

# HEATGARD® – GEOMEMBRANE

Your critical containment infrastructure demands the best in longevity, toughness, and chemical resistance. HeatGuard® is made from next-generation bimodal resins that retain antioxidants for an unprecedented length of time. This retention over time is vital to extending the service life of a geomembrane.

Environmental Stress Cracking (ESCR), a common failure mechanism, can be combatted with lower-density resins, which generally lead to less stress cracking risk. Unfortunately, this also leads to lower chemical resistance. With HeatGuard® made from bi-modal resins, the resulting product has a stronger crystal from both the high molecular weight portion and the lower molecular weight polyethylene. The result is a more robust product with a very low risk of stress cracking and a high level of chemical resistance.

November 2024		HeatGuard®			
Property	ASTM Test Method	HeatGuard® 40	HeatGuard® 60	HeatGuard® 80	Testing Frequency
Thickness (min. avg.)	D5199	40 mil 1.0 mm	60 mil 1.5 mm	80 mil 2.0 mm	Every Roll
Density (min. avg.)	D792	0.950 g/cc	0.950 g/cc	0.950 g/cc	Every 200,000 lbs /90,000 kg
Tensile Strength at Yield (min. avg.)	D6693 Type IV	100 ppi 17.5 N/mm	142 ppi 24.8 N/mm	210 ppi 36.7 N/mm	Every 20,000 lbs /9,000 kg
Tensile Elongation at Yield (min. avg.) <sup>1</sup>	D6693 Type IV	12%	12%	12%	Every 20,000 lbs /9,000 kg
Tensile Strength at Break (min. avg.)	D6693 Type IV	170 ppi 29.7 N/mm	240 ppi 42 N/mm	310 ppi 54.2 N/mm	Every 20,000 lbs /9,000 kg
Tensile Elongation at Break (min. avg.) <sup>2</sup>	D6693 Type IV	600%	600%	600%	Every 20,000 lbs /9,000 kg
Tear Resistance (min. avg.)	D1004	29 lbs 128.9 N	47 lbs 209 N	60 lbs 266.8 N	Every 45,000 lbs /20,000 kg
Puncture Resistance (min. avg.)	D4833	78 lbs 346.9 N	120 lbs 533.7 N	144 lbs 640.5 N	Every 45,000 lbs /20,000 kg
Carbon Black Content	D4218	2-3%	2-3%	2-3%	Every 20,000 lbs /9,000 kg
Carbon Black Dispersion	D5596	Cat 1 or 2	Cat 1 or 2	Cat 1 or 2	Every 45,000 lbs /20,000 kg
Stress Crack Resistance (min.)	D5397 (App X1)	1000 hours	1000 hours	1000 hours <sup>3</sup>	Once every two resin railcars
Oxidative Induction Time (min.)	D3895	100 min	100 min	100 min	Every 200,000 lbs /90,000 kg
High Pressure Oxidative Induction Time (min.)	D5885	400 min	400 min	400 min	Every 200,000 lbs /90,000 kg

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Property	ASTM Test Method	HeatGard® 40	HeatGard® 60	HeatGard® 80	Testing Frequency
Oven Aging at 85°C HPOIT Retained after 90 days (min. avg.)	D5721 D5885 (App X3)	90%	90%	90%	Once per Formulation
Oven Aging at 85°C OIT Retained After 90 Days (min. avg.)	D5721 D3895 (App X3)	70%	70%	70%	Once per Formulation
UV Resistance, HPOIT Retained after 1,600 hours (min. avg.)	D7238 D5885	80%	80%	80%	Once per Formulation

Notes 1: Calculated at gage length of 1.3 in. (33 mm)

Notes 2: Calculated at gage length of 2.0 in. (50 mm)

Notes 3: Tested using yield strength of 210 lb/in (36.7 N/mm).

November 2024		HeatGard® Field Seam Strength		
Property	ASTM Test Method	HeatGard® 60	HeatGard® 80	
Heat Bonded Seam Strength Tested at 73°F (23°C)	D6392	120 ppi 525 N/25 mm	160 ppi 701 N/25 mm	
Peel Adhesion Strength (Extrusion Weld)	D6392	78 ppi 340 N/25 mm	104 ppi 455 N/25 mm	

## INSTALLATION

HeatGard® HDPE is a field fabricated material that needs to be installed by skilled installers. Installers will unroll the material on site and then join the sheets together using wedge welding or extrusion welding techniques. Installation will need to take place during periods of suitable weather. Cold temperatures are not normally a problem but precipitation in any form, whether rain, snow, dew, or fog can bring the installation of HeatGard® HDPE to a halt. HeatGard® HDPE is a bit stiffer than regular HDPE which will require additional care during installation and special care if backfilling is required. Contact Layfield for additional installation details and guidance.

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