GSE TunnelLiner - Product Data Sheet

GSE TunnelLiner is a highly flexible polyethylene geomembrane specially designed for high-performance tunnel lining applications. **GSE TunnelLiner** consists of a black core layer and two white outer layers, which greatly facilitate visual inspection and is available in two fire resistance grades (B1 and B2). Whether used in a new design or retrofit installation, **GSE TunnelLiner** provides a unique combination of security, sealing integrity and installation efficiency.

Property	Unit	Test Method	Nominal Value			
Thickness (including signal layer)(0)	mm	DIN EN ISO 9863-1	2.0	2.5	3.0	3.2
Visual appearance	---		Free of voids, bubbles, cracks			
Lateral skew	mm	DIN 16726-5.2	≤ 50	≤ 50	≤ 50	≤ 50
Waviness	mm		≤10	≤10	≤10	≤10
Density (overall)	g/cm³	DIN ISO 1183-1/A	0.910 to 0.960 (Dependent on fire resistance rating)			
Tensile properties (each direction)		DIN EN ISO 527-3 Type 5; 100 mm/min				
Stress at break	MPa (1)		≥ 22	≥ 22	≥ 22	≥ 22
Elongation at break	%	lo = 50 mm	≥ 700	≥ 700	≥ 700	≥ 700
Tear resistance	N	DIN ISO 34-1/B(a)	140	175	210	224
Puncture resistance	N	DIN EN ISO 12236	2.650	3.400	4.200	4.400
Dimensional stability (each direction)	%	DIN 53377 (100 °C/1h)	± 2	± 2	± 2	± 2
Appearance	---		No bubbles	No bubbles	No bubbles	No bubbles
Melt flow index	g/10 min	DIN EN ISO 1133 (190 °C/5.0 kg)	≤ 3.3	≤ 3.3	≤ 3.3	≤ 3.3
Multiaxial elongation (Specimen diameter = 800 mm)	%	similar to DIN 53861	≥ 50	≥ 50	≥ 50	≥ 50
Seam performance						
Shear test	%	DIN 16726 – 5.7.1	Failure in parent material (i.e. not in seam)			
Peel test	%	DIN 16726 – 5.7.2	Peel strength ≥ 60 % of 100 % modulus of parent material. No delamination.			
Performance under hydrostatic pressure	---	DIN 16726 – 5.11	Watertight at 0.5 MPa over 72 hours			
Performance in perforation test	mm (height)	DIN 16726 – 5.12	≥ 750 mm	≥ 1000 mm	≥ 1500 mm	≥ 1500 mm
Cold flex performance at -20°C	---	DIN 16726 – 5.14	no cracking			
Long-term thermal stability (80°C, 70 days; each direction)		DIN 16726 – 5.13.3				
Change in tensile strength	%		≤ 20	≤ 20	≤ 20	≤ 20
Change in ultimate elongation	%		≤ 20	≤ 20	≤ 20	≤ 20
Resistance to Aqueous Solutions	%	DIN 16726 – 5.18				
a) in lime milk - $Ca(OH)_2$			Change in tensile strength ≤ 20 (each direction)			
b) in sulphuric acid - H_2SO_3						
Fire resistance rating	---	DIN 4102	B1 or B2 as ordered			
Roll width(2,3)	m	---	7.5	7.5	7.5	7.5
Roll length (approx.)(2,3)	m	---	100	80	65	65
Roll weight (approx.)	kg	---	1,420	1,140	1,420	1,510

(0): Special thickness available upon request
(1): 1 MPa = 1 N/mm²
(2): Roll widths and lengths have a tolerance of ± 1%.
(3): Special roll lwidth & length available upon request

GSE TunnelLiner is produced at GSE Rechlin plant, Germany

CE

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