



ROLL #	F14C054	067	Lot #		CDH81	2020	Line	er Type	e:SMC	отн і	_LC	PE
Thickness Measureme ASTM D519 (Modified)	nt	MIN: MAX: AVE:	METRIC 2.65 mm 3.051 mm 2.762 mm	120	_ISH mil mil mil	Thickness Length Width OIT(Standard)	1( 7	.5mm )2.109 7.01 // D3895	<b>100m</b> m m 5 minu	335 23.0	fee fee 193	et
Specific G ASTM D79	•		Density			g/cc				.9	35	
MFI ASTM COND. E GRADE:	D1238	7104	Melt Flow Ind	ex 190'	⁰C /2160	g - g/10 min				- 1	31	
Carbon Bla ASTM D42	ack Content 18		Range			%				2.3	34	
Carbon Bla ASTM D55	ack Dispersion 96		Category							10 In Cat	t 1	
Tensile Str ASTM D66 ASTM D63 ( 2 inches /	93 88 (Modified)		Average Strei	ngth @	Break	71	N/mm	4	<b>06</b> ppi	5,0	080	psi
-	'ield		Average Elon	gation	@ Break	%				929	9.0	
Dimension ASTM D12	al Stability 204 (Modified)		Average Dime	ensiona	al Change	e %				-0.	18	
Tear Resis ASTM D10	tance 04 (Modified)		Average Tear	Resist	ance		356	N		80.0	00	lbs
Puncture F FTMS 101	Resistance Method 2065 (Mo	odified)	Load				600	N		1	35	lbs
Puncture R ASTM D48	Resistance 33 (Modified)		Load				836	N		1	88	lbs
ESCR ASTM D16	93		Minimum Hrs	sw/o	Failures	1500 hrs			C	ERTIFIE	ED	







ROLL #	F14C054	1068	Lot #		CDH81	2020	Line	er Type	:SMO	oth li	DPE
Thickness Measureme ASTM D519 (Modified)	nt	MIN: MAX: AVE:	METRIC 2.516 mm 3.012 mm 2.722 mm	119	ISH mil mil mil	Thickness Length Width OIT(Standard)	1( 7	.5mm )2.109 7.01 // D3895	100m m m 5 minut	335 23.0	feet feet 93
Specific G ASTM D79	•		Density			g/cc				.93	5
MFI ASTM COND. E GRADE:	D1238	7104	Melt Flow Inde	ex 190º	PC /2160	g - g/10 min				.3	I
Carbon Bla ASTM D42	ack Content 18		Range			%				2.34	1
Carbon Bla ASTM D55	ack Dispersion 96		Category						1	0 In Cat ′	l
Tensile Str ASTM D66 ASTM D63 ( 2 inches )	93 88 (Modified)		Average Strer	ngth @	Break	71	N/mm	4	<b>06</b> ppi	5,08	<b>80</b> psi
-	'ield		Average Elon	gation	@ Break	%				929.0	)
Dimension ASTM D12	al Stability 204 (Modified)		Average Dime	ensiona	I Change	e %				-0.18	3
Tear Resis ASTM D10	tance 04 (Modified)		Average Tear	Resist	ance		356	N		80.000	) Ibs
Puncture F FTMS 101	Resistance Method 2065 (Me	odified)	Load				600	N		13	5 lbs
Puncture F ASTM D48	Resistance 33 (Modified)		Load				836	N		18	B lbs
ESCR ASTM D16	93		Minimum Hrs	sw/of	ailures	1500 hrs			С	ERTIFIE	)







ROLL #	F14C054	069	Lot #	¥		CDH81	2020	Line	er Type	:SMC	отн і		DPE
Thickness Measureme ASTM D519 (Modified)	ent 99	MIN: MAX: AVE:	METRI <b>2.641</b> r <b>3.064</b> r	mm	121	-ISH mil mil mil	Thickness Length Width OIT(Standard)	1( 7	. <b>5mm</b> 02.109 7.01 M D3895	<b>100n</b> m m 5 minu	335 23.0	fe fe 193	et
Specific G ASTM D79	•		Density				g/cc				.9	35	
MFI ASTM COND. E GRADE:	D1238	7104	Melt Flow	Inde	ex 190 <sup>0</sup>	ºC /2160	g - g/10 min				-	31	
Carbon Bla ASTM D42	ack Content 218		Range				%				2.	34	
Carbon Bla ASTM D55	ack Dispersion 596		Category								10 In Ca	t 1	
Tensile Str ASTM D66 ASTM D63 ( 2 inches)	693 88 (Modified)		Average S	Strer	ngth @	Break	71	N/mm	4	<b>.06</b> ppi	5,0	080	psi
-	'ield		Average E	Elon	gation	@ Break	%				929	9.0	
Dimension ASTM D12	al Stability 204 (Modified)		Average D	Dime	ensiona	al Change	e %				-0.	18	
Tear Resis ASTM D10	tance 004 (Modified)		Average T	ear	Resist	ance		356	N		80.0	00	lbs
Puncture F FTMS 101	Resistance Method 2065 (Mc	odified)	Load					600	N		1	35	lbs
Puncture F ASTM D48	Resistance 333 (Modified)		Load					836	Ν		1	88	lbs
ESCR ASTM D16	93		Minimum	Hrs	sw/o	Failures	1500 hrs			(	CERTIFI	ED	







ROLL # F1	4C054070	Lot #	CDH812	2020	Liner Type	e:SMOO	TH LLC	DPE
Thickness Measurement ASTM D5199 (Modified)	MIN: MAX: AVE:	METRIC 2.592 mm 2.81 mm 2.688 mm	111 mil	Thickness Length Width DIT(Standard)	102.109 7.01	m 2	335 fee 23.0 fe 5 193	et
Specific Gravity ASTM D792		Density		g/cc			.935	
MFI ASTM D123 COND. E GRADE:	8 <b>7104</b>	Melt Flow Ind	ex 190⁰C /2160 g	- g/10 min			.31	
Carbon Black Co ASTM D4218	ontent	Range		%			2.23	
Carbon Black Dis ASTM D5596	spersion	Category				10	In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Mo ( 2 inches / minu		Average Stree	ngth @ Break	<b>71</b> N	l/mm 4	<b>406</b> ppi	5,080	psi
Elongation ASTI ASTM D638 (Mo ( 2 inches / minu Lo = 1.3" Yield Lo = 2.0" Break	dified)	Average Elon	gation @ Break	%			929.0	
Dimensional Sta ASTM D1204 (M	odified)	Average Dime	ensional Change	%			-0.18	
Tear Resistance ASTM D1004 (M	odified)	Average Tear	Resistance		<b>356</b> N		80.000	lbs
Puncture Resista FTMS 101 Metho	ance od 2065 (Modified)	Load			600 N		135	lbs
Puncture Resista ASTM D4833 (M		Load			<b>836</b> N		188	lbs
ESCR ASTM D1693		Minimum Hrs	s w / o Failures	1500 hrs		CE	RTIFIED	

Date:	1/30/14	
SignatureQuali	St Control Department	100LLSM.FRM REV 01 1/21/14





ROLL #	F14C054	071	Lot	#		CDH81	2020	Line	er Type	:SMO	OTH L	LD	PE
Thickness Measureme ASTM D519 (Modified)	nt	MIN: MAX:	METR 2.62 3.03	mm mm	119	mil mil	Thickness Length Width OIT(Standard)	1( 7	.5mm 02.109 7.01	<b>100m</b> m m 5 minur	335 23.0	fee fee 193	et
Specific Gi ASTM D79	•	AVE:	2.762 Density	mm	109	mil	g/cc				.93		
MFI ASTM COND. E GRADE:		7104	Melt Flov	v Inde	ex 190 <sup>0</sup>	°C /2160	g - g/10 min				.3	51	
Carbon Bla ASTM D42	ack Content 218		Range				%				2.2	3	
Carbon Bla ASTM D55	ack Dispersion 596		Category	/						1	10 In Cat	1	
Tensile Str ASTM D66 ASTM D63 ( 2 inches)	693 88 (Modified)		Average	Strer	ngth @	Break	71 1	N/mm	4	<b>06</b> ppi	5,0	80	psi
-	'ield		Average	Elon	gation	@ Break	%				929.	.0	
Dimension ASTM D12	al Stability 204 (Modified)		Average	Dime	ensiona	l Change	e %				-0.1	8	
Tear Resis ASTM D10	tance 004 (Modified)		Average	Tear	Resist	ance		356	N		80.00	0	lbs
Puncture F FTMS 101	Resistance Method 2065 (Mo	odified)	Load					600	N		13	5	lbs
Puncture F ASTM D48	Resistance 333 (Modified)		Load					836	N		18	88	lbs
ESCR ASTM D16	693		Minimur	n Hrs	sw/ol	Failures	1500 hrs			C	ERTIFIE	D	







ROLL #	F14C054	072	Lot #		CDH81	2020	Line	er Type	:SMO	OTH L	LD	PE
Thickness Measureme ASTM D519 (Modified)	nt	MIN: MAX: AVE:	METRIC 2.572 mm 2.988 mm 2.705 mm	118	-ISH mil mil mil	Thickness Length Width OIT(Standard)	1( 7	.5mm 02.109 7.01 M D3895	100m m m 5 minut	335 23.0	feet fee 193	
Specific G ASTM D79	•		Density			g/cc				.93	6	
MFI ASTM COND. E GRADE:	D1238	7104	Melt Flow Inde	ex 190 <sup>0</sup>	⁰C /2160	g - g/10 min				.3	1	
Carbon Bla ASTM D42	ack Content 218		Range			%				2.3	1	
Carbon Bla ASTM D55	ack Dispersion 596		Category						1	0 In Cat	1	
Tensile Str ASTM D66 ASTM D63 ( 2 inches )	693 88 (Modified)		Average Strer	ngth @	Break	69 1	N/mm	3	96 ppi	4,9	46 µ	osi
-	'ield		Average Elon	gation	@ Break	%				908.	0	
Dimension ASTM D12	al Stability 204 (Modified)		Average Dime	ensiona	al Change	e %				-0.1	8	
Tear Resis ASTM D10	tance 004 (Modified)		Average Tear	Resist	ance		342	N		77.00	<b>0</b>	bs
Puncture F FTMS 101	Resistance Method 2065 (Mc	odified)	Load				605	N		13	6 <sup> </sup>	bs
Puncture F ASTM D48	Resistance 333 (Modified)		Load				841	N		18	<b>9</b>	bs
ESCR ASTM D16	693		Minimum Hrs	sw/ol	Failures	1500 hrs			С	ERTIFIE	D	







ROLL #	F14C054	073	Lot #		CDH81	2020	Line	er Type	:SMO	OTH L	LDI	PE
Thickness Measureme ASTM D519 (Modified)	nt	MIN: MAX: AVE:	METRIC 2.503 mm 2.966 mm 2.648 mm	117	ISH mil mil mil	Thickness Length Width OIT(Standard)	1( 7	.5mm 02.109 7.01 M D3895	100m m m 5 minut	335 23.0	feet feet	
Specific G ASTM D79	•		Density			g/cc				.93	6	
MFI ASTM COND. E GRADE:	D1238	7104	Melt Flow Inde	ex 190 <sup>0</sup>	°C /2160	g - g/10 min				.3	1	
Carbon Bla ASTM D42	ack Content 18		Range			%				2.3	1	
Carbon Bla ASTM D55	ack Dispersion 96		Category						1	0 In Cat	1	
Tensile Str ASTM D66 ASTM D63 ( 2 inches )	93 88 (Modified)		Average Strer	ngth @	Break	69 1	N/mm	3	96 ppi	4,9	<b>46</b> p	osi
-	'ield		Average Elon	gation	@ Break	%				908.	0	
Dimension ASTM D12	al Stability 204 (Modified)		Average Dime	ensiona	al Change	e %				-0.1	8	
Tear Resis ASTM D10	tance 04 (Modified)		Average Tear	Resist	ance		342	N		77.00	<b>0</b>	bs
Puncture F FTMS 101	Resistance Method 2065 (Mo	odified)	Load				605	Ν		13	<b>6</b>	bs
Puncture F ASTM D48	Resistance 33 (Modified)		Load				841	N		18	<b>9</b>	bs
ESCR ASTM D16	93		Minimum Hrs	sw/ol	Failures	1500 hrs			С	ERTIFIE	D	







ROLL #	F14C0540	)74	Lot #		CDH81	2020	Line	er Type	e:SMO	OTH LI	LDF	ΡE
Thickness Measureme ASTM D519 (Modified)	nt M 99 M	IIN: IAX: VE:	METRIC <b>2.461</b> mm	117	₋ISH mil mil mil	Thickness Length Width OIT(Standard)	1( 7	. <b>5mm</b> 02.109 7.01 M D3895	100m m m 5 minute	335 23.0	feet feet 93	
Specific Gr ASTM D79	•		Density			g/cc				.93	6	
MFI ASTM COND. E GRADE:		7104	Melt Flow Inc	lex 190	°C /2160	g - g/10 min				.3	1	
Carbon Bla ASTM D42	ack Content 18		Range			%				2.3	1	
Carbon Bla ASTM D55	ack Dispersion 96		Category						1	0 In Cat	1	
Tensile Str ASTM D66 ASTM D63 ( 2 inches /	93 88 (Modified)		Average Stre	ength @	Break	69	N/mm	3	<b>96</b> ppi	4,94	<b>16</b> p	si
-	′ield		Average Elor	ngation	@ Break	%				908.0	D	
Dimension ASTM D12	al Stability 204 (Modified)		Average Dim	ensiona	al Change	. %				-0.1	8	
Tear Resis ASTM D10	tance 04 (Modified)		Average Tea	r Resist	tance		342	N		77.00	<b>o</b> Ib	os
Puncture F FTMS 101	Resistance Method 2065 (Mod	lified)	Load				605	N		13	6 lb	os
Puncture F ASTM D48	Resistance 33 (Modified)		Load				841	N		18	<b>9</b> lb	os
ESCR ASTM D16	93		Minimum Hr	sw/o	Failures	1500 hrs			С	ERTIFIEI	כ	







ROLL #	F14C054	075	Lot #		CDH81	2020	Line	er Type	e:SMO	OTH LI	DP	Е
Thickness Measureme ASTM D519 (Modified)	99	MIN: MAX: AVE:	METRIC 2.447 mm 2.961 mm 2.623 mm	117	LISH mil mil mil	Thickness Length Width OIT(Standard)	10 7	2.5mm 02.109 7.01 M D3895	100m m m 5 minut	335 23.0	feet feet 93	
Specific G ASTM D79			Density			g/cc				.936	6	
MFI ASTM COND. E GRADE:	D1238	7104	Melt Flow Inde	ex 190 <sup>0</sup>	°C /2160	g - g/10 min				.31	I	
Carbon Bla ASTM D42	ack Content 18		Range			%				2.27	7	
Carbon Bla ASTM D55	ack Dispersion 96		Category						1	0 In Cat 1		
Tensile Str ASTM D66 ASTM D63 ( 2 inches /	93 88 (Modified)		Average Strer	ngth @	Break	69 I	N/mm	3	9 <b>6</b> ppi	4,94	6 ps	si
•	′ield		Average Elon	gation	@ Break	%				908.0	)	
Dimension ASTM D12	al Stability 04 (Modified)		Average Dime	ensiona	al Change	e %				-0.18	3	
Tear Resis ASTM D10	tance 04 (Modified)		Average Tear	Resist	ance		342	Ν		77.000	) lbs	s
Puncture F FTMS 101	Resistance Method 2065 (Mo	odified)	Load				605	Ν		130	5 lbs	S
Puncture F ASTM D48	Resistance 33 (Modified)		Load				841	Ν		189	) Ibs	S
ESCR ASTM D16	93		Minimum Hrs	sw/ol	Failures	1500 hrs			C	ERTIFIED	)	







