

As of: January 30, 2023

GENERAL INFORMATION	
Product group	GFK-LINER sewage
Product range	SAERTEX-LINER® MULTI
Design	Type S+
Utilization	Municipal wastewater, rainwater, combined sewage
Reinforcing material	Multiaxial fabric made of glass fiber
Resin type	Unsaturated polyester resins (UP)
Impregnation	Pre-impregnated at the factory
Curing procedure	Light-cured pipe lining (UV-CIPP)
Installation procedure	Pull in place
Inflation procedure	Compressed air
Pressure table	Available
EC Safety Data Sheet	Available

STORAGE (GLOBALLY VALID) AND TRANSPORT ROAD FREIGHT WITHIN EUROPE													
DN (mm)	Composite wall thickness (mm)												
	3	4	5	6	7	8	9	10	11	12	13	14	15
150	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Blue	Blue
200	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Blue	Blue
300	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Blue	Blue
400	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Blue	Blue
500	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Blue	Blue
600	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Blue	Blue
700	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Blue	Blue
800	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Blue	Blue
900	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Blue	Blue
1,000	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Blue	Blue
1,100	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Blue	Blue
1,200	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Blue	Blue
1,300	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Blue	Blue
1,400	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Blue	Blue
1,500	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue
1,600	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue

- 7 to 25° C – 12 months
- 7 to 14° C – 3 months

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DESIGN CHARACTERISTICS			
Maximum operating pressure (MDP)	Gravity pipes		up to 1 bar
Host pipe profile	All types		Circular
Diameter range	DN 150-1,600		DN 250-1,200
Structural wall thickness	3 mm-15 mm, in 1 mm increments		4 mm-12 mm, in 1 mm increments
Permissible elongation	≤400: DN + 2% >400: DN + 4%		On request
Inner foils with barrier function**	Standard	FastPlus*	Pressure
Outer foils**	Integrated gliding and light protection foil and permanent foil with barrier function		
Material characteristic 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 1500/8"-60" diameter, max wall thickness 12 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	1,100 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	≥ 40 IRHD
Longitudinal seam	Yes
Winding	No

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

* Up to 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.

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MECHANICAL CHARACTERISTICS	
Short-term circumferential E modulus according to DIN EN 1228 // DIN EN 11296-4:2011	$\geq 20,500 \text{ N/mm}^2$
Short-term bending E modulus according to DIN EN ISO 11296-4:2011 // DIN EN ISO 178	$\geq 16,800 \text{ N/mm}^2$
Short-term bending stress according to DIN EN ISO 11296-4:2011 // DIN EN ISO 178	$\geq 270 \text{ N/mm}^2$
Long-term circumferential E modulus* _{ex 50 years} according to DIN EN 761	$16,000 \text{ N/mm}^2$
Long-term bending stress E modulus* _{ex 50 years} according to DIN EN 761	210 N/mm^2
Long-term circumferential E modulus* _{ex 100 years} according to DIN EN 761	$15,600 \text{ N/mm}^2$
Long-term bending stress E modulus* _{ex 100 years} according to DIN EN 761	205 N/mm^2
Retention factor A after 10,000 hours according to DIN EN 761	1.28
Retention factor A after 20,000 hours according to DIN EN 761	1.31
Creep tendency after 24 hours according to DIN EN ISO 899-2	$\leq 6 \%$

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