @ Break			%		862.0	
Dimensional Stability ASTM D1204 (Modified)		Average Dimensional Change			%		-0.18	
Tear Resistance ASTM D1004 (Modified)		Average Tear Resistance			329 N		74.000 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)		Load			623 N		140 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: **1/27/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C051012** Lot # **CDH812020** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.438 mm	ENGLISH 96 mil	Thickness Length	2.5mm 102.109 m	100mil 335 feet	
	MAX:	2.957 mm	116 mil	Width	7.01 m	23.0 feet	
	AVE:	2.616 mm	103 mil	OIT(Standard) ASTM D3895	minutes	193	
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				.31	
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	401 ppi	5,012 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		903.0	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.18	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			336 N		75.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			596 N		134 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			801 N		180 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: **1/27/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C051013** Lot # **CDH812020** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.544 mm	ENGLISH 100 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:	2.697 mm	106 mil	OIT(Standard) ASTM D3895		minutes	193	
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						.31
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		401 ppi	5,012 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break		Average Elongation @ Break		%			903.0	
Dimensional Stability ASTM D1204 (Modified)		Average Dimensional Change		%			-0.18	
Tear Resistance ASTM D1004 (Modified)		Average Tear Resistance		336 N			75.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)		Load		596 N			134 lbs	
Puncture Resistance ASTM D4833 (Modified)		Load		801 N			180 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: **1/27/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



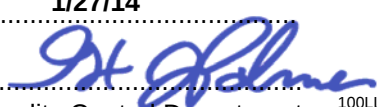
quality certificate

ROLL # **F14C051014** Lot # **CDH812020** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.368 mm	ENGLISH 93 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:	2.546 mm	100 mil	OIT(Standard) ASTM D3895	minutes	193	
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				.31	
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			70 N/mm	401 ppi	5,012 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		903.0	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.18	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			336 N		75.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			596 N		134 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			801 N		180 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: **1/27/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C051015** Lot # **CDH812020** 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:	2.889 mm	114 mil	Width	7.01 m	23.0 feet	
	AVE:	2.578 mm	101 mil	OIT(Standard) ASTM D3895	minutes	193	
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				.31	
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			70 N/mm	401 ppi	5,012 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		903.0	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.18	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			336 N		75.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			596 N		134 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			801 N		180 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: **1/27/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C051016** Lot # **CDH812020** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.568 mm	ENGLISH 101 mil	Thickness Length	2.5mm 102.109 m	100mil m	335 feet
	MAX:	3.021 mm	119 mil	Width	7.01 m	23.0 m	feet
	AVE:	2.712 mm	107 mil	OIT(Standard) ASTM D3895	minutes		193
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					.31
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			70 N/mm	401 ppi		5,012 psi
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%			903.0
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%			-0.18
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			336 N			75.500 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			596 N			134 lbs
Puncture Resistance ASTM D4833 (Modified)	Load			801 N			180 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: **1/27/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C051017** Lot # **CDH812020** 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:	3.002 mm	118 mil					
	AVE:	2.672 mm	105 mil	OIT(Standard) ASTM D3895		minutes	193	
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						.31
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			70 N/mm	402 ppi	5,029 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break		Average Elongation @ Break			%		910.5	
Dimensional Stability ASTM D1204 (Modified)		Average Dimensional Change			%		-0.18	
Tear Resistance ASTM D1004 (Modified)		Average Tear Resistance			336 N		75.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)		Load			596 N		134 lbs	
Puncture Resistance ASTM D4833 (Modified)		Load			801 N		180 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: **1/27/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



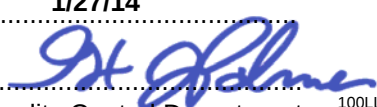
quality certificate

ROLL # **F14C051018** Lot # **CDH812020** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.41 mm	ENGLISH 95 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:	2.599 mm	102 mil	OIT(Standard) ASTM D3895	minutes	193	
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				.31	
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			70 N/mm	402 ppi	5,029 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		910.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.18	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			336 N		75.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			596 N		134 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			801 N		180 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: **1/27/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