ROLL #	F14C054	076	Lot #		CDH81	2020	Line	er Type	e:SMC	OTH L	LD	PE
Thickness Measureme ASTM D519 (Modified)	nt	MIN: MAX: AVE:	METRIC 2.403 mm 2.882 mm 2.595 mm	113	₋ISH mil mil mil	Thickness Length Width OIT(Standard)	1) 7	2.5mm 02.109 7.01 M D3895	100n m m 5 minu	335 23.0	fee fee 193	et
Specific G ASTM D79			Density			g/cc				.93	6	
MFI ASTM COND. E GRADE:	D1238	7104	Melt Flow Inde	ex 190'	⁰C /2160	g - g/10 min				.3	1	
Carbon Bla ASTM D42	ack Content		Range			%				2.2	7	
Carbon Bla ASTM D55	ack Dispersion 96		Category							10 In Cat	1	
Tensile Str ASTM D66 ASTM D63 ( 2 inches /	93 88 (Modified)		Average Strer	ngth @	Break	<b>6</b> 9	N/mm	3	9 <b>6</b> ppi	4,94	46	psi
•	'ield		Average Elon	gation	@ Break	%				908.	0	
Dimension ASTM D12	al Stability 04 (Modified)		Average Dime	ensiona	al Change	e %				-0.1	8	
Tear Resis ASTM D10	tance 04 (Modified)		Average Tear	Resist	tance		342	N		77.00	0	lbs
Puncture F FTMS 101	Resistance Method 2065 (Mo	odified)	Load				605	Ν		13	6	lbs
Puncture F ASTM D48	Resistance 33 (Modified)		Load				841	Ν		18	9	lbs
ESCR ASTM D16	93		Minimum Hrs	sw/o	Failures	1500 hrs			C	CERTIFIE	D	







ROLL #	F14C054	077	Lot #		CDH81	2020	Line	er Type	e:SMO	oth li	DPI	Е
Thickness Measureme ASTM D519 (Modified)	nt	MIN: MAX: AVE:	METRIC 2.399 mm 2.862 mm 2.534 mm	113	ISH mil mil mil	Thickness Length Width OIT(Standard)	1( 7	.5mm 02.109 7.01 M D3895	100m m m 5 minut	335 23.0	feet feet 93	
Specific Gr ASTM D79	•		Density			g/cc				.930	6	
MFI ASTM COND. E GRADE:	D1238	7104	Melt Flow Inde	ex 190 <sup>0</sup>	°C /2160	g - g/10 min				.3	1	
Carbon Bla ASTM D42	ick Content 18		Range			%				2.20	)	
Carbon Bla ASTM D55	ick Dispersion 96		Category						1	0 In Cat <sup>2</sup>	1	
Tensile Str ASTM D66 ASTM D63 ( 2 inches /	93 8 (Modified)		Average Strer	ngth @	Break	66	N/mm	3	8 <b>76</b> ppi	4,69	<b>)8</b> ps	si
-	ïeld		Average Elon	gation	@ Break	%				850.	5	
Dimension ASTM D12	al Stability 04 (Modified)		Average Dime	ensiona	l Change	e %				-0.18	8	
Tear Resis ASTM D10	tance 04 (Modified)		Average Tear	Resist	ance		342	N		77.000	<b>)</b> Ibs	S
Puncture R FTMS 101	esistance Method 2065 (Mo	odified)	Load				605	Ν		130	6 lbs	5
Puncture R ASTM D48	esistance 33 (Modified)		Load				841	Ν		18	g Ibs	s
ESCR ASTM D16	93		Minimum Hrs	sw/ol	Failures	1500 hrs			С	ERTIFIE	)	







ROLL #	F14C054	078	Lot #		CDH81	2020	Line	er Type	e:SMO	OTH L	LD	PE
Thickness Measureme ASTM D519 (Modified)	nt	MIN: MAX: AVE:	METRIC 2.352 mm 2.863 mm 2.536 mm	113	ISH mil mil mil	Thickness Length Width OIT(Standard)	1	2.5mm 02.109 7.01 M D3895	100m m m 5 minut	335 23.0	fee fee 193	et
Specific G ASTM D79	•		Density			g/cc				.93	6	
MFI ASTM COND. E GRADE:	D1238	7104	Melt Flow Inde	ex 190 <sup>0</sup>	°C /2160	g - g/10 min				.3	1	
Carbon Bla ASTM D42	ack Content 18		Range			%				2.2	0	
Carbon Bla ASTM D55	ack Dispersion 96		Category						1	0 In Cat	1	
Tensile Str ASTM D66 ASTM D63 ( 2 inches)	93 88 (Modified)		Average Strer	ngth @	Break	66	N/mm	3	8 <b>76</b> ppi	4,6	98	psi
-	'ield		Average Elon	gation	@ Break	%				850.	5	
Dimension ASTM D12	al Stability 204 (Modified)		Average Dime	ensiona	al Change	e %				-0.1	8	
Tear Resis ASTM D10	tance 04 (Modified)		Average Tear	Resist	ance		342	N		77.00	0	lbs
Puncture F FTMS 101	Resistance Method 2065 (Mo	odified)	Load				605	N		13	6	lbs
Puncture F ASTM D48	Resistance 33 (Modified)		Load				841	N		18	9	lbs
ESCR ASTM D16	93		Minimum Hrs	sw/ol	Failures	1500 hrs			С	ERTIFIE	D	







ROLL #	F14C054	079	Lot #		CDH81	2020	Line	er Type	e:SMO	OTH L	LD	PE
Thickness Measureme ASTM D519 (Modified)	nt	MIN: MAX: AVE:	METRIC 2.314 mm 2.831 mm 2.532 mm	111	ISH mil mil mil	Thickness Length Width OIT(Standard)	1	2.5mm 02.109 7.01 M D3895	100m m m 5 minut	335 23.0	fee fee 193	
Specific G ASTM D79	•		Density			g/cc				.93	6	
MFI ASTM COND. E GRADE:	D1238	7104	Melt Flow Inde	ex 190 <sup>0</sup>	°C /2160	g - g/10 min				.3	1	
Carbon Bla ASTM D42	ack Content		Range			%				2.2	0	
Carbon Bla ASTM D55	ack Dispersion 96		Category						1	0 In Cat	1	
Tensile Str ASTM D66 ASTM D63 ( 2 inches )	93 8 (Modified)		Average Strer	ngth @	Break	66	N/mm	3	8 <b>76</b> ppi	4,69	98	psi
-	ïeld		Average Elon	gation	@ Break	%				850.	5	
Dimension ASTM D12	al Stability 04 (Modified)		Average Dime	ensiona	al Change	e %				-0.1	8	
Tear Resis ASTM D10	tance 04 (Modified)		Average Tear	Resist	ance		342	N		77.00	0	lbs
Puncture F FTMS 101	Resistance Method 2065 (Mo	odified)	Load				605	Ν		13	6	lbs
Puncture F ASTM D48	Resistance 33 (Modified)		Load				841	Ν		18	<b>9</b>	lbs
ESCR ASTM D16	93		Minimum Hrs	sw/ol	Failures	1500 hrs			С	ERTIFIE	D	







ROLL #	F14C055	5083	Lot #		CDH81	2030	Line	er Type	:SMO	OTH L	LD	PE
Thickness Measureme ASTM D519 (Modified)	nt	MIN: MAX: AVE:	METRIC 2.507 mm 3.025 mm 2.689 mm	119	ISH mil mil mil	Thickness Length Width OIT(Standard)	1( 7	. <b>5mm</b> 02.109 7.01 M D3895	100m m m 5 minut	335 23.0	feet fee 202	t
Specific Gr ASTM D79	•		Density			g/cc				.93	6	
MFI ASTM COND. E GRADE:	D1238	7104	Melt Flow Inde	ex 190 <sup>0</sup>	°C /2160	g - g/10 min				.3	0	
Carbon Bla ASTM D42	ick Content 18		Range			%				2.3	7	
Carbon Bla ASTM D55	ick Dispersion 96		Category						1	0 In Cat	1	
Tensile Str ASTM D66 ASTM D63 ( 2 inches /	93 8 (Modified)		Average Strer	ngth @	Break	67	N/mm	3	80 ppi	4,75	50 j	psi
-	ïeld		Average Elon	gation	@ Break	%				841.	5	
Dimension ASTM D12	al Stability 04 (Modified)		Average Dime	ensiona	l Change	e %				-0.2	0	
Tear Resis ASTM D10	tance 04 (Modified)		Average Tear	Resist	ance		325	N		73.00	0	lbs
Puncture R FTMS 101	esistance Method 2065 (Mo	odified)	Load				592	N		13	<b>3</b>	lbs
Puncture R ASTM D48	esistance 33 (Modified)		Load				796	N		17	<b>9</b>	lbs
ESCR ASTM D16	93		Minimum Hrs	sw/o	Failures	1500 hrs			С	ERTIFIEI	D	

1/31/14 Date:.... Signature..... 100LLSM.FRM REV 01 1/21/14 Quality Control Department





ROLL #	F14C055	084	Lot #		CDH81	2030	Line	er Type	e:SMO	oth li	_DP	Έ
Thickness Measureme ASTM D519 (Modified)	nt	MIN: MAX: AVE:	METRIC 2.497 mm 3.036 mm 2.703 mm	120	ISH mil mil mil	Thickness Length Width OIT(Standard)	1( 7	.5mm 02.109 7.01 M D3895	100m m m 5 minut	335 23.0	feet feet	
Specific G ASTM D79	•		Density			g/cc				.936	5	
MFI ASTM COND. E GRADE:	D1238	7104	Melt Flow Inde	ex 190 <sup>0</sup>	°C /2160	g - g/10 min				.3(	)	
Carbon Bla ASTM D42	ack Content 18		Range			%				2.37	7	
Carbon Bla ASTM D55	ack Dispersion 96		Category						1	0 In Cat 1	I	
Tensile Str ASTM D66 ASTM D63 ( 2 inches )	93 88 (Modified)		Average Strer	ngth @	Break	67 1	N/mm	3	8 <b>0</b> ppi	4,75	5 <b>0</b> ps	si
-	′ield		Average Elon	gation	@ Break	%				841.	5	
Dimension ASTM D12	al Stability 204 (Modified)		Average Dime	ensiona	al Change	. %				-0.20	D	
Tear Resis ASTM D10	tance 04 (Modified)		Average Tear	Resist	ance		325	N		73.000	) Ib	S
Puncture F FTMS 101	Resistance Method 2065 (Mc	odified)	Load				592	Ν		13:	3 Ib	S
Puncture F ASTM D48	Resistance 33 (Modified)		Load				796	N		179	g Ib	S
ESCR ASTM D16	93		Minimum Hrs	sw/o	Failures	1500 hrs			С	ERTIFIED	)	







ROLL #	F14C055	5085	Lot	#		CDH81	2030	Line	ər Type	:SMO	отн і	_LC	PE
Thickness Measureme ASTM D519 (Modified)	nt	MIN: MAX: AVE:	METRI 2.517 3.031	mm mm		ISH mil mil mil	Thickness Length Width OIT(Standard)	1) 7	2.5mm 02.109 7.01 M D3895	100m m m 5 minut	335 23.0	fee fe <b>202</b>	et
Specific Gr ASTM D79	•		Density				g/cc				.9:	36	
MFI ASTM COND. E GRADE:	D1238	7104	Melt Flow	/ Inde	ex 190 <sup>0</sup>	PC /2160	g - g/10 min					30	
Carbon Bla ASTM D42	ack Content 18		Range				%				2.2	22	
Carbon Bla ASTM D55	ack Dispersion 96		Category							1	0 In Cat	: <b>1</b>	
Tensile Str ASTM D66 ASTM D63 ( 2 inches /	93 8 (Modified)		Average	Strer	ngth @	Break	67	N/mm	3	80 ppi	4,7	750	psi
-	ïeld		Average I	Elon	gation	@ Break	%				841	.5	
Dimension ASTM D12	al Stability 04 (Modified)		Average I	Dime	ensiona	Il Change	. %				-0.2	20	
Tear Resis ASTM D10	tance 04 (Modified)		Average <sup>-</sup>	Tear	Resist	ance		325	N		73.0	00	lbs
Puncture R FTMS 101	esistance Method 2065 (Mo	odified)	Load					592	N		1:	33	lbs
Puncture R ASTM D48	esistance 33 (Modified)		Load					796	Ν		1	79	lbs
ESCR ASTM D16	93		Minimum	n Hrs	sw/ol	Failures	1500 hrs			C	ERTIFIE	ED	

1/31/14 Date:.... Signature..... 100LLSM.FRM REV 01 1/21/14 Quality Control Department





ROLL #	F14C055	680	Lot	#		CDH81	2030	Line	er Type	e:SMC	отн		PE
Thickness Measureme ASTM D519 (Modified)	nt	MIN: MAX: AVE:	METRI <b>2.533</b>	mm mm	119	ISH mil mil mil	Thickness Length Width OIT(Standard)	10 7	2.5mm 02.109 7.01 M D3895	100n m m 5 minu	335 23.0	fe fe <b>202</b>	et
Specific G ASTM D79	•		Density				g/cc				.9	36	
MFI ASTM COND. E GRADE:	D1238	7104	Melt Flow	Inde	ex 190 <sup>0</sup>	°C /2160	g - g/10 min				-	.30	
Carbon Bla ASTM D42	ack Content 18		Range				%				2.	22	
Carbon Bla ASTM D55	ack Dispersion 96		Category								10 In Ca	t 1	
Tensile Str ASTM D66 ASTM D63 ( 2 inches /	93 8 (Modified)		Average \$	Strer	ngth @	Break	67 1	N/mm	3	<b>80</b> pp	4,	750	psi
-	ïeld		Average I	Elon	gation	@ Break	%				84 <sup>-</sup>	1.5	
Dimension ASTM D12	al Stability 04 (Modified)		Average [	Dime	ensiona	al Change	e %				-0.	.20	
Tear Resis ASTM D10	tance 04 (Modified)		Average T	Fear	Resist	ance		325	N		73.0	00	lbs
Puncture F FTMS 101	Resistance Method 2065 (Mc	odified)	Load					592	N		1	33	lbs
Puncture F ASTM D48	Resistance 33 (Modified)		Load					796	Ν		1	79	lbs
ESCR ASTM D16	93		Minimum	n Hrs	sw/ol	Failures	1500 hrs			(	CERTIFI	ED	







ROLL #	F14C0550	)87	Lo	t #		CDH81	2030	Line	er Type	:SMC	отн і		PE
Thickness Measuremen ASTM D5199 (Modified)	t M	IIN: IAX: VE:	METI	i mm mm		ISH mil mil mil	Thickness Length Width OIT(Standard)	1( 7	.5mm )2.109 /.01 // D3895	100n m m 5 minu	335 23.0	fee fee 202	et
Specific Gra ASTM D792	-		Density				g/cc				.9	36	
MFI ASTM E COND. E GRADE:		'104	Melt Flo	w Ind	ex 190 <sup>0</sup>	°C /2160	g - g/10 min				= 1	30	
Carbon Blac ASTM D421			Range				%				2.	34	
Carbon Blac ASTM D559	k Dispersion 6		Categor	у							10 In Cat	t 1	
Tensile Stre ASTM D669 ASTM D638 ( 2 inches / r	3 (Modified)		Average	e Strei	ngth @	Break	71	N/mm	4	<b>.04</b> ppi	5,0	046	psi
Elongation A ASTM D638 ( 2 inches / r Lo = 1.3" Yie Lo = 2.0" Bre	ninute) eld		Average	e Elon	gation	@ Break	%				896	5.0	
Dimensional ASTM D120	•		Average	e Dime	ensiona	l Change	e %				-0.	20	
Tear Resista ASTM D100			Average	e Tear	Resist	ance		325	N		73.0	00	lbs
Puncture Re FTMS 101 M	esistance Aethod 2065 (Modi	ified)	Load					592	N		1	33	lbs
Puncture Re ASTM D483			Load					796	N		1	79	lbs
ESCR ASTM D169	3		Minimu	ım Hrs	sw/ol	Failures	1500 hrs			C	ERTIFIE	ED	







