

Properties of common polymers used in FRPs. (Taken from Illston, JE et al, 2nd Ed., 1994)

<i>Material properties</i>	<i>Specific weight</i>	<i>Ultimate tensile strength MPa</i>	<i>Modulus of elasticity in tension GPa</i>	<i>Coefficient of linear expansion $10^{-6}/^{\circ}C$</i>
Thermosetting				
Polyester	1.28	45–90	2.5–4.0	100–110
Epoxy	1.30	90–110	3.0–7.0	45–65
Phenolic (with filler)	1.35–1.75	45–59	5.5–8.3	30–45
Thermoplastics				
Polyvinyl chloride (PVC)	1.37	58.0	2.4–2.8	50
Acrylonitrile butadiene styrene (ABS)	1.05	17–62	0.69–2.82	60–130
Nylon	1.13–1.15	48–83	1.03–2.76	80–150
Polyethylene (high-density)	0.96	30–35	1.10–1.30	120

Some Properties of Thermoplastic, Elastomeric, and Thermosetting Polymers (from J.F. Young, et al, Prentice-Hall, 1998)

Polymer	Tensile Strength (MPa)	Modulus of Elasticity (GPa)	Elongation at Failure (%)	Density (kg/m ³)	Heat Deflection (Temp. 66 psi (°C))	Examples of Application
Thermoplastics						
Polyethylene ^a						
Low density	8.5–22	0.1–0.3	50–800	920	42	Packing films, pipes
High density	22–40	0.4–1.3	15–130	960	85	
Polypropylene ^a	28–42	1–1.5	10–700	900	115	Tanks, fibers
Polyvinylchloride (PVC) ^a	35–64	2.1–4.3	2–100	1400		Pipes, floor tiles
Polystyrene ^a	23–57	2.7–3.2	1–60	1060	82	Insulating foams, lighting panels
Polymethyl-methacrylate ^a (PMMA) (Perspex)	43–86	0.14–0.36	300–450	1220	93	
Polytetrafluoroethylene ^a (Teflon) (PTFE)	14–50	0.4–0.55	100–400	2170	120	Seals, coatings
Thermosettings						
Epoxies ^b	28–107	2.8–3.6	0–6	125–	—	Adhesives Coatings, insulating foams
Polyurethanes ^b	35–71	3–6	1300	—		
Polyesters ^b	43–93	2.1–4.6	0–3	1280	—	Matrix in FRP, laminates
Elastomers						
Polychloroprene ^c (Neoprene)	25	—	800	1240	—	Hoses
Butadiene-styrene ^d (SBR)	4.3–2.1	—	600–2000	1000	—	Coatings
Silicones ^e	2.5–7	—	100–700	1500		Sealants

Properties of common fibers used in FRPs. (Taken from Illston, JE et al, 2nd Ed., 1994)

<i>Material properties</i>	<i>Specific weight</i>	<i>Ultimate tensile strength (GPa)</i>	<i>Modulus of elasticity in tension (GPa)</i>
Carbon fibre			
Type I	1.92	2.00	345
Type II	1.75	2.41	241
Type III	1.70	2.21	200
E-glass fibre	2.55	2.4	72.4
S2-glass fibre	2.47	4.6	88.0
Kevlar fibres			
29	1.44	2.65	64
49	1.45	2.65	127