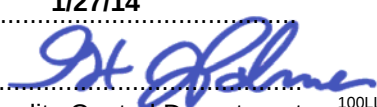
quality certificate

ROLL # **F14C051019** Lot # **CDH812020** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.501 mm	ENGLISH 98 mil	Thickness Length	2.5mm 102.109 m	100mil 335 feet	
	MAX:	2.953 mm	116 mil	Width	7.01 m	23.0 feet	
	AVE:	2.677 mm	105 mil	OIT(Standard) ASTM D3895	minutes	193	
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				.31	
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			70 N/mm	402 ppi	5,029 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		910.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.18	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			336 N		75.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			596 N		134 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			801 N		180 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: **1/27/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C051020** Lot # **CDH812020** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC	ENGLISH	Thickness	2.5mm	100mil	
		2.58 mm	102 mil	Length	102.109	m	335 feet
	MAX:	3.01 mm	119 mil	Width	7.01	m	23.0 feet
	AVE:	2.738 mm	108 mil	OIT(Standard) ASTM D3895	minutes		193
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					.31
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			70 N/mm	402 ppi		5,029 psi
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%			910.5
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%			-0.18
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			336 N			75.500 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			596 N			134 lbs
Puncture Resistance ASTM D4833 (Modified)	Load			801 N			180 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: **1/27/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C052021** Lot # **CDH812020** 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:	2.733 mm	108 mil					
	AVE:	2.536 mm	100 mil	OIT(Standard) ASTM D3895		minutes	193	
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					.31	
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			70 N/mm	402 ppi		5,029 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%			910.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%			-0.18	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			336 N			75.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			596 N			134 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			801 N			180 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: **01/28/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C052022** Lot # **CDH812020** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.587 mm	ENGLISH 102 mil	Thickness Length	2.5mm 102.109 m	100mil m	335 feet
	MAX:	2.975 mm	117 mil	Width	7.01 m	23.0 m	feet
	AVE:	2.723 mm	107 mil	OIT(Standard) ASTM D3895	minutes		193
Specific Gravity ASTM D792	Density			g/cc			.935
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min					.31
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			70 N/mm	399 ppi		4,992 psi
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%			910.0
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%			-0.18
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			349 N			78.500 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			632 N			142 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**

Date: **01/28/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C052023** Lot # **CDH812020** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.374 mm	ENGLISH 93 mil	Thickness Length Width	2.5mm 102.109 7.01	100mil m m	335 23.0	feet feet
	MAX:	2.825 mm	111 mil					
	AVE:	2.536 mm	100 mil	OIT(Standard) ASTM D3895		minutes	193	
Specific Gravity ASTM D792		Density			g/cc		.935	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min						.31
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			70 N/mm	399 ppi	4,992 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break		Average Elongation @ Break			%		910.0	
Dimensional Stability ASTM D1204 (Modified)		Average Dimensional Change			%		-0.18	
Tear Resistance ASTM D1004 (Modified)		Average Tear Resistance			349 N		78.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)		Load			632 N		142 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**

Date: **01/28/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C052024** Lot # **CDH812020** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.485 mm	ENGLISH 98 mil	Thickness Length Width	2.5mm 102.109 7.01	100mil m m	335 23.0	feet feet
	MAX:	2.981 mm	117 mil					
	AVE:	2.671 mm	105 mil	OIT(Standard) ASTM D3895		minutes	193	
Specific Gravity ASTM D792		Density			g/cc		.935	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min						.31
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			70 N/mm	399 ppi	4,992 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break		Average Elongation @ Break			%		910.0	
Dimensional Stability ASTM D1204 (Modified)		Average Dimensional Change			%		-0.18	
Tear Resistance ASTM D1004 (Modified)		Average Tear Resistance			349 N		78.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)		Load			632 N		142 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**

Date: **01/28/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C052025** Lot # **CDH812020** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.364 mm	ENGLISH 93 mil	Thickness Length	2.5mm 102.109 m	100mil 335 feet	
	MAX:	2.721 mm	107 mil	Width	7.01 m	23.0 feet	
	AVE:	2.53 mm	100 mil	OIT(Standard) ASTM D3895	minutes	193	
Specific Gravity ASTM D792	Density			g/cc		.935	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min				.31	
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			70 N/mm	399 ppi	4,992 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		910.0	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.18	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			349 N		78.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			632 N		142 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**

Date: **01/28/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C052026** Lot # **CDH812020** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.536 mm	ENGLISH 100 mil	Thickness Length	2.5mm 102.109 m	100mil 335 feet	
	MAX:	2.82 mm	111 mil	Width	7.01 m	23.0 feet	
	AVE:	2.661 mm	105 mil	OIT(Standard) ASTM D3895	minutes	193	
Specific Gravity ASTM D792	Density			g/cc		.935	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min				.31	
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			70 N/mm	399 ppi	4,992 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		910.0	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.18	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			349 N		78.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			632 N		142 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**