ROLL #	F14C055	5088	Lot #		CDH81	2030	Line	er Type	:SMO	oth li	.DPE
Thickness Measureme ASTM D519 (Modified)	nt	MIN: MAX: AVE:	METRIC 2.48 mm 2.984 mm 2.656 mm	117	ISH mil mil mil	Thickness Length Width OIT(Standard)	1( 7	2.5mm 02.109 7.01 M D3895	100m m m 5 minut	335 23.0	feet feet <b>02</b>
Specific G ASTM D79	•		Density			g/cc				.936	5
MFI ASTM COND. E GRADE:	D1238	7104	Melt Flow Inde	ex 190º	PC /2160	g - g/10 min				.30	)
Carbon Bla ASTM D42	ack Content 18		Range			%				2.34	ŀ
Carbon Bla ASTM D55	ack Dispersion 96		Category						1	0 In Cat 1	
Tensile Str ASTM D66 ASTM D63 ( 2 inches /	93 88 (Modified)		Average Strer	ngth @	Break	71	N/mm	4	. <b>04</b> ppi	5,04	<b>6</b> psi
-	'ield		Average Elon	gation	@ Break	%				896.0	)
Dimension ASTM D12	al Stability 204 (Modified)		Average Dime	ensiona	I Change	e %				-0.20	)
Tear Resis ASTM D10	tance 04 (Modified)		Average Tear	Resist	ance		325	N		73.000	) lbs
Puncture F FTMS 101	Resistance Method 2065 (Mo	odified)	Load				592	N		133	s Ibs
Puncture F ASTM D48	Resistance 33 (Modified)		Load				796	Ν		179	) Ibs
ESCR ASTM D16	93		Minimum Hrs	sw/of	ailures	1500 hrs			С	ERTIFIED	)







ROLL #	F14C055	089	Lot #		С	DH812	2030	Line	er Type	:SMC	OTH L		PE
Thickness Measureme ASTM D519 (Modified)	nt	MIN: MAX: AVE:	METRIC 2.458 m 2.95 m 2.632 m	m <b>97</b> m <b>1</b> 1	16	mil mil	Thickness Length Width OIT(Standard)	10	2. <b>5mm</b> 02.109 7.01 M D3895	100n m m 5 minu	335 23.0	fee fe <b>202</b>	et
Specific G ASTM D79	•		Density				g/cc				.93	36	
MFI ASTM COND. E GRADE:	D1238	7104	Melt Flow I	ndex 1	190ºC	/2160 ថ្	g - g /10 min					30	
Carbon Bla ASTM D42	ack Content 18		Range				%				2.3	34	
Carbon Bla ASTM D55	ack Dispersion 96		Category								10 In Cat	t 1	
Tensile Str ASTM D66 ASTM D63 ( 2 inches /	93 8 (Modified)		Average St	rength	h @ B	reak	71 1	N/mm	4	<b>04</b> ppi	5,0	046	psi
-	ïeld		Average El	ongati	ion @	Break	%				896	5.0	
Dimension ASTM D12	al Stability 04 (Modified)		Average Di	mensi	ional (	Change	%				-0.	20	
Tear Resis ASTM D10	tance 04 (Modified)		Average Te	ar Re	esistan	ice		325	N		73.0	00	lbs
Puncture F FTMS 101	Resistance Method 2065 (Mc	odified)	Load					592	N		1	33	lbs
Puncture F ASTM D48	Resistance 33 (Modified)		Load					796	N		1	79	lbs
ESCR ASTM D16	93		Minimum I	lrs w	/ o Fa	ilures	1500 hrs			C	ERTIFIE	ED	







ROLL #	F14C055	090	Lot #		CDH81	2030	Line	er Type	e:SMC	OTH LL	_DP	Έ
Thickness Measureme ASTM D519 (Modified)	ent 99	MIN: MAX: AVE:	METRIC <b>2.466</b> mm	116	LISH mil mil mil	Thickness Length Width OIT(Standard)	10 7	2.5mm 02.109 7.01 M D3895	<b>100n</b> m m 5 minu	335 23.0	feet feet	
Specific G ASTM D79			Density			g/cc				.936	5	
MFI ASTM COND. E GRADE:	D1238	7104	Melt Flow Inde	ex 190 <sup>0</sup>	°C /2160	g - g/10 min				.30	)	
Carbon Bla ASTM D42	ack Content 218		Range			%				2.33	3	
Carbon Bla ASTM D55	ack Dispersion 596		Category						•	10 In Cat 1	I	
Tensile Str ASTM D66 ASTM D63 ( 2 inches /	693 88 (Modified)		Average Strer	ngth @	Break	71	N/mm	4	1 <b>04</b> ppi	5,04	<b>-6</b> ps	si
•	'ield		Average Elon	gation	@ Break	%				896.0	)	
Dimension ASTM D12	al Stability 204 (Modified)		Average Dime	ensiona	al Change	%				-0.20	D	
Tear Resis ASTM D10	tance 004 (Modified)		Average Tear	Resist	ance		325	N		73.000	) Ib	S
Puncture F FTMS 101	Resistance Method 2065 (Mo	dified)	Load				592	N		133	<b>3</b> lb	S
Puncture F ASTM D48	Resistance 333 (Modified)		Load				796	N		179	g Ib	s
ESCR ASTM D16	93		Minimum Hrs	sw/ol	Failures	1500 hrs			C	CERTIFIED	)	

Date:	1/31/14	
SignatureQua	SH Control Department	100LLSM.FRM REV 01 1/21/14





ROLL #	F14C055	5091	Lot	#		CDH81	2030	Line	er Type	:SMC	отн і	_LC	PE
Thickness Measureme ASTM D519 (Modified)	nt	MIN: MAX: AVE:	METR <b>2.436</b>	mm mm	117	ISH mil mil mil	Thickness Length Width OIT(Standard)	1) 7	2.5mm 02.109 7.01 M D3895	100n m m 5 minu	335 23.0	fee fe 202	et
Specific Gr ASTM D79	•		Density				g/cc				.9:	36	
MFI ASTM COND. E GRADE:	D1238	7104	Melt Flow	v Inde	ex 190º	PC /2160	g - g/10 min				- \	30	
Carbon Bla ASTM D42	ack Content		Range				%				2.3	33	
Carbon Bla ASTM D55	ack Dispersion 96		Category	,							10 In Cat	t 1	
Tensile Str ASTM D66 ASTM D63 ( 2 inches /	93 8 (Modified)		Average	Strer	ngth @	Break	71	N/mm	4	<b>04</b> pp	i 5,(	046	psi
-	ïeld		Average	Elon	gation	@ Break	%				896	5.0	
Dimension ASTM D12	al Stability 04 (Modified)		Average	Dime	ensiona	I Change	e %				-0.	20	
Tear Resis ASTM D10	tance 04 (Modified)		Average	Tear	Resist	ance		325	N		73.0	00	lbs
Puncture R FTMS 101	Resistance Method 2065 (Mo	odified)	Load					592	N		1	33	lbs
Puncture R ASTM D48	Resistance 33 (Modified)		Load					796	Ν		1	79	lbs
ESCR ASTM D16	93		Minimun	n Hrs	sw/ol	ailures	1500 hrs			(	CERTIFIE	ED	

1/31/14 Date:.... Signature..... 100LLSM.FRM REV 01 1/21/14 Quality Control Department





ROLL #	F14C055	5092	Lot #		CDH81	2030	Line	er Type	e:SMO	oth Li	LD	PE
Thickness Measureme ASTM D519 (Modified)	nt	MIN: MAX: AVE:	METRIC 2.448 mm 2.943 mm 2.635 mm	116	ISH mil mil mil	Thickness Length Width OIT(Standard)	1	2.5mm 02.109 7.01 M D3895	100m m m 5 minut	335 23.0	fee fee 202	et
Specific Gr ASTM D79	•		Density			g/cc				.934	4	
MFI ASTM COND. E GRADE:	D1238	7104	Melt Flow Inde	ex 190 <sup>0</sup>	°C /2160	g - g/10 min				.3	0	
Carbon Bla ASTM D42	ack Content 18		Range			%				2.29	9	
Carbon Bla ASTM D55	ack Dispersion 96		Category						1	0 In Cat	1	
Tensile Str ASTM D66 ASTM D63 ( 2 inches /	93 8 (Modified)		Average Strer	ngth @	Break	71	N/mm	4	<b>07</b> ppi	5,08	86	psi
-	ïeld		Average Elon	gation	@ Break	%				903.0	0	
Dimension ASTM D12	al Stability 04 (Modified)		Average Dime	ensiona	al Change	e %				-0.2	0	
Tear Resis ASTM D10	tance 04 (Modified)		Average Tear	Resist	ance		347	N		78.00	0	lbs
Puncture R FTMS 101	esistance Method 2065 (M	odified)	Load				627	Ν		14	1	lbs
Puncture R ASTM D48	esistance 33 (Modified)		Load				774	Ν		17	4	lbs
ESCR ASTM D16	93		Minimum Hrs	sw/ol	Failures	1500 hrs			С	ERTIFIEI	D	







ROLL #	F14C055	5093	Lot #		CDH81	2030	Line	er Type	:SMO	OTH L	.LD	PE
Thickness Measureme ASTM D519 (Modified)		MIN: MAX: AVE:	METRIC 2.474 mm 2.984 mm 2.629 mm	117	ISH mil mil mil	Thickness Length Width OIT(Standard)	1) 7	. <b>5mm</b> 0 <b>2.109</b> 7.01 M D3895	100m m m 5 minut	335 23.0	fee fee 202	et
Specific Gr ASTM D79	•		Density			g/cc				.93	34	
MFI ASTM COND. E GRADE:	D1238	7104	Melt Flow Inde	ex 190⁰	C /2160	g - g/10 min				.3	30	
Carbon Bla ASTM D42	ack Content 18		Range			%				2.2	<u>29</u>	
Carbon Bla ASTM D55	ack Dispersion 96		Category						1	0 In Cat	1	
Tensile Str ASTM D66 ASTM D63 ( 2 inches /	93 8 (Modified)		Average Strer	ngth @	Break	71	N/mm	4	. <b>07</b> ppi	5,0	86	psi
-	ïeld		Average Elon	gation	@ Break	%				903	.0	
Dimension ASTM D12	al Stability 04 (Modified)		Average Dime	ensiona	l Change	%				-0.2	20	
Tear Resis ASTM D10	tance 04 (Modified)		Average Tear	Resist	ance		347	N		78.00	)0	lbs
Puncture R FTMS 101	esistance Method 2065 (Mo	odified)	Load				627	N		14	<b>1</b> 1	lbs
Puncture R ASTM D48	esistance 33 (Modified)		Load				774	Ν		17	74	lbs
ESCR ASTM D16	93		Minimum Hrs	sw/oF	ailures	1500 hrs			С	ERTIFIE	D	







ROLL #	F14C055	5094	Lot #		CDH81	2030	Line	er Type	e:SMC	OTH L	.LC	PE
Thickness Measureme ASTM D519 (Modified)	nt	MIN: MAX: AVE:	METRIC <b>2.449</b> mm	116	ISH mil mil mil	Thickness Length Width OIT(Standard)	1	2.5mm 02.109 7.01 M D3895	100n m m 5 minu	335 23.0	fee fe 202	et
Specific Gr ASTM D79	•		Density			g/cc				.93	34	
MFI ASTM COND. E GRADE:	D1238	7104	Melt Flow Ind	ex 190 <sup>0</sup>	<sup>o</sup> C /2160	g - g/10 min				.:	30	
Carbon Bla ASTM D42	ick Content 18		Range			%				2.2	29	
Carbon Bla ASTM D55	ick Dispersion 96		Category							10 In Cat	1	
Tensile Str ASTM D66 ASTM D63 ( 2 inches /	93 8 (Modified)		Average Stree	ngth @	Break	71	N/mm	4	. <b>07</b> ppi	i 5,0	)86	psi
-	ïeld		Average Elon	gation	@ Break	%				903	.0	
Dimension ASTM D12	al Stability 04 (Modified)		Average Dime	ensiona	I Change	%				-0.2	20	
Tear Resis ASTM D10	tance 04 (Modified)		Average Tear	Resist	ance		347	Ν		78.00	00	lbs
Puncture R FTMS 101	esistance Method 2065 (Mo	odified)	Load				627	Ν		14	41	lbs
Puncture R ASTM D48	esistance 33 (Modified)		Load				774	N		17	74	lbs
ESCR ASTM D16	93		Minimum Hrs	sw/ol	Failures	1500 hrs			C	CERTIFIE	D	







ROLL #	F14C055	5095	Lot #		CDH81	2030	Line	er Type	:SMO	OTH L	LD	PE
Thickness Measureme ASTM D519 (Modified)	nt	MIN: MAX: AVE:	METRIC 2.49 mm 2.973 mm 2.626 mm	117	ISH mil mil mil	Thickness Length Width OIT(Standard)	1) 7	2.5mm 02.109 7.01 M D3895	100m m m 5 minut	335 23.0	fee fee 202	et
Specific Gr ASTM D79	•		Density			g/cc				.93	4	
MFI ASTM COND. E GRADE:	D1238	7104	Melt Flow Inde	ex 190º	PC /2160	g - g/10 min				.3	0	
Carbon Bla ASTM D42	ick Content 18		Range			%				2.2	2	
Carbon Bla ASTM D55	ick Dispersion 96		Category						1	0 In Cat	1	
Tensile Str ASTM D66 ASTM D63 ( 2 inches /	93 8 (Modified)		Average Strer	ngth @	Break	71	N/mm	4	. <b>07</b> ppi	5,0	86	psi
-	ïeld		Average Elon	gation	@ Break	%				903.	.0	
Dimension ASTM D12	al Stability 04 (Modified)		Average Dime	ensiona	I Change	e %				-0.2	20	
Tear Resis ASTM D10	tance 04 (Modified)		Average Tear	Resist	ance		347	Ν		78.00	0	lbs
Puncture R FTMS 101	esistance Method 2065 (Mo	odified)	Load				627	Ν		14	1	lbs
Puncture R ASTM D48	esistance 33 (Modified)		Load				774	N		17	<b>'</b> 4	lbs
ESCR ASTM D16	93		Minimum Hrs	sw/of	ailures	1500 hrs			С	ERTIFIE	D	







ROLL #	F14C055	5096	Lot #		CDH81	2030	Line	er Type	:SMO	OTH L	LD	PE
Thickness Measureme ASTM D519 (Modified)	nt	MIN: MAX: AVE:	METRIC 2.488 mm 2.943 mm 2.617 mm	116	ISH mil mil mil	Thickness Length Width OIT(Standard)	10 7	. <b>5mm</b> 02.109 7.01 M D3895	100m m m	335 23.0	fee fee 202	et
Specific Gr ASTM D79	•		Density			g/cc				.93	4	
MFI ASTM COND. E GRADE:	D1238	7104	Melt Flow Inde	ex 190º	PC /2160	g - g/10 min				.3	0	
Carbon Bla ASTM D42	ick Content 18		Range			%				2.2	2	
Carbon Bla ASTM D55	ick Dispersion 96		Category						1	0 In Cat	1	
Tensile Str ASTM D66 ASTM D63 ( 2 inches /	93 8 (Modified)		Average Strer	ngth @	Break	71	N/mm	4	<b>07</b> ppi	5,0	86	psi
-	ïeld		Average Elon	gation	@ Break	%				903.	.0	
Dimension ASTM D12	al Stability 04 (Modified)		Average Dime	ensiona	I Change	. %				-0.2	20	
Tear Resis ASTM D10	tance 04 (Modified)		Average Tear	Resist	ance		347	N		78.00	0	lbs
Puncture R FTMS 101	esistance Method 2065 (Mo	odified)	Load				627	N		14	1	lbs
Puncture R ASTM D48	esistance 33 (Modified)		Load				774	N		17	<b>'</b> 4	lbs
ESCR ASTM D16	93		Minimum Hrs	sw/ol	Failures	1500 hrs			С	ERTIFIE	D	







