

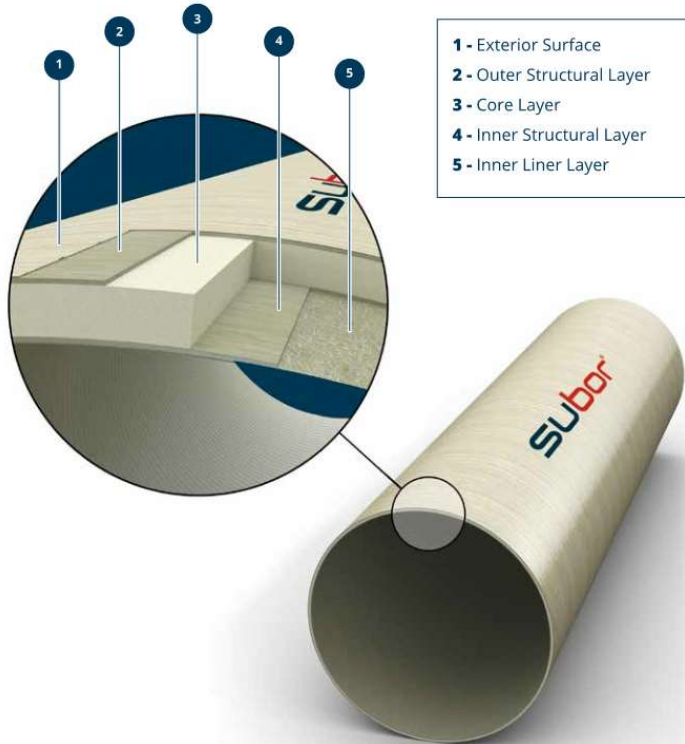
**Glassfiber Reinforced Plastic (GRP)**  
**Advanced Continuous Winding Technology**



Subor was founded in 1996 and offers long-term solutions for various infrastructure applications.  
 Pipe production and type tests by ISO 23856, EN 14364 and EN 1796.  
 Conformity confirmation by DIN CEN/TS 14632, DIN 18200 and ÖNorm B5161.  
**DN 200 - 4.000 mm, SN 2.500 - 1.000.000 N/mm<sup>2</sup>, PN 1 - 40 bar, Length 6m/ 12m/ tailor-made**

24.01.2023

**Wall structure and materials**



three basis raw materials:  
 - glass fiber  
 - UP-resin  
 - silica sand

Continuous glass fiber roving is providing high circumferential strength, while chopped roving is incorporating for axial reinforcement and outer impacts. A sand fortifier provides increased stiffness with placement near the neutral axis in the pipe wall core.

**Mechanical properties**

specific initial ring stiffness, ISO 7685	SN 10.000	≥ 10.000 N/mm <sup>2</sup>	
bending Young's modulus, ISO 178		≥ 12.000 N/mm <sup>2</sup>	long-term 8.600 MPa
bending stress, ISO 178		≥ 250 N/mm <sup>2</sup>	long-term 170 MPa
declared by the manufacturer based on the 5% quantile value of the type test			
initial axial tensile strength, ISO 8513		428 N/mm <sup>2</sup>	
initial ring defelction, ISO 10466		276 N/mm <sup>2</sup>	
extrapolated failure strain, 50 years, ISO 10952		0,97%	
extrapolated failure stress, 50 years, ISO 10471+10952		152 N/mm <sup>2</sup>	
wet creep factor, ISO 10468		α = 0,72	A = 1,39
poisson ratio, ISO 527-1		0,148	

measured in type test: report no. 2092943-7 and no. 2321003645 IB Siebert+Knipschild

**Additional tests**

High pressure flushing test, DIN 19523  
 Abrasion test, CEN/TR 15729: average abrasion after 200.000 cycles=0,42mm  
 Chemical resistance test, ISO 175