Date: **01/28/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C052027** Lot # **CDH812020** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.377 mm	ENGLISH 94 mil	Thickness Length	2.5mm 102.109 m	100mil 335 feet	
	MAX:	2.891 mm	114 mil	Width	7.01 m	23.0 feet	
	AVE:	2.575 mm	101 mil	OIT(Standard) ASTM D3895	minutes	193	
Specific Gravity ASTM D792	Density			g/cc		.935	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min				.31	
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			68 N/mm	388 ppi	4,850 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		873.0	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.18	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			349 N		78.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			632 N		142 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**

Date: **01/28/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C052028** Lot # **CDH812020** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.479 mm	ENGLISH 98 mil	Thickness Length Width	2.5mm 102.109 7.01	100mil m m	335 23.0	feet feet
	MAX:	3.004 mm	118 mil					
	AVE:	2.64 mm	104 mil	OIT(Standard) ASTM D3895		minutes	193	
Specific Gravity ASTM D792	Density			g/cc			.935	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min					.31	
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			68 N/mm	388 ppi		4,850 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%			873.0	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%			-0.18	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			349 N			78.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			632 N			142 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**

Date: **01/28/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C052029** Lot # **CDH812020** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.558 mm	ENGLISH 101 mil	Thickness Length Width	2.5mm 102.109 7.01	100mil m m	335 23.0	feet feet
	MAX:	2.991 mm	118 mil					
	AVE:	2.696 mm	106 mil	OIT(Standard) ASTM D3895		minutes	193	
Specific Gravity ASTM D792	Density				g/cc	.935		
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min					.31	
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				68 N/mm	388 ppi	4,850 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break				%	873.0		
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change				%	-0.18		
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance				349 N	78.500 lbs		
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load				632 N	142 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**

Date: **01/28/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C052030** Lot # **CDH812020** 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:	2.875 mm	113 mil	Width	7.01 m	23.0 feet	
	AVE:	2.539 mm	100 mil	OIT(Standard) ASTM D3895	minutes	193	
Specific Gravity ASTM D792	Density			g/cc		.935	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min				.31	
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			68 N/mm	388 ppi	4,850 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		873.0	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.18	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			349 N		78.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			632 N		142 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**

Date: **01/28/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C052031** Lot # **CDH812020** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.459 mm	ENGLISH 97 mil	Thickness Length Width	2.5mm 102.109 7.01	100mil m m	335 23.0	feet feet
	MAX:	2.932 mm	115 mil					
	AVE:	2.615 mm	103 mil	OIT(Standard) ASTM D3895		minutes	193	
Specific Gravity ASTM D792		Density		g/cc			.935	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min						.31
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		68 N/mm		388 ppi	4,850 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break		Average Elongation @ Break		%			873.0	
Dimensional Stability ASTM D1204 (Modified)		Average Dimensional Change		%			-0.18	
Tear Resistance ASTM D1004 (Modified)		Average Tear Resistance		349 N			78.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)		Load		632 N			142 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**