ROLL #	F14C055	<b>6097</b>	• Lot #			CDH81	2030	Lin	er Type	e:SM	оотн	LLC	OPE
Thickness Measureme ASTM D519 (Modified)	nt	MIN: MAX: AVE:	METRIC <b>2.468</b> m	nm nm	117	ISH mil mil mil	Thickness Length Width OIT(Standard)	1	2.5mm 02.109 7.01 M D3895	100 m m 5 min	335 23.0	fe fe <b>20</b> 2	et
Specific G ASTM D79	•		Density				g/cc				.9	934	
MFI ASTM COND. E GRADE:	D1238	7104	Melt Flow I	nde	ex 190º	C /2160	g - g/10 min					.30	
Carbon Bla ASTM D42	ack Content 18		Range				%				2	.33	
Carbon Bla ASTM D55	ack Dispersion 96		Category								10 In Ca	at 1	
Tensile Str ASTM D66 ASTM D63 ( 2 inches /	93 8 (Modified)		Average St	trer	ngth @	Break	68 1	N/mm	. 3	88 pt	oi <b>4</b>	,852	psi
-	ïeld		Average El	lon	gation	@ Break	%				87	2.0	
Dimension ASTM D12	al Stability 04 (Modified)		Average Di	ime	ensiona	l Change	e %				-0	.20	
Tear Resis ASTM D10	tance 04 (Modified)		Average Te	ear	Resist	ance		347	Ν		78.0	000	lbs
Puncture F FTMS 101	Resistance Method 2065 (Mo	odified)	Load					627	N			141	lbs
Puncture F ASTM D48	Resistance 33 (Modified)		Load					774	Ν			174	lbs
ESCR ASTM D16	93		Minimum	Hrs	w/of	ailures	1500 hrs				CERTIF	IED	







ROLL #	F14C056	6098	Lot #		CDH81	2030	Line	er Type	e:SMO	OTH LI	_DP	ΡE
Thickness Measureme ASTM D519 (Modified)	nt	MIN: MAX: AVE:	METRIC 2.454 mm 2.958 mm 2.613 mm	116	ISH mil mil mil	Thickness Length Width OIT(Standard)	10 7	2.5mm 02.109 7.01 M D3895	<b>100m</b> m m 5 minu	335 23.0	feet feet	
Specific Gr ASTM D79			Density			g/cc				.934	4	
MFI ASTM COND. E GRADE:	D1238	7104	Melt Flow Inde	ex 190 <sup>0</sup>	°C /2160	g - g/10 min				.30	)	
Carbon Bla ASTM D42	ack Content 18		Range			%				2.33	3	
Carbon Bla ASTM D55	ack Dispersion 96		Category						1	10 In Cat '	1	
Tensile Str ASTM D66 ASTM D63 ( 2 inches /	93 8 (Modified)		Average Strer	ngth @	Break	68	N/mm	3	<b>88</b> ppi	4,85	5 <b>2</b> ps	si
•	ïeld		Average Elon	gation	@ Break	%				872.0	)	
Dimension ASTM D12	al Stability 04 (Modified)		Average Dime	ensiona	l Change	e %				-0.20	D	
Tear Resis ASTM D10	tance 04 (Modified)		Average Tear	Resist	ance		347	N		78.000	) Ib	os
Puncture R FTMS 101	esistance Method 2065 (M	odified)	Load				627	Ν		14 <sup>-</sup>	1 lb	S
Puncture R ASTM D48	esistance 33 (Modified)		Load				774	Ν		174	<b>4</b> lb	S
ESCR ASTM D16	93		Minimum Hrs	sw/ol	Failures	1500 hrs			C	ERTIFIE	C	







ROLL #	F14C056	6099	Lot #		CDH81	2030	Line	er Type	:SMO	OTH L	LC	PE
Thickness Measureme ASTM D519 (Modified)	nt	MIN: MAX: AVE:	METRIC 2.458 mm 2.949 mm 2.629 mm	116	ISH mil mil mil	Thickness Length Width OIT(Standard)	1) 7	2.5mm 02.109 7.01 M D3895	100m m m 5 minut	335 23.0	fee fe	et
Specific Gr ASTM D79	•		Density			g/cc				.9:	34	
MFI ASTM COND. E GRADE:	D1238	7104	Melt Flow Inde	ex 190º	PC /2160	g - g/10 min					30	
Carbon Bla ASTM D42	ick Content 18		Range			%				2.3	33	
Carbon Bla ASTM D55	ick Dispersion 96		Category						1	0 In Cat	: 1	
Tensile Str ASTM D66 ASTM D63 ( 2 inches /	93 8 (Modified)		Average Strer	ngth @	Break	68	N/mm	3	8 <b>8</b> ppi	4,8	352	psi
-	ïeld		Average Elon	gation	@ Break	%				872	2.0	
Dimension ASTM D12	al Stability 04 (Modified)		Average Dime	ensiona	I Change	e %				-0.2	20	
Tear Resis ASTM D10	tance 04 (Modified)		Average Tear	Resist	ance		347	Ν		78.00	00	lbs
Puncture R FTMS 101	esistance Method 2065 (Mo	odified)	Load				627	Ν		14	41	lbs
Puncture R ASTM D48	esistance 33 (Modified)		Load				774	N		1	74	lbs
ESCR ASTM D16	93		Minimum Hrs	sw/oF	ailures	1500 hrs			С	ERTIFIE	ED	







ROLL #	F14C056	5100	Lot #		CDH81	2030	Line	er Type	:SMO	OTH L	LD	PE
Thickness Measureme ASTM D519 (Modified)		MIN: MAX: AVE:	METRIC 2.473 mm 2.966 mm 2.628 mm	117	LISH mil mil mil	Thickness Length Width OIT(Standard)	1( 7	.5mm )2.109 7.01 // D3895	100m m m 5 minut	335 23.0	fee fee 202	et
Specific G ASTM D79	•		Density			g/cc				.93	4	
MFI ASTM COND. E GRADE:	D1238	7104	Melt Flow Inde	ex 190 <sup>0</sup>	°C /2160	g - g/10 min				.3	0	
Carbon Bla ASTM D42	ack Content		Range			%				2.3	2	
Carbon Bla ASTM D55	ack Dispersion 96		Category						1	0 In Cat	1	
Tensile Str ASTM D66 ASTM D63 ( 2 inches /	93 88 (Modified)		Average Strer	ngth @	Break	68	N/mm	3	<b>88</b> ppi	4,8	52	psi
-	'ield		Average Elon	gation	@ Break	%				872.	.0	
Dimension ASTM D12	al Stability 204 (Modified)		Average Dime	ensiona	al Change	e %				-0.2	20	
Tear Resis ASTM D10	tance 04 (Modified)		Average Tear	Resist	ance		347	N		78.00	0	lbs
Puncture F FTMS 101	Resistance Method 2065 (Mo	odified)	Load				627	N		14	1	lbs
Puncture F ASTM D48	Resistance 33 (Modified)		Load				774	N		17	'4	lbs
ESCR ASTM D16	93		Minimum Hrs	sw/ol	Failures	1500 hrs			С	ERTIFIE	D	







ROLL #	F14C056	6101	Lot #		CDH81	2030	Line	er Type	:SMO	OTH L	.LC	PE
Thickness Measureme ASTM D519 (Modified)	nt	MIN: MAX: AVE:	METRIC 2.498 mm 2.964 mm 2.638 mm	117	.ISH mil mil mil	Thickness Length Width OIT(Standard)	1) 7	2.5mm 02.109 7.01 M D3895	100m m m 5 minut	335 23.0	fee fe	et
Specific G ASTM D79	•		Density			g/cc				.93	34	
MFI ASTM COND. E GRADE:	D1238	7104	Melt Flow Inde	ex 190 <sup>0</sup>	PC /2160	g - g/10 min					30	
Carbon Bla ASTM D42	ack Content 18		Range			%				2.3	32	
Carbon Bla ASTM D55	ack Dispersion 96		Category						1	0 In Cat	: 1	
Tensile Str ASTM D66 ASTM D63 ( 2 inches /	93 8 (Modified)		Average Strer	ngth @	Break	68	N/mm	3	8 <b>8</b> ppi	4,8	352	psi
-	ïeld		Average Elon	gation	@ Break	%				872	.0	
Dimension ASTM D12	al Stability 04 (Modified)		Average Dime	ensiona	I Change	e %				-0.2	20	
Tear Resis ASTM D10	tance 04 (Modified)		Average Tear	Resist	ance		347	Ν		78.00	00	lbs
Puncture F FTMS 101	esistance Method 2065 (Me	odified)	Load				627	Ν		14	41	lbs
Puncture F ASTM D48	esistance 33 (Modified)		Load				774	Ν		17	74	lbs
ESCR ASTM D16	93		Minimum Hrs	sw/ol	Failures	1500 hrs			С	ERTIFIE	Đ	







ROLL #	F14C056	6102	Lot #		CDH81	2030	Line	er Type	e:SMO	OTH L	LD	PE
Thickness Measureme ASTM D519 (Modified)	nt	MIN: MAX: AVE:	METRIC 2.46 mm 2.923 mm 2.619 mm	115	ISH mil mil mil	Thickness Length Width OIT(Standard)	1) 7	2.5mm 02.109 7.01 M D3895	100m m m 5 minur	335 23.0	fee fee 202	et
Specific Gr ASTM D79			Density			g/cc				.93	5	
MFI ASTM COND. E GRADE:	D1238	7104	Melt Flow Inde	ex 190º	PC /2160	g - g/10 min				.3	0	
Carbon Bla ASTM D42	ack Content		Range			%				2.3	1	
Carbon Bla ASTM D55	ack Dispersion 96		Category						1	10 In Cat	1	
Tensile Str ASTM D66 ASTM D63 ( 2 inches /	93 8 (Modified)		Average Strer	ngth @	Break	<b>68</b>	N/mm	3	<b>88</b> ppi	4,8	54	psi
-	íeld		Average Elon	gation	@ Break	%				863.	0	
Dimension ASTM D12	al Stability 04 (Modified)		Average Dime	ensiona	I Change	%				-0.2	0	
Tear Resis ASTM D10	tance 04 (Modified)		Average Tear	Resist	ance		342	Ν		77.00	0	lbs
Puncture R FTMS 101	Resistance Method 2065 (M	odified)	Load				636	N		14	3	lbs
Puncture R ASTM D48	Resistance 33 (Modified)		Load				805	Ν		18	1	lbs
ESCR ASTM D16	93		Minimum Hrs	sw/of	ailures	1500 hrs			C	ERTIFIE	D	







ROLL #	F14C056	6103	Lot #		CDH81	2030	Line	er Type	e:SMC	DOTH L	.LC	PE
Thickness Measureme ASTM D519 (Modified)		MIN: MAX: AVE:	METRIC 2.471 mm 2.566 mm 2.633 mm	101	LISH mil mil mil	Thickness Length Width OIT(Standard)	10 7	2.5mm 02.109 7.01 M D3895	100r m m 5 minu	335 23.0	fee fe 202	et
Specific G ASTM D79	•		Density			g/cc				.93	35	
MFI ASTM COND. E GRADE:	D1238	7104	Melt Flow Inde	ex 190'	°C /2160	g - g/10 min				.:	30	
Carbon Bla ASTM D42	ack Content		Range			%				2.3	31	
Carbon Bla ASTM D55	ack Dispersion 96		Category							10 In Cat	1	
Tensile Str ASTM D66 ASTM D63 ( 2 inches /	93 8 (Modified)		Average Strer	ngth @	Break	68	N/mm	3	8 <b>8</b> pp	i <b>4,</b> 8	854	psi
•	ïeld		Average Elon	gation	@ Break	%				863	.0	
Dimension ASTM D12	al Stability 04 (Modified)		Average Dime	ensiona	al Change	e %				-0.2	20	
Tear Resis ASTM D10	tance 04 (Modified)		Average Tear	Resist	ance		342	N		77.00	00	lbs
Puncture F FTMS 101	Resistance Method 2065 (Mo	odified)	Load				636	Ν		14	43	lbs
Puncture F ASTM D48	Resistance 33 (Modified)		Load				805	N		18	81	lbs
ESCR ASTM D16	93		Minimum Hrs	sw/o	Failures	1500 hrs				CERTIFIE	Ð	







ROLL # F14C056104		Lot #	CDH81	2030	отн і	_LC	PE					
Thickness Measureme ASTM D519 (Modified)	nt	MIN: MAX: AVE:	METRIC 2.487 mm 2.957 mm 2.634 mm	116	ISH mil mil mil	Thicknes Length Width OIT(Standard	1) 7	2.5mm 02.109 7.01 M D3895	<b>100m</b> m m 5 minu	335 23.0	fee fe 202	et
Specific Gravity ASTM D792			Density			g/cc	.935					
MFI ASTM COND. E GRADE:	D1238	Melt Flow Index 190°C /2160 g - g /10 min							= 1	.30		
Carbon Black Content ASTM D4218			Range		%			2.31				
Carbon Black Dispersion ASTM D5596			Category					10 In Cat	t 1			
Tensile Strength ASTM D6693 ASTM D638 (Modified) ( 2 inches / minute )			Average Strer	Break	68	<b>68</b> N/mm <b>388</b> ppi				<b>4,854</b> psi		
Elongation ASTM D-6693 ASTM D638 (Modified) ( 2 inches / minute ) Lo = 1.3" Yield Lo = 2.0" Break			Average Elon	@ Break	%				863.0			
Dimensional Stability ASTM D1204 (Modified)		Average Dime	Il Change	%				-0.20				
Tear Resis ASTM D10	tance 04 (Modified)		Average Tear	Resist	ance		342	N		77.0	00	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)		Load			636	N		1	43	lbs		
Puncture Resistance ASTM D4833 (Modified)		Load			805	Ν		1	81	lbs		
ESCR ASTM D1693			Minimum Hrs w / o Failures			1500 hrs C			CERTIFIE	ERTIFIED		







ROLL # F14C056105		Lot # CDH812			2030	отн і		DPE					
Thickness Measureme ASTM D519 (Modified)	nt 9	MIN: MAX: AVE:	METRIC 2.465 mm 2.939 mm		LISH mil mil mil	Thickness Length Width OIT(Standard)	1	2.5mm 02.109 7.01 M D3895	<b>100</b> m m 5 minu	335 23.0	fe fe 202	et	
Specific Gravity ASTM D792			Density			g/cc	.935						
MFI ASTM COND. E GRADE:	D1238	7104	Melt Flow Index 190°C /2160 g - g /10 min							.30			
Carbon Black Content ASTM D4218			Range		%	%			2.28				
	Carbon Black Dispersion ASTM D5596			Category						10 In Ca	t 1		
ASTM D66 ASTM D63	Tensile Strength ASTM D6693 ASTM D638 (Modified) ( 2 inches / minute )		Average Stre	Break	68	<b>68</b> N/mm <b>388</b> ppi			i <b>4,</b> 1	<b>4,854</b> psi			
Elongation ASTM D-6693 ASTM D638 (Modified) ( 2 inches / minute ) Lo = 1.3" Yield Lo = 2.0" Break			Average Elon	@ Break	%	%				863.0			
Dimensional Stability ASTM D1204 (Modified)			Average Dime	al Change	%				-0.20				
Tear Resis ASTM D10	tance 04 (Modified)		Average Tea	Resis	tance		342	N		77.0	00	lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)		odified)	Load			636	N		1	43	lbs		
Puncture Resistance ASTM D4833 (Modified)			Load			805	N		1	81	lbs		
ESCR ASTM D1693			Minimum Hr	Failures	1500 hrs CEI				CERTIFI	RTIFIED			






ROLL #	F14C056	6106	Lot #		CDH81	2030	Line	er Type	:SMC	отн і		PE
Thickness Measureme ASTM D519 (Modified)	nt	MIN: MAX: AVE:	METRIC 2.45 mm 2.964 mm 2.651 mm	117	ISH mil mil mil	Thickness Length Width OIT(Standard)	1( 7	.5mm 02.109 7.01 M D3895	100n m m 5 minu	335 23.0	fee fe 202	et
Specific Gr ASTM D79	•		Density			g/cc				.9	35	
MFI ASTM COND. E GRADE:	D1238	7104	Melt Flow Inde	ex 190 <sup>0</sup>	PC /2160	g - g/10 min				-	30	
Carbon Bla ASTM D42	ack Content		Range			%				2.	28	
Carbon Bla ASTM D55	ack Dispersion 96		Category							10 In Ca	t 1	
Tensile Str ASTM D66 ASTM D63 ( 2 inches /	93 8 (Modified)		Average Strer	ngth @	Break	68	N/mm	3	8 <b>8</b> ppi	4,	854	psi
-	'ield		Average Elon	gation	@ Break	%				863	3.0	
Dimension ASTM D12	al Stability 04 (Modified)		Average Dime	ensiona	l Change	%				-0.	20	
Tear Resis ASTM D10	tance 04 (Modified)		Average Tear	Resist	ance		342	N		77.0	00	lbs
Puncture R FTMS 101	Resistance Method 2065 (Me	odified)	Load				636	N		1	43	lbs
Puncture R ASTM D48	Resistance 33 (Modified)		Load				805	N		1	81	lbs
ESCR ASTM D16	93		Minimum Hrs	sw/of	ailures	1500 hrs			C	CERTIFI	ED	







