

GSE HD Smooth Geomembrane (available from 0.3 – 3.0 mm)

GSE HD is a smooth high density polyethylene (HDPE) geomembrane manufactured with the highest quality resin specifically formulated for flexible geomembranes. This product is used in applications that require excellent chemical resistance and endurance properties.



AT THE CORE:
An HDPE geomembrane used in applications that require excellent chemical resistance and endurance properties.

Product Specifications

These product specifications meet or exceed GRI GM13.

Tested Property	Unit	Test Method	Values (*)			
Thickness ^(a)	mm	DIN EN ISO 9863-1	1.5	2.0	2.5	3.0
Density	g/cm ³	DIN EN ISO 1183-1/A	≥ 0.94	≥ 0.94	≥ 0.94	≥ 0.94
Tensile Properties (each Direction)		DIN EN ISO 527-3 (Type 5; 100 mm/min; l ₀ = 50 mm)				
Strength at Yield	MPa		17 (16)	17 (16)	17 (16)	17 (16)
Elongation at Yield	%		11 (10)	11 (10)	11 (10)	11 (10)
Strength at Break	MPa		35 (26)	35 (26)	35 (26)	35 (26)
Elongation at Break	%		800 (700)	800 (700)	800 (700)	800 (700)
Tear Resistance	N	DIN ISO 34-1/B (a)	225 (210)	300 (280)	375 (350)	450 (420)
Puncture Resistance	N	DIN EN ISO 12236	4,150 (3,700)	5,450 (4,900)	6,750 (6,050)	8,000 (7,200)
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)	%	DIN 53377 (120°C/1 h)	± 2	± 2	± 2	± 2
Melt Flow Index ^(c)	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)	h	ASTM D 5397; Appendix	≥ 336	≥ 336	≥ 336	≥ 336
Oxidative Induction Time (OIT)	min	ASTM D 3895 (200°C; Pure O ₂ ; 1 atm)	≥ 100	≥ 100	≥ 100	≥ 100
Reference Property						
Low Temperature Brittleness	°C	ASTM D 746	- 77	- 77	- 77	- 77
UV Resistance ^(d) HP-OIT retained after 1,600 hours ^(e)	%	GRI-GM 11 ASTM D 5885	≥ 50	≥ 50	≥ 50	≥ 50
Roll Width (approx.) ^(f)	m	---	6.95 / 7.5		7.5	
Surface	---	---	double-sided smooth			

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): Test-Conditions: 20 hours UV cycle at 75°C followed by 4 hours condensation at 60°C; total: 1,600 hours.
- (e): UV Resistance is based on percent retained value regardless of the original High Pressure - OIT value.
- (f): Roll widths and lengths have a tolerance of ± 1%.

[Product specifications continued on back]

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.



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Product Specifications

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Tested Property	Unit	Test Method	Values (*)			
Thickness ^(a)	mm	DIN EN ISO 9863-1	0.3	0.5	0.75	1.0
Density	g/cm ³	DIN EN ISO 1183-1/A	≥ 0.94	≥ 0.94	≥ 0.94	≥ 0.94
Tensile Properties (each Direction)		DIN EN ISO 527-3 (Type 5; 100 mm/min; l ₀ = 50 mm)				
Stress at Yield	MPa		17 (16)	17 (16)	17 (16)	17 (16)
Elongation at Yield	%		8.5 (7.5)	8.5 (7.5)	10 (9)	10 (9)
Stress at Break	MPa		35 (26)	35 (26)	35 (26)	35 (26)
Elongation at Break	%		700 (600)	700 (600)	800 (700)	800 (700)
Tear Resistance	N	DIN ISO 34-1/B (a)	40 (35)	75 (65)	110 (95)	145 (130)
Puncture Resistance	N	DIN EN ISO 12236	700 (550)	1,450 (1,150)	2,150 (1,700)	2,850 (2,400)
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)	%	DIN 53377 (120°C/1 h)	± 2	± 2	± 2	± 2
Melt Flow Index ^(c)	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)	h	ASTM D 5397; Appendix	≥ 336	≥ 336	≥ 336	≥ 336
Oxidative Induction Time (OIT)	min	ASTM D 3895 (200°C; Pure O ₂ ; 1 atm)	≥ 100	≥ 100	≥ 100	≥ 100
Reference Property						
Low Temperature Brittleness	°C	ASTM D 746	- 77	- 77	- 77	- 77
UV Resistance ^(d) HP-OIT retained after 1,600 hours ^(e)	%	GRI-GM 11 ASTM D 5885	≥ 50	≥ 50	≥ 50	≥ 50
Roll Width (approx.) ^(f)	m	---	7.0		6.95	6.95 / 7.5
Surface	---	---	double-sided smooth			

NOTES:

- (*): All values - unless otherwise noted - are nominal values. Values in brackets are minimum values within the 95% confidence interval.
- (a): Tolerance ± 10%; 0.3 mm: Tolerance ± 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): Test-Conditions: 20 hours UV cycle at 75°C followed by 4 hours condensation at 60°C; total: 1,600 hours.
- (e): UV Resistance is based on percent retained value regardless of the original High Pressure - OIT value.
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