

SuperGeo™ HD Smooth

Meets GRI GM13 Specifications

Properties	Test Method	Minimum Average Values			
		30	40	60	80
Thickness (mil.) Lowest individual reading	ASTM D5199	30 -10%	40 -10%	60 -10%	80 -10%
Minimum Density, g/cm ³	ASTM D1505	.940	.940	.940	.940
Tensile Properties (1) (Each Direction) Strength at Break (lbs.) (N/mm) Strength at Yield (lbs.) (N/mm) Elongation at Break (%) Elongation at Yield (%)	ASTM D6693, Type IV	114 (20) 63 (11) 700 12	152 (27) 84 (15) 700 12	228 (40) 126 (22) 700 12	304 (53) 168 (29) 700 12
Tear Resistance (lbs.) (N)	ASTM D1004	21 (93)	28 (125)	42 (187)	56 (249)
Puncture Resistance (lbs.) (N)	ASTM D4833	54 (240)	72 (320)	108 (480)	144 (640)
Stress Crack Resistance	D 5397	500 hr.	500 hr.	500 hr.	500 hr.
Carbon Black Content (%) (Range)	ASTM D1603 or D 4218	2.0 – 3.0	2.0 – 3.0	2.0 – 3.0	2.0 – 3.0
Carbon Black Dispersion	ASTM D5596	Note (2)	Note (2)	Note (2)	Note (2)
Oxidative Induction Time (OIT) (min. ave.) (3) (a) Standard OIT -----OR----- (b) High Pressure OIT	D 3895 D 5885	100 min 400 min	100 min 400 min	100 min 400 min	100 min 400 min
Oven Aging at 85°C (3) (a) Standard OIT (min. ave.) – % retained after 90 days -----OR----- (b) High Pressure OIT (min. ave.) - % retained after 90 days	D 5721 D 3895 D5885	55% 80%	55% 80%	55% 80%	55% 80%
UV Resistance (4) (a) Standard OIT (min. ave.) -----OR----- (b) High Pressure OIT (min. ave.) – retained after 1600 hrs (6)	D 7238 D 3895 D 5885	N.R. (5) 50%	N.R. (5) 50%	N.R. (5) 50%	N.R. (5) 50%
Standard Roll Dimensions					
Roll Length (7) , ft.		1,090	815	540	400
Roll Width (7) , ft.		22	22	22	22
Roll Area, ft. ²		23,980	17,930	11,800	8,800

- (1) Machine direction (MD) and cross machine direction (XMD) average values should be on the basis of 5 test specimens each direction.
Yield elongation is calculated using a gage length of 1.3 inches.
Break elongation is calculated using a gage length of 2.0 in.
- (2) Carbon black dispersion (only near spherical agglomerates) for 10 different views: 9 in Categories 1 or 2 and 1 in Category 3.
- (3) Either of the OIT methods listed can be used by the manufacturer to evaluate the antioxidant content in the geomembrane.
- (4) The condition of the test should be 20 hr. UV cycle at 75°C followed by 4 hr. condensation at 60°C.
- (5) Not recommended since the high temperature of the Std-OIT test produces an unrealistic result for some of the antioxidants in the UV exposed samples.
- (6) UV resistance is based on percent retained value regardless of the original HP-OIT value.
- (7) Roll Lengths and widths will be +/- 1% of the stated dimensions.

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