Date: **01/28/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C052032** Lot # **CDH812020** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.597 mm	ENGLISH 102 mil	Thickness Length	2.5mm 102.109 m	100mil m	335 feet
	MAX:	3.048 mm	120 mil	Width	7.01 m	23.0 m	feet
	AVE:	2.742 mm	108 mil	OIT(Standard) ASTM D3895	minutes		193
Specific Gravity ASTM D792	Density			g/cc			.937
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min					.31
Carbon Black Content ASTM D4218	Range			%			2.33
Carbon Black Dispersion ASTM D5596	Category						10 In Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			69 N/mm	392 ppi		4,896 psi
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%			887.5
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%			-0.18
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			354 N			79.500 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			623 N			140 lbs
Puncture Resistance ASTM D4833 (Modified)	Load			845 N			190 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: **01/28/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C052033** Lot # **CDH812020** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.44 mm	ENGLISH 96 mil	Thickness Length	2.5mm 102.109 m	100mil 335 feet	
	MAX:	2.944 mm	116 mil	Width	7.01 m	23.0 feet	
	AVE:	2.623 mm	103 mil	OIT(Standard) ASTM D3895	minutes	193	
Specific Gravity ASTM D792	Density			g/cc		.937	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min				.31	
Carbon Black Content ASTM D4218	Range			%		2.33	
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			69 N/mm	392 ppi	4,896 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		887.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.18	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			354 N		79.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			623 N		140 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			845 N		190 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: **01/28/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C052034** Lot # **CDH812020** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.56 mm	ENGLISH 101 mil	Thickness Length Width	2.5mm 102.109 7.01	100mil m m	335 23.0	feet feet
	MAX:	3.018 mm	119 mil					
	AVE:	2.708 mm	107 mil	OIT(Standard) ASTM D3895		minutes	193	
Specific Gravity ASTM D792		Density			g/cc		.937	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min						.31
Carbon Black Content ASTM D4218		Range			%		2.33	
Carbon Black Dispersion ASTM D5596		Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)		Average Strength @ Break			69 N/mm	392 ppi	4,896 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break		Average Elongation @ Break			%		887.5	
Dimensional Stability ASTM D1204 (Modified)		Average Dimensional Change			%		-0.18	
Tear Resistance ASTM D1004 (Modified)		Average Tear Resistance			354 N		79.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)		Load			623 N		140 lbs	
Puncture Resistance ASTM D4833 (Modified)		Load			845 N		190 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: **01/28/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C052035** Lot # **CDH812020** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.562 mm	ENGLISH 101 mil	Thickness Length	2.5mm 102.109 m	100mil 335 feet	
	MAX:	3.032 mm	119 mil	Width	7.01 m	23.0 feet	
	AVE:	2.722 mm	107 mil	OIT(Standard) ASTM D3895	minutes	193	
Specific Gravity ASTM D792	Density			g/cc		.937	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min				.31	
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	4,896 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		887.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.18	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			354 N		79.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			623 N		140 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			845 N		190 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: **01/28/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C052036** Lot # **CDH812020** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.354 mm	ENGLISH 93 mil	Thickness Length	2.5mm 102.109 m	100mil 335 feet	
	MAX:	2.86 mm	113 mil	Width	7.01 m	23.0 feet	
	AVE:	2.537 mm	100 mil	OIT(Standard) ASTM D3895	minutes	193	
Specific Gravity ASTM D792	Density			g/cc		.937	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min				.31	
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	4,896 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		887.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.18	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			354 N		79.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			623 N		140 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			845 N		190 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: **01/28/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C052037** Lot # **CDH812020** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.501 mm	ENGLISH 98 mil	Thickness Length Width	2.5mm 102.109 7.01	100mil m m	335 23.0	feet feet
	MAX:	3.02 mm	119 mil					
	AVE:	2.667 mm	105 mil	OIT(Standard) ASTM D3895		minutes	193	
Specific Gravity ASTM D792		Density			g/cc		.937	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min						.31
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			72 N/mm	413 ppi	5,165 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break		Average Elongation @ Break			%		928.5	
Dimensional Stability ASTM D1204 (Modified)		Average Dimensional Change			%		-0.18	
Tear Resistance ASTM D1004 (Modified)		Average Tear Resistance			354 N		79.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)		Load			623 N		140 lbs	
Puncture Resistance ASTM D4833 (Modified)		Load			845 N		190 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: **01/28/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C052038** Lot # **CDH812020** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.59 mm	ENGLISH 102 mil	Thickness Length	2.5mm 102.109 m	100mil m	335 feet
	MAX:	2.96 mm	117 mil	Width	7.01 m	23.0 m	feet
	AVE:	2.714 mm	107 mil	OIT(Standard) ASTM D3895	minutes		193
Specific Gravity ASTM D792	Density			g/cc			.937
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min					.31
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			72 N/mm	413 ppi		5,165 psi
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%			928.5
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%			-0.18
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			354 N			79.500 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			623 N			140 lbs
Puncture Resistance ASTM D4833 (Modified)	Load			845 N			190 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: **01/28/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C052039** Lot # **CDH812020** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.481 mm	ENGLISH 98 mil	Thickness Length	2.5mm 102.109 m	100mil 335 feet	
	MAX:	2.909 mm	115 mil	Width	7.01 m	23.0 feet	
	AVE:	2.614 mm	103 mil	OIT(Standard) ASTM D3895	minutes	193	
Specific Gravity ASTM D792	Density			g/cc		.937	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min				.31	
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			72 N/mm	413 ppi	5,165 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		928.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.18	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			354 N		79.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			623 N		140 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			845 N		190 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: **01/28/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C052040** Lot # **CDH812020** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.49 mm	ENGLISH 98 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:	2.668 mm	105 mil	OIT(Standard) ASTM D3895	minutes	193	
Specific Gravity ASTM D792	Density			g/cc		.937	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min				.31	
Carbon Black Content ASTM D4218	Range			%		2.17	
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			72 N/mm	413 ppi	5,165 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		928.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.18	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			354 N		79.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			623 N		140 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			845 N		190 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: **01/28/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C053041** Lot # **CDH812020** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.34 mm	ENGLISH 92 mil	Thickness Length Width	2.5mm 102.109 7.01	100mil m m	335 23.0	feet feet
	MAX:	2.75 mm	108 mil					
	AVE:	2.538 mm	100 mil	OIT(Standard) ASTM D3895		minutes	193	
Specific Gravity ASTM D792		Density			g/cc		.937	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min						.31
Carbon Black Content ASTM D4218		Range			%		2.17	
Carbon Black Dispersion ASTM D5596		Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)		Average Strength @ Break			72 N/mm	413 ppi	5,165 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break		Average Elongation @ Break			%		928.5	