ROLL #	F14C056	5107	Lot #		CDH81	2030	Line	er Type	e:SMC	OTH L	LC.	PE
Thickness Measureme ASTM D519 (Modified)	nt	MIN: MAX: AVE:	METRIC 2.46 mm 2.993 mm 2.645 mm	118	ISH mil mil mil	Thickness Length Width OIT(Standard)	1( 7	.5mm 02.109 7.01 M D3895	<b>100n</b> m m 5 minu	335 23.0	fee fe 202	et
Specific G ASTM D79			Density			g/cc				.93	35	
MFI ASTM COND. E GRADE:	D1238	7104	Melt Flow Inde	ex 190º	PC /2160	g - g/10 min					30	
Carbon Bla ASTM D42	ack Content 218		Range			%				2.3	38	
Carbon Bla ASTM D55	ack Dispersion 596		Category							10 In Cat	: 1	
Tensile Str ASTM D66 ASTM D63 ( 2 inches /	693 88 (Modified)		Average Strer	ngth @	Break	67	N/mm	3	8 <b>4</b> ppi	i 4,8	304	psi
•	'ield		Average Elon	gation	@ Break	%				881	.0	
Dimension ASTM D12	al Stability 204 (Modified)		Average Dime	ensiona	I Change	%				-0.:	20	
Tear Resis ASTM D10	tance 004 (Modified)		Average Tear	Resist	ance		342	N		77.00	00	lbs
Puncture F FTMS 101	Resistance Method 2065 (Mc	odified)	Load				636	N		1	43	lbs
Puncture F ASTM D48	Resistance 333 (Modified)		Load				805	Ν		1	81	lbs
ESCR ASTM D16	693		Minimum Hrs	sw/oF	ailures	1500 hrs			C	CERTIFIE	ED	







ROLL #	F14C056	5108	Lo	t #		CDH81	2030	Line	er Type	e:SMO	OTH	LLC	DPE
Thickness Measureme ASTM D519 (Modified)		MIN: MAX: AVE:	METF 2.46 2.91 2.64	mm mm		.ISH mil mil mil	Thickness Length Width OIT(Standard)	1( 7	.5mm 02.109 7.01 M D3895	100m m m 5 minut	335 23.0	fe fe <b>202</b>	et
Specific G ASTM D79	•		Density				g/cc				.9	35	
MFI ASTM COND. E GRADE:	D1238	7104	Melt Flo	w Inde	ex 190 <sup>0</sup>	°C /2160	g - g/10 min					.30	
Carbon Bla ASTM D42	ack Content 18		Range				%				2.	.38	
Carbon Bla ASTM D55	ack Dispersion 96		Categor	у						1	0 In Ca	t 1	
Tensile Str ASTM D66 ASTM D63 ( 2 inches)	93 88 (Modified)		Average	Strer	ngth @	Break	67	N/mm	3	8 <b>4</b> ppi	4,	804	psi
-	'ield		Average	Elon	gation	@ Break	%				88 <sup>.</sup>	1.0	
Dimension ASTM D12	al Stability 204 (Modified)		Average	Dime	ensiona	I Change	e %				-0	.20	
Tear Resis ASTM D10	tance 04 (Modified)		Average	Tear	Resist	ance		342	N		77.0	000	lbs
Puncture F FTMS 101	Resistance Method 2065 (Mo	odified)	Load					636	N		1	43	lbs
Puncture F ASTM D48	Resistance 33 (Modified)		Load					805	N		1	81	lbs
ESCR ASTM D16	93		Minimu	m Hrs	sw/of	Failures	1500 hrs			С	ERTIFI	ED	







ROLL #	F14C056	5109	Lot	#		CDH81	2030	Line	er Type	:SMC	отн і		OPE
Thickness Measureme ASTM D519 (Modified)	nt	MIN: MAX: AVE:	METRI <b>2.45</b>	mm mm	116	ISH mil mil mil	Thickness Length Width OIT(Standard)	10 7	2.5mm 02.109 7.01 M D3895	100r m m 5 minu	335 23.0	fe fe 202	et
Specific Gr ASTM D79			Density				g/cc				.9	35	
MFI ASTM COND. E GRADE:	D1238	7104	Melt Flow	/ Inde	ex 190 <sup>0</sup>	PC /2160	g - g/10 min					30	
Carbon Bla ASTM D42	ack Content		Range				%				2.	38	
Carbon Bla ASTM D55	ack Dispersion 96		Category								10 In Ca	t 1	
Tensile Str ASTM D66 ASTM D63 ( 2 inches /	93 88 (Modified)		Average	Strer	ngth @	Break	67 1	N/mm	3	8 <b>4</b> pp	yi <b>4</b> ,1	804	psi
•	′ield		Average	Elon	gation	@ Break	%				881	1.0	
Dimension ASTM D12	al Stability 04 (Modified)		Average I	Dime	ensiona	I Change	%				-0.	20	
Tear Resis ASTM D10	tance 04 (Modified)		Average <sup>-</sup>	Tear	Resist	ance		342	N		77.0	00	lbs
Puncture R FTMS 101	Resistance Method 2065 (Mc	odified)	Load					636	Ν		1	43	lbs
Puncture R ASTM D48	Resistance 33 (Modified)		Load					805	N		1	81	lbs
ESCR ASTM D16	93		Minimum	n Hrs	sw/of	ailures	1500 hrs				CERTIFII	ED	







ROLL #	F14C056	5110	Lot #		CDH81	2030	Line	er Type	e:SMC	DOTH L	_LC	PE
Thickness Measureme ASTM D519 (Modified)		MIN: MAX: AVE:	METRIC 2.454 mm 2.927 mm 2.642 mm	115	LISH mil mil mil	Thickness Length Width OIT(Standard)	10 7	2.5mm 02.109 7.01 M D3895	<b>100</b> r m m 5 minu	335 23.0	fee fe <b>202</b>	et
Specific G ASTM D79			Density			g/cc				.9:	35	
MFI ASTM COND. E GRADE:	D1238	7104	Melt Flow Inde	ex 190'	°C /2160	g - g/10 min					30	
Carbon Bla ASTM D42	ack Content		Range			%				2.2	28	
Carbon Bla ASTM D55	ack Dispersion 96		Category							10 In Cat	t <b>1</b>	
Tensile Str ASTM D66 ASTM D63 ( 2 inches /	93 8 (Modified)		Average Strer	ngth @	Break	67	N/mm	3	8 <b>4</b> pp	i <b>4,</b> 8	304	psi
•	ïeld		Average Elon	gation	@ Break	%				881	.0	
Dimension ASTM D12	al Stability 04 (Modified)		Average Dime	ensiona	al Change	%				-0.:	20	
Tear Resis ASTM D10	tance 04 (Modified)		Average Tear	Resist	ance		342	Ν		77.00	00	lbs
Puncture F FTMS 101	Resistance Method 2065 (Mo	odified)	Load				636	Ν		1	43	lbs
Puncture F ASTM D48	Resistance 33 (Modified)		Load				805	Ν		1	81	lbs
ESCR ASTM D16	93		Minimum Hrs	s w / o	Failures	1500 hrs			(	CERTIFIE	ED	







ROLL #	F14C056	6111	Lot #		CDH81	2030	Line	er Type	:SMC	OTH L	LC.	PE
Thickness Measureme ASTM D519 (Modified)	nt	MIN: MAX: AVE:	METRIC 2.485 mm 2.931 mm 2.641 mm	115	LISH mil mil mil	Thickness Length Width OIT(Standard)	10 7	.5mm 02.109 7.01 M D3895	100n m m 5 minu	335 23.0	fee fe 202	et
Specific G ASTM D79	•		Density			g/cc				.93	35	
MFI ASTM COND. E GRADE:	D1238	7104	Melt Flow Inde	ex 190 <sup>0</sup>	°C /2160	g - g/10 min					30	
Carbon Bla ASTM D42	ack Content		Range			%				2.2	28	
Carbon Bla ASTM D55	ack Dispersion 96		Category							10 In Cat	: 1	
Tensile Str ASTM D66 ASTM D63 ( 2 inches /	93 8 (Modified)		Average Strer	ngth @	Break	67	N/mm	3	8 <b>4</b> ppi	i 4,8	304	psi
•	ïeld		Average Elon	gation	@ Break	%				881	.0	
Dimension ASTM D12	al Stability 04 (Modified)		Average Dime	ensiona	al Change	%				-0.:	20	
Tear Resis ASTM D10	tance 04 (Modified)		Average Tear	Resist	ance		342	N		77.00	00	lbs
Puncture F FTMS 101	Resistance Method 2065 (Me	odified)	Load				636	N		1	43	lbs
Puncture F ASTM D48	Resistance 33 (Modified)		Load				805	N		1	81	lbs
ESCR ASTM D16	93		Minimum Hrs	sw/ol	Failures	1500 hrs			(	CERTIFIE	ED	







ROLL #	F14C056	5112	Lot #		CDH81	2030	Line	er Type	e:SMO	oth li	DPE
Thickness Measureme ASTM D519 (Modified)	nt 19	MIN: MAX: AVE:	METRIC 2.462 mm 2.918 mm 2.618 mm	115	ISH mil mil mil	Thickness Length Width OIT(Standard)	1( 7	.5mm 02.109 7.01 M D3895	100m m m 5 minut	335 23.0	feet feet
Specific Gr ASTM D79	•		Density			g/cc				.930	6
MFI ASTM COND. E GRADE:	D1238	7104	Melt Flow Inde	ex 190 <sup>0</sup>	PC /2160	g - g/10 min				.30	)
Carbon Bla ASTM D42	ack Content 18		Range			%				2.20	6
Carbon Bla ASTM D55	ack Dispersion 96		Category						1	0 In Cat ′	I
Tensile Str ASTM D66 ASTM D63 ( 2 inches /	93 8 (Modified)		Average Strer	ngth @	Break	69	N/mm	3	9 <b>2</b> ppi	4,89	<b>9</b> psi
-	ïeld		Average Elon	gation	@ Break	%				869.5	5
Dimension ASTM D12	al Stability 04 (Modified)		Average Dime	ensiona	l Change	%				-0.2	D
Tear Resis ASTM D10	tance 04 (Modified)		Average Tear	Resist	ance		340	N		76.500	) Ibs
Puncture R FTMS 101	esistance Method 2065 (Mo	odified)	Load				623	N		14	) Ibs
Puncture R ASTM D48	esistance 33 (Modified)		Load				836	N		18	B lbs
ESCR ASTM D16	93		Minimum Hrs	sw/ol	Failures	1500 hrs			С	ERTIFIE	)







ROLL #	F14C056	5113	Lot #		CDH81	2030	Line	er Type	e:SMO	OTH L	LD	PE
Thickness Measuremer ASTM D519 (Modified)	nt	MIN: MAX: AVE:	METRIC 2.458 mm 2.927 mm 2.629 mm	115	ISH mil mil mil	Thickness Length Width OIT(Standard)	1( 7	. <b>5mm</b> 02.109 7.01 M D3895	100m m m 5 minut	335 23.0	fee fee 202	et
Specific Gra ASTM D792			Density			g/cc				.93	6	
MFI ASTM COND. E GRADE:	D1238	7104	Melt Flow Inde	ex 190º	PC /2160	g - g/10 min				.3	0	
Carbon Bla ASTM D42			Range			%				2.2	6	
Carbon Bla ASTM D55	ck Dispersion 96		Category						1	10 In Cat	1	
Tensile Stre ASTM D66 ASTM D63 ( 2 inches /	93 8 (Modified)		Average Strer	ngth @	Break	69	N/mm	3	9 <b>2</b> ppi	4,8	99	psi
Elongation ASTM D63 ( 2 inches / Lo = 1.3" Y Lo = 2.0" B	minute) ield		Average Elon	gation	@ Break	%				869.	5	
Dimensiona ASTM D12	al Stability 04 (Modified)		Average Dime	ensiona	Il Change	. %				-0.2	0	
Tear Resist ASTM D10	ance 04 (Modified)		Average Tear	Resist	ance		340	N		76.50	0	lbs
Puncture R FTMS 101	esistance Method 2065 (Mo	odified)	Load				623	N		14	0	lbs
Puncture R ASTM D48	esistance 33 (Modified)		Load				836	N		18	8	lbs
ESCR ASTM D16	93		Minimum Hrs	sw/oF	Failures	1500 hrs			C	ERTIFIE	D	







ROLL #	F14C056	5114	Lot #	ŧ		CDH81	2030	Line	er Type	e:SM	оотн		<b>DPE</b>
Thickness Measureme ASTM D519 (Modified)	nt	MIN: MAX: AVE:	METRIC 2.431 n 2.935 n	nm nm		ISH mil mil mil	Thickness Length Width OIT(Standard)	1	2.5mm 02.109 7.01 M D3895	100 m m 5 min	mil 335 23.0 utes	fe fe 202	et
Specific Gr ASTM D79			Density				g/cc				.9	36	
MFI ASTM COND. E GRADE:	D1238	7104	Melt Flow	Inde	ex 190º	PC /2160	g - g/10 min				•	.30	
Carbon Bla ASTM D42	ack Content		Range				%				2.	.26	
Carbon Bla ASTM D55	ack Dispersion 96		Category								10 In Ca	t 1	
Tensile Str ASTM D66 ASTM D63 ( 2 inches /	93 88 (Modified)		Average S	strer	ngth @	Break	69 1	N/mm	3	9 <b>2</b> pj	pi <b>4,</b>	899	psi
•	'ield		Average E	ilon	gation	@ Break	%				869	9.5	
Dimension ASTM D12	al Stability 04 (Modified)		Average D	)ime	ensiona	l Change	e %				-0.	.20	
Tear Resis ASTM D10	tance 04 (Modified)		Average T	ear	Resist	ance		340	Ν		76.5	00	lbs
Puncture R FTMS 101	Resistance Method 2065 (Mo	odified)	Load					623	Ν		1	40	lbs
Puncture R ASTM D48	Resistance 33 (Modified)		Load					836	N		1	88	lbs
ESCR ASTM D16	93		Minimum	Hrs	sw/oF	ailures	1500 hrs				CERTIFI	ED	







ROLL #	F14C057	'115	Lot #		CDH81	2030	Line	er Type	e:SMO	OTH LI	DPE
Thickness Measureme ASTM D519 (Modified)	nt	MIN: MAX: AVE:	METRIC 2.47 mm 2.928 mm 2.603 mm	115	ISH mil mil mil	Thickness Length Width OIT(Standard)	1( 7	. <b>5mm</b> 02.109 7.01 M D3895	100m m m 5 minut	335 23.0	feet feet <b>02</b>
Specific G ASTM D79			Density			g/cc				.936	5
MFI ASTM COND. E GRADE:	D1238	7104	Melt Flow Inde	ex 190 <sup>0</sup>	PC /2160	g - g/10 min				.3(	)
Carbon Bla ASTM D42	ack Content		Range			%				2.29	)
Carbon Bla ASTM D55	ack Dispersion 96		Category						1	0 In Cat 1	
Tensile Str ASTM D66 ASTM D63 ( 2 inches /	93 8 (Modified)		Average Strer	ngth @	Break	69	N/mm	3	9 <b>2</b> ppi	4,89	<b>9</b> psi
-	ïeld		Average Elon	gation	@ Break	%				869.5	5
Dimension ASTM D12	al Stability 04 (Modified)		Average Dime	ensiona	Il Change	. %				-0.20	)
Tear Resis ASTM D10	tance 04 (Modified)		Average Tear	Resist	ance		340	N		76.500	) Ibs
Puncture F FTMS 101	Resistance Method 2065 (Mo	odified)	Load				623	N		140	) Ibs
Puncture F ASTM D48	Resistance 33 (Modified)		Load				836	N		188	3 lbs
ESCR ASTM D16	93		Minimum Hrs	sw/ol	Failures	1500 hrs			С	ERTIFIED	)







