APPENDIX E

LTF Geomembrane Specifications

TECHNICAL DATA SHEET

LLDPE Smooth - Metric Values

PROPERTY	TEST METHOD	FREQUENCY[1]	UNIT Metric	
SPECIFICATIONS				
Thickness (min. avg.)	ASTM D-5199	Every roll	mm	0.75
Thickness (min.)	ASTM D-5199	Every roll	mm	0.675
Resin Density	ASTM D-1505	1/Batch	g/cc	< 0.926
Melt Index - 190/2.16 (max.)	ASTM D-1238	1/Batch	g/10 min	1.0
Sheet Density (8)	ASTM D-1505	Every 2 rolls	g/cc	≤ 0.939
Carbon Black Content (9)	ASTM D-4218	Every 2 rolls	%	2.0 - 3.0
Carbon Black Dispersion	ASTM D-5596	Every 6 rolls	Category	Cat. 1 / Cat. 2
OIT - standard (avg.)	ASTM D-3895	1/Batch	min	100
Tensile Properties (min. avg) (2)	ASTM D-6693	Every 2 rolls		
Strength at Break			kN/m	20
Elongation at Break			%	750
2% Modulus (max.)	ASTM D-5323	Per formulation	kN/m	315
Tear Resistance (min. avg.)	ASTM D-1004	Every 6 rolls	N	70
Puncture Resistance (min. avg.)	ASTM D-4833	Every 6 rolls	N	200
Dimensional Stability	ASTM D-1204	Every 6 rolls	%	± 2
Multi-Axial Tensile (min.)	ASTM D-5617	Per formulation	%	30
Oven Aging - % retained after 90 days	ASTM D-5721	Per formulation		
STD OIT (min. avg.)	ASTM D-3895		%	35
HP OIT (min. avg.)	ASTM D-5885		%	60
UV Resistance - % retained after 1600 hr	GRI-GM-11	Per formulation		
HP-OIT (min. avg.)	ASTM D-5885		%	35

NOTES

1. Testing frequency based on standard roll dimensions and one batch is approximately 180,000 lbs (or one railcar).
2. Machine Direction (MD) and Cross Machine Direction (XMD or TD) average values should be on the basis of 5 specimens each direction.
8. Correlation table is available for ASTM D792 vs ASTM D1505. Both methods give the same results.
9. Correlation table is available for ASTM D1603 vs ASTM D4218. Both methods give the same results.

* All values are nominal test results, except when specified as minimum or maximum.
*The information contained herein is provided for reference purposes only