Dimensional Stability ASTM D1204 (Modified)		Average Dimensional Change			%		-0.18	
Tear Resistance ASTM D1004 (Modified)		Average Tear Resistance			354 N		79.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)		Load			623 N		140 lbs	
Puncture Resistance ASTM D4833 (Modified)		Load			845 N		190 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: **1/29/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C053042** Lot # **CDH812020** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.387 mm	ENGLISH 94 mil	Thickness Length	2.5mm 102.109 m	100mil 335 feet	
	MAX:	2.822 mm	111 mil	Width	7.01 m	23.0 feet	
	AVE:	2.539 mm	100 mil	OIT(Standard) ASTM D3895	minutes	193	
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				.31	
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			71 N/mm	408 ppi	5,101 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		930.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.18	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			331 N		74.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			578 N		130 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			770 N		173 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: **1/29/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C053043** Lot # **CDH812020** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.601 mm	ENGLISH 102 mil	Thickness Length	2.5mm 102.109 m	100mil m	335 feet
	MAX:	2.895 mm	114 mil	Width	7.01 m	23.0 m	feet
	AVE:	2.698 mm	106 mil	OIT(Standard) ASTM D3895	minutes		193
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					.31
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			71 N/mm	408 ppi		5,101 psi
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%			930.5
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%			-0.18
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			331 N			74.500 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			578 N			130 lbs
Puncture Resistance ASTM D4833 (Modified)	Load			770 N			173 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: **1/29/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C053044** Lot # **CDH812020** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.571 mm	ENGLISH 101 mil	Thickness Length	2.5mm 102.109 m	100mil 335 feet	
	MAX:	3.082 mm	121 mil	Width	7.01 m	23.0 feet	
	AVE:	2.732 mm	108 mil	OIT(Standard) ASTM D3895	minutes	193	
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				.31	
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			71 N/mm	408 ppi	5,101 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		930.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.18	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			331 N		74.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			578 N		130 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			770 N		173 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: **1/29/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C053045** Lot # **CDH812020** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.422 mm	ENGLISH 95 mil	Thickness Length Width	2.5mm 102.109 7.01	100mil m m	335 23.0	feet feet
	MAX:	2.848 mm	112 mil					
	AVE:	2.562 mm	101 mil	OIT(Standard) ASTM D3895		minutes	193	
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						.31
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			71 N/mm	408 ppi	5,101 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break		Average Elongation @ Break			%		930.5	
Dimensional Stability ASTM D1204 (Modified)		Average Dimensional Change			%		-0.18	
Tear Resistance ASTM D1004 (Modified)		Average Tear Resistance			331 N		74.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)		Load			578 N		130 lbs	
Puncture Resistance ASTM D4833 (Modified)		Load			770 N		173 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: **1/29/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C053046** Lot # **CDH812020** 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:	2.624 mm	103 mil	Width	7.01 m	23.0 feet	
	AVE:	2.537 mm	100 mil	OIT(Standard) ASTM D3895	minutes	193	
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				.31	
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			71 N/mm	408 ppi	5,101 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		930.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.18	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			331 N		74.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			578 N		130 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			770 N		173 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: **1/29/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C053047** Lot # **CDH812020** 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:	2.98 mm	117 mil					
	AVE:	2.692 mm	106 mil	OIT(Standard) ASTM D3895		minutes	193	
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					.31	
Carbon Black Content ASTM D4218	Range			%			2.33	
Carbon Black Dispersion ASTM D5596	Category						10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			68 N/mm	390 ppi		4,880 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%			883.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%			-0.18	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			331 N			74.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			578 N			130 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			770 N			173 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: **1/29/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C053048** Lot # **CDH812020** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.401 mm	ENGLISH 95 mil	Thickness Length	2.5mm 102.109 m	100mil 335 feet	
	MAX:	2.872 mm	113 mil	Width	7.01 m	23.0 feet	
	AVE:	2.551 mm	100 mil	OIT(Standard) ASTM D3895	minutes	193	
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				.31	
Carbon Black Content ASTM D4218	Range			%		2.33	
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			68 N/mm	390 ppi	4,880 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		883.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.18	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			331 N		74.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			578 N		130 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			770 N		173 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: **1/29/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C053049** Lot # **CDH812020** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.577 mm	ENGLISH 101 mil	Thickness Length Width	2.5mm 102.109 7.01	100mil m m	335 23.0	feet feet
	MAX:	2.974 mm	117 mil					
	AVE:	2.699 mm	106 mil	OIT(Standard) ASTM D3895		minutes	193	
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					.31	
Carbon Black Content ASTM D4218	Range				%	2.33		
Carbon Black Dispersion ASTM D5596	Category				10 In Cat 1			
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break				68 N/mm	390 ppi	4,880 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break				%	883.5		
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change				%	-0.18		
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance				331 N	74.500 lbs		
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load				578 N	130 lbs		
Puncture Resistance ASTM D4833 (Modified)	Load				770 N	173 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: **1/29/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C053050** Lot # **CDH812020** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.402 mm	ENGLISH 95 mil	Thickness Length	2.5mm 102.109 m	100mil 335 feet	
	MAX:	2.911 mm	115 mil	Width	7.01 m	23.0 feet	
	AVE:	2.569 mm	101 mil	OIT(Standard) ASTM D3895	minutes	193	
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				.31	
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			68 N/mm	390 ppi	4,880 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		883.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.18	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			331 N		74.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			578 N		130 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			770 N		173 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: **1/29/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C053051** Lot # **CDH812020** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.599 mm	ENGLISH 102 mil	Thickness Length	2.5mm 102.109 m	100mil m	335 feet
	MAX:	3.03 mm	119 mil	Width	7.01 m	23.0 m	feet
	AVE:	2.742 mm	108 mil	OIT(Standard) ASTM D3895	minutes		193
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					.31
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			68 N/mm	390 ppi		4,880 psi
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%			883.5
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%			-0.18
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			331 N			74.500 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			578 N			130 lbs
Puncture Resistance ASTM D4833 (Modified)	Load			770 N			173 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: **1/29/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



