



Area of application

Gravity sewers

- Circular profiles: ID 400 (6") - ID 1,600 (63")
- Ovoid cross-sections: 350/525 mm (14"/21") - 1,200/1,800 mm (48"/71")



Advantages

- Higher mechanical characteristics compared to the Berolina-Liner
- Reduction of the structurally required wall thickness compared to the Berolina-Liner
- Seamless design, particular extensibility
- Up to 500 / 1,000 meters ($\leq$ DN 300)
- Can be stored up to 6 months (VE liners) or 12 months (UP liners)
- Fast curing and smooth surface
- Suitable for all standard pipe profiles
- Quality mgmt. acc. to EN ISO 9001:2015
- Bridging small profile and cross-section changes
- Resin types: PE, VE, styrene-free
- Abrasion protection layer

Additional advantage: IES

Integrated Enhanced Security

- Can be a substitute for gliding foil, reducing installation time
- Available up to DN 600



Approvals

- DIBt Z-42.3-336 (UP and VE resins)
- WRc PT/496/0422 (UP and VE resin)
- CSTB 17.2/15-303_V4 (UP resins)
- City of Los Angeles, USA (UP resins)

Reinforcement material

Woven glass complex E-CR according to

- EN 14020-1
- EN 14020-2
- EN 14020-3

Resins

Unsaturated polyester resins (UP resins)

- Type 1140 according to DIN 16946-2
- Group 3 according to DIN 18820-1
- Group 4 according to EN 13121-1

Vinyl ester resins (VE resins)

- Type 1310 according to DIN 16946-2
- Group 5 according to DIN 18820-1
- Group 7 B according to EN 13121-1

Styrene-free resin

Technical data

Approved for UP and VE resins

Density after curing (EN ISO 1183-2):	1.59g/cm ³ (± 0.5 g/cm ³)
Glass fibre content (EN ISO 1172 / by mass):	53% (± 8%)
Glass weight per unit area (per mm wall thickness)*:	900g/m ² (+150/-100g/m ²)
Short-term circumferential modulus of elasticity (EN 1228)*:	≥ 17,000 N/mm ²
Short-term modulus of elasticity (EN ISO 178)*:	≥ 17,000 N/mm ²
Short-term flexural strength (EN ISO 178)*:	≥ 280 N/mm ²
Long-term circumferential modulus of elasticity (EN 1228)*:	≥ 14,200 N/mm ²
Long-term flexural strength (EN ISO 178)*:	≥ 235 N/mm ²
Laminate design:	Multi-layer, seamless and overlapping in longitudinal direction; overlaps are offset
Linear expansion during calibration:	~ 0.0%
Allowable diameter tolerances of the host pipes:	DN ≤ 800: ± 5%; DN > 800: ± 2%

All values according to DIBt approval

** Structural wall thickness to EN ISO 11296-4 (07/2011)*