



# GSE HD Textured Product Data Sheet

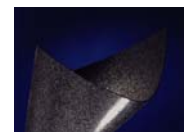
GSE HD Textured is a coextruded double-sided or single-sided textured, black, high quality, high density polyethylene (HDPE) geomembrane, produced from specially formulated polyethylene resin. The polyethylene resin is designed specifically for flexible and durable geomembrane applications. GSE HD Textured contains approximately 97.5% polyethylene, 2.5% carbon black and trace amounts of antioxidants and heat stabilizers. GSE HD Textured has outstanding chemical resistance, mechanical properties, environmental stress crack resistance, dimensional stability and thermal aging characteristics. GSE HD Textured has excellent resistance to UV radiation and is suitable for exposed applications. This product allows the design of projects with steeper slopes since frictional characteristics are enhanced. These product specifications meet or exceed GRI-GM 13.

Tested Property	Unit	Test Method	Values			
			0.75	1.0	1.5	2.0
Thickness <sup>(a)</sup> (Core Thickness)	mm	ASTM D 5994	0.75	1.0	1.5	2.0
Density (Minimum Average)	g/cm <sup>3</sup>	DIN EN ISO 1183-1/A	0.94	0.94	0.94	0.94
Tensile Properties (each Direction) (Minimum Average)		DIN EN ISO 527-3 (Type 5; 100 mm/min; lo = 50 mm)				
Stress at Yield	MPa		16	16	16	16
Elongation at Yield	%		9	9	9	9
Stress at Break	MPa		10	10	10	10
Elongation at Break	%		100	100	100	100
Tear Resistance (Minimum Average)	N	DIN ISO 34-1/B(a)	95	130	210	280
Puncture Resistance (Minimum Average)	N	DIN EN ISO 12236	1,250	1,800	2,700	3,750
Carbon Black Content	%	ASTM D 1603	2.0 – 3.0	2.0 – 3.0	2.0 – 3.0	2.0 – 3.0
Carbon Black Dispersion	Category	ASTM D 5596	1 / 2 <sup>(b)</sup>	1 / 2 <sup>(b)</sup>	1 / 2 <sup>(b)</sup>	1 / 2 <sup>(b)</sup>
Dimensional Stability (each Direction)	%	DIN 53377 (120 °C/1h)	± 2	± 2	± 2	± 2
Melt Flow Index <sup>(c)</sup>	g/10 min	DIN EN ISO 1133 (190 °C / 5.0 kg) (190 °C / 2.16 kg)	≤ 3.0 ≤ 1.0	≤ 3.0 ≤ 1.0	≤ 3.0 ≤ 1.0	≤ 3.0 ≤ 1.0
Stress Crack Resistance (NCTL) <sup>(d)</sup>	h	ASTM D 5397; Appendix	≥ 400	≥ 400	≥ 400	≥ 400
Oxidative Induction Time (OIT)	min	ASTM D 3895 (200°C; Pure O <sub>2</sub> ; 1 atm)	≥ 100	≥ 100	≥ 100	≥ 100

Reference Property	Unit	Test Method	Values			
			- 77	- 77	- 77	- 77
Low Temperature Brittleness	°C	ASTM D 746	- 77	- 77	- 77	- 77
UV Resistance <sup>(e)</sup>	%	GRI-GM 11	≥ 50	≥ 50	≥ 50	≥ 50
HP-OIT retained after 1,600 hours <sup>(f)</sup>	%	ASTM D 5885	≥ 50	≥ 50	≥ 50	≥ 50
Asperity Height (each Side) (Minimum Average)	mm	GRI-GM 12	0.25 <sup>(g)</sup>	0.25 <sup>(g)</sup>	0.25 <sup>(g)</sup>	0.25 <sup>(g)</sup>
Roll Width (approx.) <sup>(h)</sup>	m	---	6.95			
Surface	---	---	single-sided or double-sided coextruded textured			

- (a): Minimum average: – 5 %, lowest individual for 8 out of 10: -10%, lowest individual: – 15 % - Special thickness available upon request.
- (b): Dispersion only applies to near spherical agglomerates. 9 of 10 views shall be category 1 or 2. No more than 1 view from category 3.
- (c): Standard test conditions: 190 °C / 5.0 kg.
- (d): Note: NCTL is conducted on representative smooth membrane samples.
- (e): Test conditions: 20 hours UV cycle at 75°C followed by 4 hours condensation at 60°C; total: 1,600 hours.
- (f): UV Resistance is based on percent retained value regardless of the original High Pressure-OIT value.
- (g): 8 out of 10 readings must be ≥ 0.18 mm and lowest individual reading must be ≥ 0.13 mm.
- (h): Roll widths and lengths have a tolerance of ± 1%.



GSE HD Textured is produced at GSE Rechlin plant, Germany.

*This information is provided for reference purposes only and is not intended as a warranty or guarantee. GSE assumes no liability in connection with the use of this information. Please check with GSE for current, standard minimum quality assurance procedures. This information is subject to change without prior notice. Please contact GSE for updated information.*



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