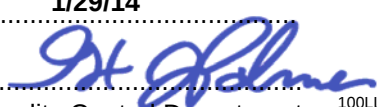
quality certificate

ROLL # **F14C053052** Lot # **CDH812020** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.604 mm	ENGLISH 103 mil	Thickness Length	2.5mm 102.109 m	100mil m	335 feet
	MAX:	3.008 mm	118 mil	Width	7.01 m	23.0 m	feet
	AVE:	2.722 mm	107 mil	OIT(Standard) ASTM D3895	minutes		193
Specific Gravity ASTM D792	Density			g/cc			.935
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min					.31
Carbon Black Content ASTM D4218	Range			%			2.39
Carbon Black Dispersion ASTM D5596	Category						10 In Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			71 N/mm	408 ppi		5,103 psi
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%			930.0
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%			-0.18
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			340 N			76.500 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			636 N			143 lbs
Puncture Resistance ASTM D4833 (Modified)	Load			801 N			180 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: **1/29/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C053053** Lot # **CDH812020** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.503 mm	ENGLISH 99 mil	Thickness Length Width	2.5mm 102.109 7.01	100mil m m	335 23.0	feet feet
	MAX:	2.96 mm	117 mil					
	AVE:	2.64 mm	104 mil	OIT(Standard) ASTM D3895		minutes	193	
Specific Gravity ASTM D792	Density			g/cc			.935	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min					.31	
Carbon Black Content ASTM D4218	Range			%			2.39	
Carbon Black Dispersion ASTM D5596	Category						10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			71 N/mm	408 ppi		5,103 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%			930.0	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%			-0.18	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			340 N			76.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			636 N			143 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			801 N			180 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: **1/29/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C053054** Lot # **CDH812020** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.575 mm	ENGLISH 101 mil	Thickness Length Width	2.5mm 102.109 7.01	100mil m m	335 23.0	feet feet
	MAX:	3.008 mm	118 mil					
	AVE:	2.738 mm	108 mil	OIT(Standard) ASTM D3895		minutes	193	
Specific Gravity ASTM D792		Density			g/cc		.935	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min						.31
Carbon Black Content ASTM D4218		Range			%		2.39	
Carbon Black Dispersion ASTM D5596		Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)		Average Strength @ Break			71 N/mm	408 ppi	5,103 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break		Average Elongation @ Break			%		930.0	
Dimensional Stability ASTM D1204 (Modified)		Average Dimensional Change			%		-0.18	
Tear Resistance ASTM D1004 (Modified)		Average Tear Resistance			340 N		76.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)		Load			636 N		143 lbs	
Puncture Resistance ASTM D4833 (Modified)		Load			801 N		180 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: **1/29/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C053055** Lot # **CDH812020** 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:	2.859 mm	113 mil	Width	7.01 m	23.0 feet	
	AVE:	2.533 mm	100 mil	OIT(Standard) ASTM D3895	minutes	193	
Specific Gravity ASTM D792	Density			g/cc		.935	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min				.31	
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			71 N/mm	408 ppi	5,103 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		930.0	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.18	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			340 N		76.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			636 N		143 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			801 N		180 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: **1/29/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