ROLL #	F14C057	'116	Lot #		CDH81	2030	Line	er Type	e:SMO	OTH L	LDP	Έ
Thickness Measureme ASTM D519 (Modified)	nt 19	MIN: MAX: AVE:	METRIC 2.44 mm 2.923 mm 2.627 mm	115	ISH mil mil mil	Thicknes Length Width OIT(Standard)	1( 7	.5mm )2.109 7.01 // D3895	<b>100m</b> m m 5 minute	335 23.0	feet feet	
Specific Gr ASTM D79	•		Density			g/cc				.93	6	
MFI ASTM COND. E GRADE:	D1238	7104	Melt Flow Ind	ex 190º	PC /2160	g - g/10 min				.3	0	
Carbon Bla ASTM D42	ack Content 18		Range			%				2.2	9	
Carbon Bla ASTM D55	ack Dispersion 96		Category						1	0 In Cat	1	
Tensile Str ASTM D66 ASTM D63 ( 2 inches /	93 8 (Modified)		Average Strei	ngth @	Break	69	N/mm	3	<b>392</b> ppi	4,89	<b>99</b> ps	Si
-	ïeld		Average Elon	gation	@ Break	%				869.	5	
Dimension ASTM D12	al Stability 04 (Modified)		Average Dime	ensiona	Il Change	e %				-0.2	0	
Tear Resis ASTM D10	tance 04 (Modified)		Average Tear	Resist	ance		340	N		76.50	<b>0</b> lb:	s
Puncture R FTMS 101	esistance Method 2065 (Mc	odified)	Load				623	N		14	<b>0</b> lb:	S
Puncture R ASTM D48	esistance 33 (Modified)		Load				836	N		18	<b>8</b> lb:	S
ESCR ASTM D16	93		Minimum Hrs	sw/of	Failures	1500 hrs			С	ERTIFIEI	D	







ROLL #	F14C057	117	Lot #		CDH81	2030	Line	er Type	e:SMO	OTH L	LDI	PE
Thickness Measureme ASTM D519 (Modified)	nt 99	MIN: MAX: AVE:	METRIC 2.443 mm 2.926 mm 2.613 mm	115	ISH mil mil mil	Thicknes Length Width OIT(Standard)	1( 7	.5mm 02.109 7.01 M D3895	100m m m 5 minute	335 23.0	feet feet	
Specific Gi ASTM D79	•		Density			g/cc				.93	6	
MFI ASTM COND. E GRADE:	D1238	7104	Melt Flow Inde	ex 190º	PC /2160	g - g/10 min				.3	0	
Carbon Bla ASTM D42	ack Content 18		Range			%				2.2	6	
Carbon Bla ASTM D55	ack Dispersion 96		Category						1	0 In Cat	1	
Tensile Str ASTM D66 ASTM D63 ( 2 inches /	93 8 (Modified)		Average Strer	ngth @	Break	69	N/mm	3	<b>94</b> ppi	4,92	<b>23</b> p	osi
-	ïeld		Average Elon	gation	@ Break	%				876.	5	
Dimension ASTM D12	al Stability 04 (Modified)		Average Dime	ensiona	l Change	e %				-0.2	0	
Tear Resis ASTM D10	tance 04 (Modified)		Average Tear	Resista	ance		340	N		76.50	<b>0</b>	bs
Puncture F FTMS 101	Resistance Method 2065 (Mo	dified)	Load				623	N		14	<b>0</b>	bs
Puncture F ASTM D48	Resistance 33 (Modified)		Load				836	N		18	8	bs
ESCR ASTM D16	93		Minimum Hrs	sw/oF	ailures	1500 hrs			С	ERTIFIE	D	







ROLL #	F14C057	′118	Lot #		CDH81	2030	Line	er Type	e:SMO	OTH L	.LD	PE
Thickness Measureme ASTM D519 (Modified)		MIN: MAX: AVE:	METRIC 2.464 mm 2.929 mm 2.614 mm	115	ISH mil mil mil	Thickness Length Width OIT(Standard)	1( 7	.5mm 02.109 7.01 M D3895	100m m m 5 minut	335 23.0	fee fee 202	et
Specific Gr ASTM D79	•		Density			g/cc				.93	36	
MFI ASTM COND. E GRADE:	D1238	7104	Melt Flow Inde	ex 190º	PC /2160	g - g/10 min					30	
Carbon Bla ASTM D42	ack Content		Range			%				2.2	26	
Carbon Bla ASTM D55	ack Dispersion 96		Category						1	0 In Cat	1	
Tensile Str ASTM D66 ASTM D63 ( 2 inches /	93 8 (Modified)		Average Strer	ngth @	Break	69	N/mm	3	9 <b>4</b> ppi	4,9	923	psi
-	′ield		Average Elon	gation	@ Break	%				876	.5	
Dimension ASTM D12	al Stability 04 (Modified)		Average Dime	ensiona	l Change	%				-0.2	20	
Tear Resis ASTM D10	tance 04 (Modified)		Average Tear	Resist	ance		340	N		76.50	00	lbs
Puncture R FTMS 101	Resistance Method 2065 (Mc	odified)	Load				623	N		14	40	lbs
Puncture R ASTM D48	Resistance 33 (Modified)		Load				836	N		18	88	lbs
ESCR ASTM D16	93		Minimum Hrs	sw/of	ailures	1500 hrs			С	ERTIFIE	Ð	







ROLL #	F14C057	<b>'</b> 119	Lot	#		CDH81	2030	Line	er Type	e:SMC	отн і		PE
Thickness Measureme ASTM D519 (Modified)	nt	MIN: MAX: AVE:	METR <b>2.455</b>	mm mm	115	LISH mil mil mil	Thickness Length Width OIT(Standard)	1) 7	2.5mm 02.109 7.01 M D3895	100n m m 5 minu	335 23.0	fee fe 202	et
Specific G ASTM D79	•		Density				g/cc				.9	36	
MFI ASTM COND. E GRADE:	D1238	7104	Melt Flov	v Inde	ex 190'	°C /2160	g - g/10 min				-	30	
Carbon Bla ASTM D42	ack Content		Range				%				2.	26	
Carbon Bla ASTM D55	ack Dispersion 96		Category	,							10 In Ca	t 1	
Tensile Str ASTM D66 ASTM D63 ( 2 inches )	93 8 (Modified)		Average	Strer	ngth @	Break	69 1	N/mm	3	9 <b>4</b> ppi	4,9	923	psi
-	ïeld		Average	Elon	gation	@ Break	%				876	ò.5	
Dimension ASTM D12	al Stability 04 (Modified)		Average	Dime	ensiona	al Change	e %				-0.	20	
Tear Resis ASTM D10	tance 04 (Modified)		Average	Tear	Resist	tance		340	Ν		76.5	00	lbs
Puncture F FTMS 101	Resistance Method 2065 (Mo	odified)	Load					623	N		1	40	lbs
Puncture F ASTM D48	Resistance 33 (Modified)		Load					836	Ν		1	88	lbs
ESCR ASTM D16	93		Minimun	n Hrs	sw/o	Failures	1500 hrs			C	CERTIFI	ED	







ROLL #	F14C057	<b>'120</b>	Lot #		CDH81	2030	Line	er Type	:SMO	oth li	DPE	Е
Thickness Measureme ASTM D519 (Modified)	nt	MIN: MAX: AVE:	METRIC 2.449 mm 2.944 mm 2.626 mm	116	ISH mil mil mil	Thickness Length Width OIT(Standard)	1( 7	.5mm 02.109 7.01 M D3895	100m m m 5 minut	335 23.0	feet feet	
Specific G ASTM D79	•		Density			g/cc				.930	6	
MFI ASTM COND. E GRADE:	D1238	7104	Melt Flow Inde	ex 190 <sup>0</sup>	PC /2160	g - g/10 min				.3(	)	
Carbon Bla ASTM D42	ack Content		Range			%				2.37	7	
Carbon Bla ASTM D55	ack Dispersion 96		Category						1	0 In Cat <sup>-</sup>	1	
Tensile Str ASTM D66 ASTM D63 ( 2 inches /	93 8 (Modified)		Average Strer	ngth @	Break	<b>6</b> 9	N/mm	3	9 <b>4</b> ppi	4,92	2 <b>3</b> psi	i
-	ïeld		Average Elon	gation	@ Break	%				876.	5	
Dimension ASTM D12	al Stability 04 (Modified)		Average Dime	ensiona	l Change	e %				-0.20	0	
Tear Resis ASTM D10	tance 04 (Modified)		Average Tear	Resist	ance		340	N		76.500	) Ibs	3
Puncture F FTMS 101	Resistance Method 2065 (Mo	odified)	Load				623	N		14	<b>)</b> Ibs	3
Puncture F ASTM D48	Resistance 33 (Modified)		Load				836	N		18	<b>B</b> lbs	3
ESCR ASTM D16	93		Minimum Hrs	sw/ol	ailures	1500 hrs			С	ERTIFIE	)	







ROLL #	F14C057	<b>'121</b>	Lot	#		CDH81	2030	Line	er Type	e:SMO	OTH L	_LC	PE
Thickness Measureme ASTM D519 (Modified)	nt	MIN: MAX: AVE:	METR <b>2.439</b>	mm mm	115	ISH mil mil mil	Thickness Length Width OIT(Standard)	10 7	2. <b>5mm</b> 02.109 7.01 M D3895	<b>100m</b> m m 5 minu	335 23.0	fee fe	et
Specific Gr ASTM D79	•		Density				g/cc				.9:	36	
MFI ASTM COND. E GRADE:	D1238	7104	Melt Flow	/ Inde	ex 190º	PC /2160	g - g/10 min				.:	30	
Carbon Bla ASTM D42	ack Content 18		Range				%				2.3	37	
Carbon Bla ASTM D55	ack Dispersion 96		Category							1	10 In Cat	t 1	
Tensile Str ASTM D66 ASTM D63 ( 2 inches /	93 8 (Modified)		Average	Strer	ngth @	Break	69 1	N/mm	3	3 <b>94</b> ppi	4,9	923	psi
-	ïeld		Average	Elon	gation	@ Break	%				876	6.5	
Dimension ASTM D12	al Stability 04 (Modified)		Average	Dime	ensiona	l Change	. %				-0.:	20	
Tear Resis ASTM D10	tance 04 (Modified)		Average	Tear	Resist	ance		340	N		76.5	00	lbs
Puncture R FTMS 101	Resistance Method 2065 (Mo	odified)	Load					623	N		1	40	lbs
Puncture R ASTM D48	Resistance 33 (Modified)		Load					836	N		1	88	lbs
ESCR ASTM D16	93		Minimun	n Hrs	sw/of	ailures	1500 hrs			C	ERTIFIE	ED	







ROLL # <b>F14C05</b>	57122	Lot	#		CDH81	2030	Line	er Type	e:SMO	oth l	LDI	PE
Thickness Measurement ASTM D5199 (Modified)	MIN: MAX: AVE:	METR 2.444 2.89 2.62	mm mm	ENGL 96 114 103	ISH mil mil mil	Thickness Length Width OIT(Standard)	10 7	2.5mm 02.109 7.01 M D3895	100m m m 5 minut	335 23.0	feet feet	
Specific Gravity ASTM D792		Density				g/cc				.93	6	
MFI ASTM D1238 COND. E GRADE:	7104	Melt Flov	v Ind	ex 190 <sup>0</sup>	PC /2160	g - g/10 min				.3	D	
Carbon Black Content ASTM D4218		Range				%				2.3	7	
Carbon Black Dispersion ASTM D5596		Category	/						1	0 In Cat	1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) ( 2 inches / minute )		Average	Strei	ngth @	Break	<b>6</b> 9	N/mm	3	<b>94</b> ppi	4,92	<b>23</b> p	osi
Elongation ASTM D-6693 ASTM D638 (Modified) ( 2 inches / minute ) Lo = 1.3" Yield Lo = 2.0" Break		Average	Elon	gation	@ Break	%				876.	5	
Dimensional Stability ASTM D1204 (Modified)		Average	Dime	ensiona	Il Change	e %				-0.2	0	
Tear Resistance ASTM D1004 (Modified)		Average	Tear	Resist	ance		340	N		76.50	<b>D</b>	bs
Puncture Resistance FTMS 101 Method 2065 (	Modified)	Load					623	N		14	<b>0</b>	bs
Puncture Resistance ASTM D4833 (Modified)		Load					836	Ν		18	<b>8</b>	bs
ESCR ASTM D1693		Minimu	n Hrs	sw/ol	Failures	1500 hrs			С	ERTIFIE	D	







ROLL #	F14C057	<b>'</b> 123	Lot #		CDH81	2030	Line	er Type	e:SMO	oth li	DPE
Thickness Measureme ASTM D519 (Modified)	nt	MIN: MAX: AVE:	METRIC 2.488 mm 2.725 mm 2.593 mm	107	ISH mil mil mil	Thickness Length Width OIT(Standard)	1( 7	2.5mm 02.109 7.01 M D3895	100m m m 5 minut	335 23.0	feet feet 02
Specific Gr ASTM D79	•		Density			g/cc				.936	5
MFI ASTM COND. E GRADE:	D1238	7104	Melt Flow Inde	ex 190 <sup>0</sup>	°C /2160	g - g/10 min				.3(	)
Carbon Bla ASTM D42	ack Content		Range			%				2.37	7
Carbon Bla ASTM D55	ack Dispersion 96		Category						1	0 In Cat 1	
Tensile Str ASTM D66 ASTM D63 ( 2 inches /	93 8 (Modified)		Average Strer	ngth @	Break	69	N/mm	3	9 <b>4</b> ppi	4,92	2 <b>3</b> psi
-	ïeld		Average Elon	gation	@ Break	%				876.5	5
Dimension ASTM D12	al Stability 04 (Modified)		Average Dime	ensiona	al Change	e %				-0.20	)
Tear Resis ASTM D10	tance 04 (Modified)		Average Tear	Resist	ance		340	N		76.500	) Ibs
Puncture R FTMS 101	Resistance Method 2065 (Mo	odified)	Load				623	Ν		140	<b>)</b> Ibs
Puncture R ASTM D48	Resistance 33 (Modified)		Load				836	N		188	B lbs
ESCR ASTM D16	93		Minimum Hrs	sw/ol	Failures	1500 hrs			С	ERTIFIED	)





## Appendix I.6

## Secondary (100-mil LLDPE SSMS) Geomembrane Resin Quality Control Certificates



Shipped To: AGRU AMERICA INC:FERNLEY Delivery #: 88772984 PO #: 007935 2000 EAST NEWLANDS FERNLEY NV 89408 Weight: 190850 LB Ship Date: 12/21/2013 USA Package: BULK Recipient: PALMER Mode: Hopper Car Car #: CEFX054223 Fax: Seal No: 550196

#### Product: PE 7104 BULK

#### Lot Number: CDN810200

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.34	g/10mi
HLMI	ASTM D1238	14.47	g/10mi
Pellet Count	ST-905	33	pel/g
Production date		20131204	1 0
Density	D1505 or D4883	0.919	g/cm3

The data set forth herein have been carefully compiled by Chevron Phillips Chemical Company LP (CPChem). However, there is no warranty of any kind, either expressed or implied, applicable to its use, and the user assumes all risk and liability in connection therewith.

5 Ken ayn

Kevin Ayres Quality Control Supervisor



Shipped To: AGRU AMERICA INC:FERNLEY Delivery #: 88772985 PO #: 007935 2000 EAST NEWLANDS FERNLEY NV 89408 Weight: 189000 LB Ship Date: 12/21/2013 USA Package: BULK Recipient: PALMER Mode: Hopper Car NAHX610020 Car #: Fax: Seal No: 542563

#### Product: PE 7104 BULK

#### Lot Number: CDH812030

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.30	g/10mi
HLMI	ASTM D1238	13.26	g/10mi
Pellet Count	ST-905	34	pel/g
Production date		20130831	1 0
Density	D1505 or D4883	0.921	g/cm3

The data set forth herein have been carefully compiled by Chevron Phillips Chemical Company LP (CPChem). However, there is no warranty of any kind, either expressed or implied, applicable to its use, and the user assumes all risk and liability in connection therewith.

