

As of: May 5, 2021

GENERAL INFORMATION	
Product group	GFRP LINER sewage
Product range	SAERTEX-LINER® INDUSTRY
Design	Type S+
Utilization	Corrosive sewage after resistance test
Reinforcing material	Multiaxial fabric made of glass fiber
Resin type	Vinyl ester resin (VE)
Impregnation	Pre-impregnated at the factory
Curing procedure	Light-cured pipe lining (UV-CIPP)
Installation procedure	Pull in place
Inflation procedure	Compressed air
Shelf life	Up to 3 months at temperatures from 7°C – 25 °C/45°F-77°F
EC Safety Data Sheet	Available

DESIGN CHARACTERISTICS	
Operating pressure	Gravity pipeline
Host pipe profile	All types
Diameter range	DN 150-1000/6"-40"
Structural wall thickness	3 mm-10 mm, in 1 mm increments; system limits: DN 1000 max. WD 8 mm, WD 10 mm max. DN 800
Permissible elongation	≤DN 400: DN + 2% >DN 400: DN + 4%
Inner foils with barrier function**	Standard FastPlus*
Outer foils**	Integrated sliding and light protection foil and permanent foil with barrier function
Material characteristics group according to DWA M 144-3	25
Liner construction as outlined in:	DIBt approval Z-42.3-350, Annex 1 and 2, abZ/AB

* FastPlus available for DN 200 to DN 1000 max WD 10 mm

** Details see section "FOILS"

COMPOSITE REINFORCEMENT	
Glass fiber type according to DIN 61850	Permanently corrosion and chemical resistant, ECR
Number of layers multiaxial fabric	at least 2
Glass area weight per mm wall thickness	1100 g/m ² ± 150 g/m ²
Specific density according to DIN EN ISO 1183-2	1.6 g/cm ³ ± 0.5 g/cm ³
Glass content according to DIN EN ISO 1172	≥ 46% (mass-based)
Barcol hardness according to DIN EN 59	≥ 50 IRHD
Longitudinal seam	Yes
Winding	No

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FOILS		
Inner foils with barrier function	Standard	FastPlus
- Remains in the liner	Temporary	Semi-permanent
- Materials	PE/PA	PE/PA, PET
- Thickness	Up to 200 µm	Up to 400 µm
Protective outer gliding foil, UV light protection*, integrated		
- Material	PVC, fabric reinforced in places	
- Thickness	Up to 500 µm	
Permanent outer foil with barrier function		
- Material	PE/PA/PE and nonwoven PP	
- Thickness	Up to 200 µm	

*Up to DN 600/24 inch and max. 2.5 t liner weight and corresponding condition of host pipe installation possible without additional gliding foil.

Notes (terms ISO 11296- 4):

- Temporary: Foil is removed after curing.
- Semi-permanent: Facilitates liner installation and curing without post-installation functions. Remains in the liner.
- Permanent: Facilitates liner installation and curing with post-installation functions. Remains in the liner.

MECHANICAL CHARACTERISTICS	
Short-term circumferential E modulus according to DIN EN 1228	≥ 20.500 N/mm ² : 2,973,270 psi
Short-term bending E modulus according to DIN EN ISO 11296-4 // DIN EN ISO 178	≥ 16.800 N/mm ² : 2,436,630 psi
Short-term bending stress according to DIN EN ISO 11296-4 // DIN EN ISO 178	≥ 270 N/mm ² : 39,160 psi
Long-term circumferential E modulus* _{ex 50 years} according to DIN EN 761	16.000 N/mm ² : 2,320,600 psi
Long-term bending stress E modulus* _{ex 50 years} according to DIN EN 761	210 N/mm ² : 30,455 psi
Long-term circumferential E modulus* _{ex 100 years} according to DIN EN 761	15.600 N/mm ² : 2,262,585 psi
Long-term bending stress E modulus* _{ex 100 years} according to DIN EN 761	205 N/mm ² : 29,730 psi
Retention factor A after 10,000 hours according to DIN EN 761	1.28/78%
Reduction factor A after 20,000 hours according to DIN EN 761	1.31/76%
Creep tendency after 24 hours according to DIN EN ISO 899-2	≤ 5 %

* These values are used for the static calculation of the liner's stability according to DWA-A 143-2.