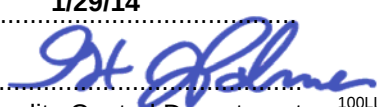
quality certificate

ROLL # **F14C053056** Lot # **CDH812020** 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:	2.909 mm	115 mil	Width	7.01 m	23.0 feet	
	AVE:	2.57 mm	101 mil	OIT(Standard) ASTM D3895	minutes	193	
Specific Gravity ASTM D792	Density			g/cc		.935	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min				.31	
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			71 N/mm	408 ppi	5,103 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		930.0	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.18	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			340 N		76.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			636 N		143 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			801 N		180 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: **1/29/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



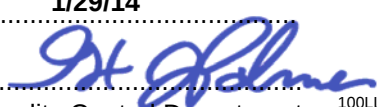
quality certificate

ROLL # **F14C053057** Lot # **CDH812020** 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 mm	118 mil	Width	7.01 m	23.0 feet	
	AVE:	2.696 mm	106 mil	OIT(Standard) ASTM D3895	minutes	193	
Specific Gravity ASTM D792	Density			g/cc		.935	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min				.31	
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			71 N/mm	406 ppi	5,075 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		904.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.18	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			340 N		76.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			636 N		143 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			801 N		180 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: **1/29/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C053058** Lot # **CDH812020** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.358 mm	ENGLISH 93 mil	Thickness Length	2.5mm 102.109 m	100mil 335 feet	
	MAX:	2.788 mm	110 mil	Width	7.01 m	23.0 feet	
	AVE:	2.533 mm	100 mil	OIT(Standard) ASTM D3895	minutes	193	
Specific Gravity ASTM D792	Density			g/cc		.935	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min				.31	
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			71 N/mm	406 ppi	5,075 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		904.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.18	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			340 N		76.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			636 N		143 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			801 N		180 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: **1/29/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



