

GSE Ultra FrictionFlex Geomembrane

GSE Ultra FrictionFlex is a single-sided or double-sided textured, linear low density polyethylene (LLDPE) geomembrane manufactured with the highest quality resin specifically formulated for flexible geomembranes. GSE's texturing process is the only manufacturing method that provides textured materials without significant reduction of any of the physical properties of the smooth surfaced product. This product is used in applications that require increased flexibility and elongation properties where differential or localized settlement may occur such as a landfill closure applications. The smooth edges (width approx. 15 cm) allow for an easier, quicker welding process according to the state of the art.



AT THE CORE:

A single or double-sided textured LLDPE geomembrane with high uniaxial and multiaxial elongation characteristics suitable for applications where differential or localized subgrade settlements are expected.

Product Specifications

These product specifications meet or exceed GRI GM17.

Tested Property	Unit	Test Method	Values (*)			
Thickness ^(a)	mm	ASTM D 5994	1.0	1.5	2.0	2.5
Density	g/cm ³	ASTM D 792	≤ 0.939	≤ 0.939	≤ 0.939	≤ 0.939
Tensile Properties (each Direction)		ASTM D 638 / D 6693; Type IV; 200 mm/min; lo = 50 mm				
Stress at Break	N/mm		33 (27)	50 (40)	66 (53)	82 (66)
Elongation at Break	%		950 (800)	950 (800)	950 (800)	950 (800)
Tear Resistance	N	ASTM D 1004	110 (100)	165 (150)	220 (200)	275 (250)
Puncture Resistance	N	ASTM D 4833	320 (250)	430 (370)	550 (500)	660 (620)
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 ^(b)	1/2 ^(b)	1/2 ^(b)	1/2 ^(b)
Dimensional Stability (each Direction)	%	ASTM D 1204 (100°C/1 h)	± 2	± 2	± 2	± 2
Melt Flow Index ^(c)	g/10 min	ASTM D 1238 (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
Asperity Height (each side) (Minimum Average)	mm	GRI-GM 12	0.25 ^(d)	0.25 ^(d)	0.25 ^(d)	0.25 ^(d)
Oxidative Induction Time (OIT)	min	ASTM D 3895 (200°C; Pure O ₂ ; 1 atm)	≥ 100	≥ 100	≥ 100	≥ 100
Reference Property						
Multiaxial Elongation at Break	%	similar to ASTM D 5617 ; Ø = 500 mm	70	70	70	70
Low Temperature Brittleness	°C	ASTM D 746	- 77	- 77	- 77	- 77
UV Resistance ^(e) HP-OIT retained after 1,600 hours ^(f)	%	GRI-GM 11 ASTM D 5885	≥ 35	≥ 35	≥ 35	≥ 35
Roll Width ^(g)	m	---	6.95 / 7.5			7.5
Surface	---	---	single-sided or double-sided textured			

NOTES:

- (*): All values - unless otherwise noted - are nominal values. Values in brackets are minimum values within the 95% confidence interval.
- (a): Tolerance ± 10% - 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): 8 out of 10 readings must be ≥ 0.18 mm and lowest individual reading must be ≥ 0.13 mm.
- (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): Roll widths and lengths have a tolerance of ± 1%.

GSE is a leading manufacturer and marketer of geosynthetic lining products and services. We've built a reputation of reliability through our dedication to providing consistency of product, price and protection to our global customers.

Our commitment to innovation, our focus on quality and our industry expertise allow us the flexibility to collaborate with our clients to develop a custom, purpose-fit solution.

[DURABILITY RUNS DEEP] For more information on this product and other, please visit us at GSEworld.com, call 49.40.767420 or contact your local sales office.