5 Ken ayn

Kevin Ayres Quality Control Supervisor



Shipped To: AGRU AMERICA INC:FERNLEY Delivery #: 88772983 PO #: 007935 2000 EAST NEWLANDS FERNLEY NV 89408 Weight: 188700 LB Ship Date: 12/21/2013 USA Package: BULK Recipient: PALMER Mode: Hopper Car Car #: CHVX898073 Fax: Seal No: 550194

#### Product: PE 7104 BULK

#### Lot Number: CDH810210

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.33	g/10mi
HLMI	ASTM D1238	15.20	g/10mi
Pellet Count	ST-905	35	pel/g
Production date		20131205	1 0
Density	D1505 or D4883	0.919	g/cm3

The data set forth herein have been carefully compiled by Chevron Phillips Chemical Company LP (CPChem). However, there is no warranty of any kind, either expressed or implied, applicable to its use, and the user assumes all risk and liability in connection therewith.

I fem ayn

Kevin Ayres Quality Control Supervisor



Lili Cui, Ph.D., Geomembrane Technical Service & Applications Development Room 154 PTC 
Bartlesville, OK 74004
918-661-1897 
cuil @cpchem.com 
Fax: 918-662-2220 
www.cpchem.com

June 8, 2012

Grant Palmer Agru America 500 Garrison Road Georgetown, SC 29440

Dear Grant:

This letter is to report the final results of oven-aging and UV-aging tests (according to GRI-GM13 and GRI-GM17) on Agru America sheet samples that you provided to us in 2011. These tests were performed by CPChem's Materials Evaluation Laboratory in Bartlesville, OK. The tests were completed April 2012.

The GRI-GM13 (HDPE) and GRI-GM17 (LLDPE) durability tests were done according to the following procedures.

Test	Exposure	Method
HP-OIT	150 °C, 500 psi oxygen	D5885
Oven Aging	90 days, 85 °C	D5721
UV Aging	1600 UV hrs (Conditions were 20 hours UVA-340 at 75 °C followed by 4 hrs dark with condensation at 60 °C. Irradiance was $0.72 \text{ W/m}^2$ at 340	D7238
	nm.)	

#### **Oven-Aging Results**

Sample	Initial HP-OIT (min)	HP-OIT Value after Oven Aging (min)	% HP-OIT Retained	GRI-GM13 or GRI- GM17 % Retained Requirement
40 mil LLDPE Roll # 346550-11 from Marlex <sup>®</sup> 7104 Polyethylene Lot # CBC810430	659	572	87	60
60 mil HDPE Roll # 447108-11 from Marlex <sup>®</sup> K307 Polyethylene Lot # 71-1-1104	1136	994	88	80

#### **UV-Aging Results**

Sample	Initial HP-OIT (min)	HP-OIT Value after UV Aging (min)	% HP-OIT Retained	GRI-GM13 or GRI- GM17 % Retained Requirement
40 mil LLDPE Roll # 346550-11 from Marlex <sup>®</sup> 7104 Polyethylene Lot # CBC810430	659	449	68	35
60 mil HDPE Roll # 447108-11 from Marlex <sup>®</sup> K307 Polyethylene Lot # 71-1-1104	1136	924	81	50

According to these test results, the durability requirements are met.

If you have any questions, please call me at 918-661-1897.

Sincerely,

fili Cui

Lili Cui, Ph.D. Geomembrane Technical Service & Applications Development

Any technical advice, recommendations, results, or analysis ("Information") contained herein, including, without limitation, Information as it may relate to the selection of a specific product ("Product") for your use and application, is given without warranty or guarantee and is accepted at your sole risk. It is imperative that you test the Information (and Product, if applicable) to determine to your own satisfaction whether the Information (and Product, if applicable) are suitable for your intended use and application. You expressly assume, and release Chevron Phillips Chemical Company, from all risk and liability, whether based in contract, tort or otherwise, in connection with the use of, or results obtained from, such Information (and Product, if applicable).



Lili Cui, Polyethylene Tech Service and Applications Development Room 154 PTC 
Bartlesville, OK 74003
918-977-4685 
cuill@cpchem.com 
Fax: 918-977-7599 
www.cpchem.com

July 10, 2013

Grant Palmer Agru America 500 Garrison Road Georgetown, SC 29440

Dear Grant:

Per your request for this information, there has been no change to the additive formulation specifications of Marlex<sup>®</sup> 7104 and Marlex<sup>®</sup> K307 polyethylene resins since GRI-GM13 and GRI-GM17 oven- and UV-aging testing was performed on Agru America sheet from these resins in December 2012.

If you have any questions, please call me at 918-977-4685.

Sincerely,

the Cui

Lili Cui, Ph.D. Polyethylene Tech Service and Applications Development

Any technical advice, recommendations, results, or analysis ("Information") contained herein, including, without limitation, Information as it may relate to the selection of a specific product ("Product") for your use and application, is given **without warranty or guarantee** and is accepted at your sole risk. It is imperative that you test the Information (and Product, if applicable) to determine to your own satisfaction whether the Information (and Product, if applicable) are suitable for your intended use and application. You expressly assume, and release Chevron Phillips Chemical Company, from all risk and liability, whether based in contract, tort or otherwise, in connection with the use of, or results obtained from, such Information (and Product, if applicable).



# Appendix I.7

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



Shipped To: AGRU AMERICA INC:FERNLEY Delivery #: 88713596 PO #: 007699 2000 EAST NEWLANDS FERNLEY NV 89408 Weight: 179000 LB Ship Date: 09/10/2013 USA Package: BULK Recipient: PALMER Mode: Hopper Car PSPX006890 Car #: Fax: Seal No: 542416

#### Product: PE 7104 BULK

#### Lot Number: CDH811430

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.33	g/10mi
HLMI	ASTM D1238	15.04	g/10mi
Pellet Count	ST-905	33	pel/g
Production date		20130821	1 0
Density	D1505 or D4883	0.918	g/cm3

The data set forth herein have been carefully compiled by Chevron Phillips Chemical Company LP (CPChem). However, there is no warranty of any kind, either expressed or implied, applicable to its use, and the user assumes all risk and liability in connection therewith.

5 Ken ayn

Kevin Ayres Quality Control Supervisor



Shipped To: AGRU AMERICA INC:FERNLEY Delivery #: 88734029 PO #: 007786 2000 EAST NEWLANDS FERNLEY NV 89408 Weight: 189750 LB Ship Date: 10/15/2013 USA Package: BULK Recipient: PALMER Mode: Hopper Car Car #: NAHX620028 Fax: Seal No: 542564

#### Product: PE 7104 BULK

#### Lot Number: CDH812050

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.32	g/10mi
HLMI	ASTM D1238	13.64	g/10mi
Pellet Count	ST-905	33	pel/g
Production date		20130831	1 0
Density	D1505 or D4883	0.920	g/cm3

The data set forth herein have been carefully compiled by Chevron Phillips Chemical Company LP (CPChem). However, there is no warranty of any kind, either expressed or implied, applicable to its use, and the user assumes all risk and liability in connection therewith.

5 Ken ayn

Kevin Ayres Quality Control Supervisor



Shipped To: AGRU AMERICA INC:FERNLEY Delivery #: 88772987 PO #: 007935 2000 EAST NEWLANDS FERNLEY NV 89408 Weight: 188250 LB Ship Date: 12/21/2013 USA Package: BULK Recipient: PALMER Mode: Hopper Car SHPX463703 Car #: Fax: Seal No: 542562

#### Product: PE 7104 BULK

#### Lot Number: CDH812020

Property	Test Method	Value	Unit	
Melt Index	ASTM D1238	0.31	g/10mi	
HLMI	ASTM D1238	13.83	g/10mi	
Pellet Count	ST-905	32	pel/g	
Production date		20130830	1 0	
Density	D1505 or D4883	0.921	g/cm3	

The data set forth herein have been carefully compiled by Chevron Phillips Chemical Company LP (CPChem). However, there is no warranty of any kind, either expressed or implied, applicable to its use, and the user assumes all risk and liability in connection therewith.

5 Ken ayn

Kevin Ayres Quality Control Supervisor



Shipped To: AGRU AMERICA INC:FERNLEY Delivery #: 88772985 PO #: 007935 2000 EAST NEWLANDS FERNLEY NV 89408 Weight: 189000 LB Ship Date: 12/21/2013 USA Package: BULK Recipient: PALMER Mode: Hopper Car NAHX610020 Car #: Fax: Seal No: 542563

#### Product: PE 7104 BULK

#### Lot Number: CDH812030

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.30	g/10mi
HLMI	ASTM D1238	13.26	g/10mi
Pellet Count	ST-905	34	pel/g
Production date		20130831	1 0
Density	D1505 or D4883	0.921	g/cm3

The data set forth herein have been carefully compiled by Chevron Phillips Chemical Company LP (CPChem). However, there is no warranty of any kind, either expressed or implied, applicable to its use, and the user assumes all risk and liability in connection therewith.

5 Ken ayn

Kevin Ayres Quality Control Supervisor



Lili Cui, Ph.D., Geomembrane Technical Service & Applications Development Room 154 PTC 
Bartlesville, OK 74004
918-661-1897 
cuil @cpchem.com 
Fax: 918-662-2220 
www.cpchem.com

June 8, 2012

Grant Palmer Agru America 500 Garrison Road Georgetown, SC 29440

Dear Grant:

This letter is to report the final results of oven-aging and UV-aging tests (according to GRI-GM13 and GRI-GM17) on Agru America sheet samples that you provided to us in 2011. These tests were performed by CPChem's Materials Evaluation Laboratory in Bartlesville, OK. The tests were completed April 2012.

The GRI-GM13 (HDPE) and GRI-GM17 (LLDPE) durability tests were done according to the following procedures.

Test	Exposure	Method
HP-OIT	150 °C, 500 psi oxygen	D5885
Oven Aging	90 days, 85 °C	D5721
UV Aging	1600 UV hrs (Conditions were 20 hours UVA-340 at 75 °C followed by 4 hrs dark with condensation at 60 °C. Irradiance was $0.72 \text{ W/m}^2$ at 340	D7238
	nm.)	

#### **Oven-Aging Results**

Sample	Initial HP-OIT (min)	HP-OIT Value after Oven Aging (min)	% HP-OIT Retained	GRI-GM13 or GRI- GM17 % Retained Requirement
40 mil LLDPE Roll # 346550-11 from Marlex <sup>®</sup> 7104 Polyethylene Lot # CBC810430	659	572	87	60
60 mil HDPE Roll # 447108-11 from Marlex <sup>®</sup> K307 Polyethylene Lot # 71-1-1104	1136	994	88	80

#### **UV-Aging Results**

Sample	Initial HP-OIT (min)	HP-OIT Value after UV Aging (min)	% HP-OIT Retained	GRI-GM13 or GRI- GM17 % Retained Requirement
40 mil LLDPE Roll # 346550-11 from Marlex <sup>®</sup> 7104 Polyethylene Lot # CBC810430	659	449	68	35
60 mil HDPE Roll # 447108-11 from Marlex <sup>®</sup> K307 Polyethylene Lot # 71-1-1104	1136	924	81	50

According to these test results, the durability requirements are met.

If you have any questions, please call me at 918-661-1897.

Sincerely,

fili Cui

Lili Cui, Ph.D. Geomembrane Technical Service & Applications Development

Any technical advice, recommendations, results, or analysis ("Information") contained herein, including, without limitation, Information as it may relate to the selection of a specific product ("Product") for your use and application, is given without warranty or guarantee and is accepted at your sole risk. It is imperative that you test the Information (and Product, if applicable) to determine to your own satisfaction whether the Information (and Product, if applicable) are suitable for your intended use and application. You expressly assume, and release Chevron Phillips Chemical Company, from all risk and liability, whether based in contract, tort or otherwise, in connection with the use of, or results obtained from, such Information (and Product, if applicable).



Lili Cui, Polyethylene Tech Service and Applications Development Room 154 PTC 
Bartlesville, OK 74003
918-977-4685 
cuill@cpchem.com 
Fax: 918-977-7599 
www.cpchem.com

July 10, 2013

Grant Palmer Agru America 500 Garrison Road Georgetown, SC 29440

Dear Grant:

Per your request for this information, there has been no change to the additive formulation specifications of Marlex<sup>®</sup> 7104 and Marlex<sup>®</sup> K307 polyethylene resins since GRI-GM13 and GRI-GM17 oven- and UV-aging testing was performed on Agru America sheet from these resins in December 2012.

If you have any questions, please call me at 918-977-4685.

Sincerely,

the Cui

Lili Cui, Ph.D. Polyethylene Tech Service and Applications Development

Any technical advice, recommendations, results, or analysis ("Information") contained herein, including, without limitation, Information as it may relate to the selection of a specific product ("Product") for your use and application, is given **without warranty or guarantee** and is accepted at your sole risk. It is imperative that you test the Information (and Product, if applicable) to determine to your own satisfaction whether the Information (and Product, if applicable) are suitable for your intended use and application. You expressly assume, and release Chevron Phillips Chemical Company, from all risk and liability, whether based in contract, tort or otherwise, in connection with the use of, or results obtained from, such Information (and Product, if applicable).


# Appendix I.8

# Welding Rod Resin Quality Control Certificates



Welding Rod Thickness : 5mm

# Lot Number : CDN 810330

# Material: 7104

		Test Results	
Carbon Black Content : ASTM D4218		2.14	%
Melt Flow Index : Cond. E ASTM D1238	190ºC / 2160g	.35	g / 10min
Specific Gravity : ASTM D792 / D1505		.935	g / cm³

P. O. # : 14084 CC&V Squaw Gulch VLF

DESTINATION : Cripple Creek, CO

Signature :

Date : \_\_\_\_3-4-14

Mgr., Quality Control Department

WELDROD.FRM REV 04 3/16/01



# **Certificate of Analysis**

Shipped To: AGRU AMERICA INC:FERNLEY Delivery #: 88775293 PO #: 007935 2000 EAST NEWLANDS FERNLEY NV 89408 Weight: 188150 LB Ship Date: 12/30/2013 USA Package: BULK Recipient: PALMER Mode: Hopper Car Car #: CEFX053876 Fax: Seal No: 550295

### Product: PE 7104 BULK

### Lot Number: CDN810330

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.35	g/10mi
HLMI	ASTM D1238	14.36	g/10mi
Pellet Count	ST-905	32	pel/g
Production date		20131207	1 0
Density	D1505 or D4883	0.919	g/cm3

The data set forth herein have been carefully compiled by Chevron Phillips Chemical Company LP (CPChem). However, there is no warranty of any kind, either expressed or implied, applicable to its use, and the user assumes all risk and liability in connection therewith.

5 Ken ayn

Kevin Ayres Quality Control Supervisor

For CoA questions contact Customer Service Representative at +1-832-813-4806



Welding Rod Thickness : 5mm

# Lot Number : CDF 811450

# Material: 7104

		Test Results	
Carbon Black Content ASTM D4218	:	2.22	%
Melt Flow Index : Cond. E ASTM D1238	190ºC / 2160g	.31	g / 10min
Specific Gravity : ASTM D792 / D1505		.936	g / cm³

CUSTOMER : Erosion Control

P. O. # : 14084 CC&V Squaw Gulch VLF

**DESTINATION :** Cripple Creek, CO

Signature :

Date : \_\_\_\_\_3-4-14

Mgr., Quality Control Department

WELDROD.FRM REV 04 3/16/01



# **Certificate of Analysis**

Shipped To: AGRU AMERICA INC:FERNLEY Delivery #: 88686583 PO #: 007539 2000 EAST NEWLANDS FERNLEY NV 89408 Weight: 189550 LB Ship Date: 07/21/2013 USA Package: BULK Recipient: PALMER Mode: Hopper Car Car #: NAHX610346 Fax: Seal No: 543532

### Product: PE 7104 BULK

### Lot Number: CDF811450

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.31	g/10mi
HLMI	ASTM D1238	13.88	g/10mi
Pellet Count	ST-905	33	pel/g
Production date		20130625	1 0
Density	D1505 or D4883	0.919	g/cm3

## WAIVED BY GUNTHER NIEDERMOSER

The data set forth herein have been carefully compiled by Chevron Phillips Chemical Company LP (CPChem). However, there is no warranty of any kind, either expressed or implied, applicable to its use, and the user assumes all risk and liability in connection therewith.