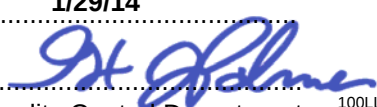
quality certificate

ROLL # **F14C053059** Lot # **CDH812020** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.32 mm	ENGLISH 91 mil	Thickness Length	2.5mm 102.109 m	100mil 335 feet	
	MAX:	2.879 mm	113 mil	Width	7.01 m	23.0 feet	
	AVE:	2.532 mm	100 mil	OIT(Standard) ASTM D3895	minutes	193	
Specific Gravity ASTM D792	Density			g/cc		.935	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min				.31	
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			71 N/mm	406 ppi	5,075 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		904.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.18	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			340 N		76.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			636 N		143 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			801 N		180 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: **1/29/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C053060** Lot # **CDH812020** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.608 mm	ENGLISH 103 mil	Thickness Length	2.5mm 102.109 m	100mil m	335 feet
	MAX:	2.921 mm	115 mil	Width	7.01 m	23.0 m	feet
	AVE:	2.736 mm	108 mil	OIT(Standard) ASTM D3895	minutes		193
Specific Gravity ASTM D792	Density			g/cc			.935
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min					.31
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			71 N/mm	406 ppi		5,075 psi
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%			904.5
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%			-0.18
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			340 N			76.500 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			636 N			143 lbs
Puncture Resistance ASTM D4833 (Modified)	Load			801 N			180 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: **1/29/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C054061** Lot # **CDH812020** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.435 mm	ENGLISH 96 mil	Thickness Length Width	2.5mm 102.109 7.01	100mil m m	335 23.0	feet feet
	MAX:	2.837 mm	112 mil					
	AVE:	2.568 mm	101 mil	OIT(Standard) ASTM D3895		minutes	193	
Specific Gravity ASTM D792		Density			g/cc		.935	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min						.31
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			71 N/mm	406 ppi	5,075 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break		Average Elongation @ Break			%		904.5	
Dimensional Stability ASTM D1204 (Modified)		Average Dimensional Change			%		-0.18	
Tear Resistance ASTM D1004 (Modified)		Average Tear Resistance			340 N		76.500 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)		Load			636 N		143 lbs	
Puncture Resistance ASTM D4833 (Modified)		Load			801 N		180 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: **1/30/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C054062** Lot # **CDH812020** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.615 mm	ENGLISH 103 mil	Thickness Length	2.5mm 102.109 m	100mil m	335 feet
	MAX:	3.008 mm	118 mil	Width	7.01 m	23.0 m	feet
	AVE:	2.751 mm	108 mil	OIT(Standard) ASTM D3895	minutes		193
Specific Gravity ASTM D792	Density			g/cc			.935
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min					.31
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			69 N/mm	396 ppi		4,948 psi
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%			912.0
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%			-0.18
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			356 N			80.000 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			600 N			135 lbs
Puncture Resistance ASTM D4833 (Modified)	Load			836 N			188 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: **1/30/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C054063** Lot # **CDH812020** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.562 mm	ENGLISH 101 mil	Thickness Length Width	2.5mm 102.109 7.01	100mil m m	335 23.0	feet feet
	MAX:	2.98 mm	117 mil					
	AVE:	2.694 mm	106 mil	OIT(Standard) ASTM D3895		minutes	193	
Specific Gravity ASTM D792	Density				g/cc	.935		
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min					.31	
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				69 N/mm	396 ppi	4,948 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break				%	912.0		
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change				%	-0.18		
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance				356 N	80.000 lbs		
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load				600 N	135 lbs		
Puncture Resistance ASTM D4833 (Modified)	Load				836 N	188 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: **1/30/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C054064** Lot # **CDH812020** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.486 mm	ENGLISH 98 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:	2.655 mm	105 mil	OIT(Standard) ASTM D3895		minutes	193	
Specific Gravity ASTM D792	Density				g/cc	.935		
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min					.31	
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				69 N/mm	396 ppi	4,948 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break				%	912.0		
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change				%	-0.18		
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance				356 N	80.000 lbs		
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load				600 N	135 lbs		
Puncture Resistance ASTM D4833 (Modified)	Load				836 N	188 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: **1/30/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C054065** Lot # **CDH812020** Liner Type: **SMOOTH LLDPE**

Thickness Measurement ASTM D5199 (Modified)	MIN:	METRIC 2.504 mm	ENGLISH 99 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:	2.623 mm	103 mil	OIT(Standard) ASTM D3895	minutes	193	
Specific Gravity ASTM D792	Density			g/cc		.935	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min				.31	
Carbon Black Content ASTM D4218	Range			%		2.21	
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			69 N/mm	396 ppi	4,948 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		912.0	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.18	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			356 N		80.000 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			600 N		135 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			836 N		188 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: **1/30/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14



quality certificate

ROLL # **F14C054066** Lot # **CDH812020** 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:	2.776 mm	109 mil	Width	7.01 m	23.0 feet	
	AVE:	2.57 mm	101 mil	OIT(Standard) ASTM D3895	minutes	193	
Specific Gravity ASTM D792	Density			g/cc		.935	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flow Index 190°C /2160 g - g /10 min				.31	
Carbon Black Content ASTM D4218	Range			%		2.21	
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break			69 N/mm	396 ppi	4,948 psi	
Elongation ASTM D-6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%		912.0	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional Change			%		-0.18	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance			356 N		80.000 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			600 N		135 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load			836 N		188 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: **1/30/14**

Signature: 
Quality Control Department

100LLSM.FRM
REV 01
1/21/14