21.2.1.2 Polypropylene Pipe Material Requirements

All polypropylene (PP) used to produce pipes and fittings in accordance with this specification shall be described by the resin manufacturer as pipe grades and as a minimum, comply with the requirements of Table 21-3

Properties	Test Method	Required Value
Average Density	ISO 1183	≤ 910 kg/m^3
Melt Flow Rate (230 °C/2,16 kg)	ISO 1133	≤ 1.5 g/10 min
Flexural Modulus (2 mm/min)	ISO 178	≥1300 MPa
Modulus of Elasticity (1 minute)	ISO 527	1250 – 2500 MPa
Tensile Strain at Yield (50 mm/min)	ISO 527-2	6-15 %
Tensile Stress at Yield (50 mm/min)	ISO 527-2	25 - 40 MPa
Charpy Impact Strength, notched (23°C)	ISO 179/1eA	≥40 kJ/m²
Charpy Impact Strength, notched (-20°C)	ISO 179/1eA	≥4 kJ/m²
Thermal stability OIT (200 °C)	EN 728	≥20 minutes
Creep Ratio, ɣ	EN ISO 9967	≤ 4 at 2 years extrapolation
Resistance to internal pressure at 80^{o}C and 4.0 MPa hoop stress	EN ISO 1167-2	165 hours
Resistance to internal pressure at 80^{o}C and 2.8 MPa hoop stress	EN ISO 1167-2	1000 hours

Table 21-3: PP Material Properties

21.2.2 Pipes and Fittings

21.2.2.1 PE and PP for Non-Pressure Application.

A. All pipes and fittings shall be supplied by approved manufacturers and shall be fully compatible with regards to both performance and being jointed together.

B. Pipes shall be of standard ring stiffness 4000 N/SQM or 8000 N/SQM unless otherwise approved.