5 Ken ayn

Kevin Ayres Quality Control Supervisor

For CoA questions contact Customer Service Representative at +1-832-813-4806



# Appendix I.9

# **Geotextile Quality Control Certificates**



February 20, 2012

Bowman Construction Supply Attn: Ken Kinnard 10801 E 54<sup>th</sup> St Denver, CO 80239

Reference: American Recovery & Reinvestment Acts (ARRA) Buy American Requirement FAR 25.6

Dear Ken:

This letter is to certify that the Western Excelsior nonwoven geotextiles meet the manufactured in the United States requirement of the American Recovery & Reinvestment Acts (ARRA) and the Buy American Requirement FAR 25.6

If you have any questions regarding this, please feel free to contact me.

Sincerely,

Keith Gregory 704-200-4912



# Certificate of Compliance

February 16, 2012

Ames Construction Mr. Eric Marolf PO Box 163 Project: Ball Mill Fill Earthwork Victor Cripple Creek Mine

Victor, CO 80860

Ref: 12.0N (Lot # 27218-03)

This letter is to certify that WEC 12.0N is a needle-punched nonwoven geotextile made of 100% polypropylene staple fibers, which are formed into a random network for dimensional stability. WEC 12.0N resists ultraviolet deterioration, rotting, biological degradation, naturally encountered basics and acids. Polypropylene is stable within a pH range of 2 to 13. Excel 12.0N meets or exceeds the physical property values listed below:

PROPERTY	TEST METHOD	UNIT	<b>M.A.R.V.</b> (Minimum Average Roll Value)
Weight	ASTM D 5261	OZ	12.0
Grab Tensile	ASTM D 4632	lbs	300
Grab Elongation	ASTM D 4632	%	50
Trapezoid Tear Strength	ASTM D 4533	lbs	115
Puncture Resistance	ASTM D 4833	lbs	180
CBR Puncture	ASTM D 6241	lbs	850
Permittivity*	ASTM D 4491	sec <sup>-1</sup>	1
AOS*	ASTM D 4751	US Sieve (mm)	100
UV Resistance	ASTM D 4355	%/hrs	70/500

Sincerely,

Keith Gregory Technical Sales Manager

I hereby certify under penalty of perjury that the material listed in this
Certified Test Report represents $\frac{1500 \text{ sy}}{100 \text{ sy}}$ (quantity) of pay item
Day Itam
Project Name: Ball MILE Fill EAr the Project Number: 090601-400
Bull Jac Blailiz
Contract Supplier - Bowman Construction Supply Date



February 16, 2012

Ames Construction Mr. Eric Marolf PO Box 163

Victor, CO 80860

# Certificate of Testing

Victor Cripple Creek Mine Project: Ball Mill Fill Earthwork

Ref: 12.0N (Lot # 27218-03)

This letter is to certify that WEC 12.0N Geotextile stated herein, tested at following values:

			T	T	
Permittivity	ASTM D4491	sec-1	1.13	1.13	1.13
Flow Rate	ASTM D4491	aal/min/sf	85	85	85
AOS	ASTM D4751	US Std Sieve	100	100	100
Puncture	ASTM D4833	sdl	194	186	18
Trap Tear CD	ASTM D4533	sql	137	143	143
Trap Tear MD	ASTM D4533	sdl	124	120	120
Elongation CD	ASTM D4635	sdl	78	80	80
Grab Tensile CD	ASTM D4634	sql	340	336	336
Elongation MD	ASTM D4633	%	76	78	78
Grab Tensile MD	ASTM D4632	sql	314	309	309
Weight	ASTM D 5261	oz/sy	12.48	12.36	12.36
WEC 12.0N	Lot Number		27218-03	27218-03	27218-03
WEC 12.0N	Roll Number		30374164	30374173	30374174

Sincerely,

Keith Gregory – Technical Sales Manager 0 Let

Project Name: Ball Mult Fill Edual work Project Number: 090601-400 2 I hereby certify under penalty of perjury that the material listed in this Certified Test Report represents 1500 sy (quantity) of pay item Date Contract Supplier - Bowman Construction Supply Pay Item: Rolla



March 14, 2012

Ames Construction Mr. Eric Marolf PO Box 163 Project: Ball Mill Fill Earthwork Victor Cripple Creek Mine

Victor, CO 80860

Ref: 12.0N (Lot # 8192011)

This letter is to certify that WEC 12.0N is a needle-punched nonwoven geotextile made of 100% polypropylene staple fibers, which are formed into a random network for dimensional stability. WEC 12.0N resists ultraviolet deterioration, rotting, biological degradation, naturally encountered basics and acids. Polypropylene is stable within a pH range of 2 to 13. Excel 12.0N meets or exceeds the physical property values listed below:

PROPERTY	TEST METHOD UNIT		<b>M.A.R.V.</b> (Minimum Average Roll Value)
Weight	ASTM D 5261	OZ	12.0
Grab Tensile	ASTM D 4632	lbs	300
Grab Elongation	ASTM D 4632	%	50
Trapezoid Tear Strength	ASTM D 4533	lbs	115
Puncture Resistance	ASTM D 4833	lbs	180
CBR Puncture	ASTM D 6241	lbs	850
Permittivity*	ASTM D 4491	sec <sup>-1</sup>	1
AOS*	ASTM D 4751	US Sieve (mm)	100
UV Resistance	ASTM D 4355	%/hrs	70/500

Sincerely,

Keith Gregory

I hereby certify under penalty of perjury that the material listed in this Certified Test Report represents <u>/ Coosy</u> (quantity) of pay item <u>Pay Item:</u> <u>Project Name: Ball Mill Fill Farth work Project Number:</u> 090601-400 <u>Bull Mill Fill Farth work Project Number:</u> 090601-400 <u>Contract Supplier - Bowman Construction Supply</u> Date



# Certificate of Testing

March 14, 2012

Ames Construction Mr. Eric Marolf PO Box 163

Victor, CO 80860

Project: Ball Mill Fill Earthwork Victor Cripple Creek Mine Ref: 12.0N (Lot #8192011)

This letter is to certify that WEC 12.0N Geotextile stated herein, tested at following values:

Permittivity	ASTM D4491	sec-1	0.98	0.98	
Flow Rate	ASTM D4491	gal/min/sf	73	73	
AOS	ASTM D4751	US Std Sieve	100	100	
Puncture	ASTM D4833	sql	199	191	
Trap Tear CD	ASTM D4533	sdl	152	149	
Trap Tear MD	ASTM D4533	sql	139	133	
Elongation CD	ASTM D4635	sdl	88	83	
Grab Tensile CD	ASTM D4634	sdl	363	359	
Elongation MD	ASTM D4633	%	77	72	
Grab Tensile MD	ASTM D4632	lbs	342	338	
Weight	ASTM D 5261	oz/sy	12.67	12.29	
WEC 12.0N	Lot Number		8192011	8192011	
WEC 12.0N	Roll Number		020272918	020272928	

Sincerely,

Keith Gregory



August 19, 2011

RE: Buy America Act – Construction Materials Federal Acquisition Regulation 52.225-9

The following Mirafi<sup>®</sup> products are manufactured and produced in the United States:

N-Series Nonwoven Geotextiles: 135N, 140NL, 140NC, 140N, 170N, 180N, 1100N, 1120N, 1160N S-Series Nonwven Geotexitles: S600, S800, S1000, S1200, S1600 Paving Products: MPV, FG, FGC, MTK, 1450BB Filterweave Geotextiles: FW300, FW402, FW403, FW500, FF101 G-Series: G100N, G100W, G200N HP-Series Geotextiles: HP270, HP565, HP665, HP770, Miramesh RSi Series Geotextiles: RS380i, RS580i HS-Series Geotextiles: HS400, HS600, HS800, HS1150, HS1715 Miragrid XT Geogrids: 2XT, 3XT, 5XT, 7XT, 8XT, 10XT, 20XT, 22XT, 24XT BXG Geogrids: BXG10, BXG11, BXG12

These products meet the requirements to be classified as a "Domestic Construction Material" under Section 52.225-9 Buy American Act – Construction Materials.

Sincerely,

Jeri Krock

Teri Krock Senior Product Manager

TenCate Geosynthetics North America 365 South Holland Drive, Pendergrass, GA 30567 (706) 693-2226 Fax: (706) 693-4400

# **MIRAFI 1120N Certification**

ATTN: ERIC MAROLF AMES CONSTRUCTION, INC. P.O. BOX 163 VICTOR, COLORADO 80860-0163

Project: 090601-400 Proj Name: BALL MILL FILL EARTHWORK Contractor: AMES CONSTRUCTION, INC. QTY: 3 ROLLS (SEE ATTACHED)

This is to certify that Mirafi® 1120N is a needlepunched nonwoven geotextile composed of polypropylene fibers, which are formed into a stable network such that the fibers retain their relative position. Mirafi® 1120N geotextile is inert to biological degradation and resists naturally encountered chemicals, alkalis, and acids.

Mechanical Properties	Test Code	Test Method	Minimu	ım Average Roll \	/alue	
GRAB TENSILE STRENGTH (MD)	GRABMD	ASTM D4632	300	LBS	1335	N
GRAB TENSILE STRENGTH (CD)	GRABCD	ASTM D4632	300	LBS	1335	N
ELONGATION (MD)	ELMD	ASTM D4632	50	%		
ELONGATION (CD)	ELCD	ASTM D4632	50	%		
TEAR STRENGTH (MD)	TTMD	ASTM D4533	115	LBS	512	N
TEAR STRENGTH (CD)	TTCD	ASTM D4533	115	LBS	512	Ν
CBR PUNCTURE	CBR	ASTM D6241	800	LBS	3560	N
APPARENT OPENING SIZE - SIEVE	AOS	ASTM D4751	100	#		
APPARENT OPENING SIZE - MM	A0S2	ASTM D4751	. 15	MM		
PERMITTIVITY	ΡΤΥΥ	ASTM D4491	. 80	SEC-1		
WATER FLOW RATE	FLOW	ASTM D4491	65	GPM/FT2	2648	L/MIN/M2
UV RESISTANCE @ 500 HOURS	UV	ASTM D4355	70	%		

\* Customer requested specification.

Certification reflects test results at time of manufacturing and shipment. TenCate Geosynthetics is not responsible for environment or other factors which could alter the physical properties. ASTM D 4751, AOS is a Maximum Opening Diameter Value ASTM D4491 - Tested according to Constant Head procedure.

{ I hereby certify under penalty of perjury that the material listed in this	}
{ Certificate of Compliance represents $1,500$ sy (quantity) of pay item	}
{ Pay Item for installation on project:} { Ball M. 11 Fill Earth work, Number: 090601-400	} }
{ Contract Supplier : Bowman Construction Supply Bally Bally	}

\* \* \* END OF REPORT \* \* \*

This February 07, 2012

# Chris Whitfield, Quality Manager CERT#:

1004459

Unless specified separately in writing, material results apply only to items tested. No portion of this document may be reproduced whole or in part without the expressed written consent of TenCate. TenCate warrants our products and services to be free from defects in material and workmanship when delivered to TenCate's customers and that our products meet our published specifications. Actual test data supplied is for the full width of the tested master roll.

American Association of Laboratory Accreditation Certificate Number: 1291.01 Accreditation #: GAI-LAP-25-1997

© 2012 TenCate Geosynthetics Americas

365 South Holland Dr.TePendergrass, GA 30567Te

Tel 706 693 2226 Tel 888 795 0808

Fax 706 693 2122 www.tencate.com





TENCATE GEOSYNTHETICS North America

# **Mirafi® Geotextile Testing Certification**

Attn: Eric Marolf Ames Construction, Inc. P.O. Box 163 Victor, Colorado 80860-0163 Project: Ball Mill Fill Earthwork Project#: 090601-400 Roll#: 921576982,921577001,921577018 Lot# 12951B

This is to certify that the Mirafi 1120N Geotextile stated herein, tested at the following values:

Style Mirafi 1120N	Grab Tensile MD	Elongation MD	Grab Tensile CD	Elongation CD	Trap Tear MD	Trap Tear CD	Puncture	Burst	Flow Rate	Permittivity	AOS	Production & Test Date
Roll Number	ASTM D4632	ASTM D4632	ASTM D4632	ASTM D4632	ASTM D4533	ASTM D4533	ASTM D4833	ASTM D3786	ASTM D4491	ASTM D4491	ASTM D4751	
	lbs	%	lbs	lbs	lbs	lbs	lbs	psi	gal/min/sf	sec-1	US Std Sieve	
921576982	314	64	303	85	121	117	154	450	94	1.28	100	12/14/11
921577001	314	64	303	85	121	117	154	450	94	1.28	100	12/15/11
921577018	320	64	346	83	168	120	193	510	94	1.28	100	12/15/11

I hereby certify under penalty of perjury that the material listed in this Certified Test Report represents 1500 sy\_(quantity) of pay item Pay Item for Installation on Project: Ball Mill Fill Earthwork

Project Number: 090601-400

Date

Contract Supplier - Bowman Construction Supply



Tel 706 693 2226 Tel 888 795 0808 Fax 706 693 4400 www.mirafi.com



# TenCate Geosynthetics Americas Page: 1

**SETENCATE** MIRAFI 1120N Certification Ath: Eric Murol F

Ames Construction, Inc P.O. BOX 163 Victor, Colorado 80860-0163

Proj Name: BALL MILL FILL EARTHWORK

ROLL: 921577001,921576982 AND 921577018

This is to certify that Mirafi® 1120N is a needlepunched nonwoven geotextile composed of polypropylene fibers, which are formed into a stable network such that the fibers retain their relative position. Mirafi® 1120N geotextile is inert to biological degradation and resists naturally encountered chemicals, alkalis, and acids.

Mechanical Properties	Test Code	Test Method	Minimu	ım Average Rol	l Value	
GRAB TENSILE STRENGTH (MD)	GRABMD	ASTM D4632	300	LBS	1335	N
GRAB TENSILE STRENGTH (CD)	GRABCD	ASTM D4632	300	LBS	1335	N
ELONGATION (MD)	ELMD	ASTM D4632	50	%		
ELONGATION (CD)	ELCD	ASTM D4632	50	%		
TEAR STRENGTH (MD)	TTMD	ASTM D4533	115	LBS	512	N
TEAR STRENGTH (CD)	TTCD	ASTM D4533	115	LBS	512	Ν
CBR PUNCTURE	CBR	ASTM D6241	800	LBS	3560	N
APPARENT OPENING SIZE - SIEVE	AOS	ASTM D4751	100	#		
APPARENT OPENING SIZE - MM	AOS2	ASTM D4751	. 15	MM		
PERMITTIVITY	ΡΤΥΥ	ASTM D4491	. 80	SEC-1		
WATER FLOW RATE	FLOW	ASTM D4491	65	GPM/FT2	2648	L/MIN/M2
UV RESISTANCE @ 500 HOURS	UV	ASTM D4355	70	%		
Physical Properties	Test Code	Test Method	Туріса	l Value		
MASS/UNIT WEIGHT	WEIGHT	ASTM D5261	12.2	OZ/YD2	413.6	G/M2

\* Customer requested specification.

Certification reflects test results at time of manufacturing and shipment. TenCate Geosynthetics is not responsible for environment or other factors which could alter the physical properties. ASTM D 4751, AOS is a Maximum Opening Diameter Value ASTM D4491 - Tested according to Constant Head procedure.

hereby certify under penalty of perjury that the material listed in this	}
ertificate of Compliance represents $1500$ Sy (quantity) of pay item	}
ay Item for installation on project;}	×
3a ( M. 11 Fell EArthwork, Number: 090601-400	<b>/</b> }
	}
/ Contract Supplier : Bowman Construction Supply	) }
te: -2/13/12 ///////////////////////////////////	<u> </u>
Davedue	
* END OF REPORT * * *	

## This February 13, 2012

# Chris Whitfield, Quality Manager CERT#:

1004504

Unless specified separately in writing, material results apply only to items tested. No portion of this document may be reproduced whole or in part without the expressed written consent of TenCate. TenCate warrants our products and services to be free from defects in material and workmanship when delivered to TenCate's customers and that our products meet our published specifications. Actual test data supplied is for the full width of the tested master roll.

American Association of Laboratory Accreditation Certificate Number: 1291.01 Accreditation #: GAI-LAP-25-1997

© 2012 TenCate Geosynthetics Americas 365 South Holland Dr. Tel 706 Pendergrass, GA 30567 Tel 888

Tel 706 693 2226 Tel 888 795 0808 Fax 706 693 2122 www.tencate.com

