

# Common Pipe Materials – Comparison

Property	uPVC	PE	Ductile Iron	GRP	Arc Welded Steel
Max. Pressure Rating (MPa)	1.8	2.0	6.0MPa <300mm 3.6MPa > 375mm	7.0	7.0
Young's Modulus (GPa)	2.75	1.0	165	11	200
Impact Resistance (Charpy – kJ/m <sup>2</sup> )	20 (20 °C) 8 (0 °C)	35 (23 °C) 8 (-30 °C)	Not Known	Not Known	Excellent
Density (kg/m <sup>3</sup> )	1450	950	7050	1800	8000
Coefficient of Linear Expansion (m/m.deg C)	70E-6	190E-6	11.2E-6	20E-6	11.7E-6 to 17.3E-6
Abrasion Resistance	Good	Excellent	Poor	Best	Poor
Relative Cost	Low	Low	Medium	High	High
Water Hammer	Good	Excellent	Poor	Good	Poor
Minimum Tensile Stress (MPa)	52	20 - 25	420		Varies
Design Roughness (metres x 10 <sup>-6</sup> )	1.5	1.5	2.6 (Plain) 2.4 (Cement Lined)	1.5	45