LAYFIELD GEOSYNTHETICS

TECHNICAL SPECIFICATIONS

HEATGARD® – GEOMEMBRANE

Your critical containment infrastructure demands the best in longevity, toughness, and chemical resistance. HeatGard® 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 HeatGard® 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.

Material Properties

Oct **2024**

HeatGard®

Rev	ASTM	**HeatGard® 40**	**HeatGard® 60**	**HeatGard® 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/ml	0.950 g/ml	0.950 g/ml	Every 200,000 lbs
Tensile Strength at Yield (min. avg.)	D6693	100 ppi 17.5 N/mm	142 ppi 24.8 N/mm	210 ppi 36.7 N/mm	Every 20,000 lbs
Elongation at Yield (min. avg.)	D6693	12%	12%	12%	Every 20,000 lbs
Tensile Strength at Break (min. avg.)	D6693	170 ppi 29.7 N/mm	240 ppi 42 N/mm	310 ppi 54.3 N/mm	Every 20,000 lbs
Elongation at Break (min. avg.)	D6693	600%	600%	600%	Every 20,000 lbs
Tear Resistance (min. avg.)	D1004	29 lbs 128.9 N	47 lbs 209 N	60 lbs 266.8 N	Every 45,000 lbs
Puncture Resistance (min. avg.)	D4833	78 lbs 346.9 N	120 lbs 533.7 N	144 lbs 640.5 N	Every 45,000 lbs
Carbon Black Content	D6370	2-3%	2-3%	2-3%	Every 20,000 lbs
Carbon Black Dispersion	D5596	Cat 1 or 2	Cat 1 or 2	Cat 1 or 2	Every 45,000 lbs
Oxidative Induction Time (min.)	D3895	100 min	100 min	100 min	Every 200,000 lbs
High Pressure Oxidative Induction Time (min.)	D5885	400 min	400 min	400 min	Every 200,000 lbs
Oven Aging at 85ºC HPOIT Retained after 90 days	D5721 D5885 (app X3)	90%	90%	90%	Once per Formulation

	Oven Aging at 85°C OIT Retained After 90 Days	D5721 D3895 (app X3)	70%	70%	70%	Once per Formulation
	Stress Crack Resistance (min.)	D5397 (app X1)	1000 hours	1000 hours	1000 hours[1]	Once every two resin railcars
	Brine Resistance at 100°C [2] HPOIT Retained after 365 days	D1693 D5885	70%	70%	70%	N/A
	Chlorine Resistance at 90°C [2] HPOIT Retained after 365 days	D1693 D5885	70%	70%	70%	N/A
	UV Resistance HPOIT Retained after 1,600 hours QUV (min.)	D7238 D5885	80%	80%	80%	Once per Formulation

Notes: 1. Tested using Tensile Strength at Yield (minimum average) of 210 lb/in (36 N/mm).
Notes: 2. Actual result as tested at time of formulation.

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HeatGard® Field Seam Strengths

Style	ASTM D6392	**HeatGard® 60**	**HeatGard® 80**
Heat Bonded Seam Strength Test Temp 23°C, 73°F	25.4 mm (1") Strip	120 ppi 21 N/mm	160 ppi 28 N/mm
Peel Adhesion Strength (Extrusion Weld)	25.4 mm (1") Strip	78 ppi 14 N/mm	104 ppi 18 N/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.