

# GSE HD Smooth Geomembrane

(available from 0.3 - 3.0 mm)



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

## METRIC - EMEA

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.

## Product Specifications

These product specifications meet GRI GM13.

Tested Property	Unit	Test Method	Values (*)			
Thickness <sup>(a)</sup>	mm	ASTM D 5199	1.5	2.0	2.5	3.0
Density	g/cm <sup>3</sup>	ASTM D 792	≥ 0.94	≥ 0.94	≥ 0.94	≥ 0.94
Tensile Properties (each Direction)		ASTM D 638 / D 6693; Type IV				
Strength at Yield	N/mm	50 mm/min	24 (22)	32 (30)	40 (37)	48 (45)
Elongation at Yield	%	lo = 33 mm	16 (13)	16 (13)	16 (13)	16 (13)
Strength at Break	N/mm	50 mm/min	49 (40)	66 (53)	83 (67)	100 (80)
Elongation at Break	%	lo = 50 mm	800 (700)	800 (700)	800 (700)	800 (700)
Tear Resistance	N	ASTM D 1004	205 (190)	275 (250)	350 (315)	420 (375)
Puncture Resistance	N	ASTM D 4833	560 (480)	690 (640)	830 (800)	980 (960)
Carbon Black Content	%	ASTM D 4218	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)	%	ASTM D 1204 (120°C/1 h)	± 2	± 2	± 2	± 2
Melt Flow Index <sup>(c)</sup>	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
Stress Crack Resistance (NCTL)	h	ASTM D 5397; Appendix	≥ 500	≥ 500	≥ 500	≥ 500
Oxidative Induction Time (OIT)	min	ASTM D 3895 (200°C; Pure O <sub>2</sub> ; 1 atm)	≥ 100	≥ 100	≥ 100	≥ 100
<b>Reference Property</b>						
Low Temperature Brittleness	°C	ASTM D 746	- 77	- 77	- 77	- 77
UV Resistance <sup>(d)</sup> HP-OIT retained after 1,600 hours <sup>(e)</sup>	%	ASTM D 7238 ASTM D 5885	≥ 50	≥ 50	≥ 50	≥ 50
Roll Width (approx.) <sup>(f)</sup>	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% for the lowest individual reading - 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.  
 (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]

**SOLMAX 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.

For more information on this product and other, please visit us at [GSEworld.com](http://GSEworld.com), call 49.40.767420 or contact your local sales office.

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Thickness <sup>(a)</sup>	mm	ASTM D 5199	0.3	0.5	0.75	1.0
Density	g/cm <sup>3</sup>	ASTM D 792	≥ 0.94	≥ 0.94	≥ 0.94	≥ 0.94
Tensile Properties (each Direction)		ASTM D 638 / D 6693; Type IV				
Stress at Yield	N/mm	50 mm/min	5 (4)	8 (7)	13 (11)	16 (15)
Elongation at Yield	%	l <sub>0</sub> = 33 mm	13 (12)	13 (12)	14 (12)	16 (13)
Stress at Break	N/mm	50 mm/min	10 (8)	17 (12)	26 (20)	33 (27)
Elongation at Break	%	l <sub>0</sub> = 50 mm	700 (650)	800 (700)	800 (700)	800 (700)
Tear Resistance	N	ASTM D 1004	40 (35)	70 (65)	100 (95)	140 (130)
Puncture Resistance	N	ASTM D 4833	145 (96)	240 (160)	340 (240)	420 (320)
Carbon Black Content	%	ASTM D 4218	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)	%	ASTM D 1204 (120°C/1 h)	± 2	± 2	± 2	± 2
Melt Flow Index <sup>(c)</sup>	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
Stress Crack Resistance (NCTL)	h	ASTM D 5397; Appendix	≥ 500	≥ 500	≥ 500	≥ 500
Oxidative Induction Time (OIT)	min	ASTM D 3895 (200°C; Pure O <sub>2</sub> ; 1 atm)	≥ 100	≥ 100	≥ 100	≥ 100
<b>Reference Property</b>						
Low Temperature Brittleness	°C	ASTM D 746	- 77	- 77	- 77	- 77
UV Resistance <sup>(d)</sup> HP-OIT retained after 1,600 hours <sup>(e)</sup>	%	ASTM D 7238 ASTM D 5885	≥ 50	≥ 50	≥ 50	≥ 50
Roll Width (approx.) <sup>(f)</sup>	m	---	7.0		6.95	6.95 / 7.5
Surface	---	---	double-sided smooth			

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