

TYPICAL PROPERTIES OF THERMOPLASTIC POLYESTERS

ASTM or UL Test	Property	Unreinforced Resin	20 to 30% Glass Reinforced
PHYSICAL			
D792	Specific gravity	1.31-1.43	1.49-1.56
D792	Specific volume (in ³ /lb)	21.1-19.4	17.1-16.4
D570	Water absorption , 24 h, 1/8-in thk (%)	0.08-0.09	0.07
MECHANICAL			
D638	Tensile strength (psi)	8,000	16,500-23,000
D638	Elongation (%)	5-300	1-3
D638	Tensile modulus (10 ⁵ psi)	2.8	12-17
D790	Flexural strength (psi)	12,000-14,000	24,000-33,000
D790	Flexural modulus (10 ⁵ psi)	2.8-4.0	11-14
D256	Impact strength , Izod (ft-lb/in of notch)	0.5	1.0-2.6
D671	Fatigue endurance limit , 10 ⁷ cycles (psi)	2,850-3,500	4,000-5,000
D785	Hardness , Rockwell M	65-80	90-100
THERMAL			
C177	Thermal conductivity (Btu-in/hr-ft ² -°F)	1.1-1.7	1.3-9.0
D696	Coefficient of thermal expansion (10 ⁻⁵ in/in-°F)	4.3-8.9	1.3-5.4
D648	Deflection temperature (°F) At 264 psi At 66 psi	122-150 302-354	395-435 435-475
UL 94	Flammability rating	HB to V-O	HB to V-O and 5 V
ELECTRICAL			
D149	Dielectric strength (V/mil) Short time, 1/8-in thk	420-450	480-560
D150	Dielectric constant At 1 kHz	3.2-3.4	3.6-3.7
D150	Dissipation factor At 1 kHz	0.0014-0.0006	0.002-0.003
D257	Volume resistivity (ohm-cm) At 73°F, 50% RH	10 ¹⁵ -10 ¹⁶	5-10x10 ¹⁵
D495	Arc resistance (s)	110-130	80-130
FRICTIONAL			
—	Coefficient of friction Self Against steel	0.12-0.20 0.10-0.23	0.12-0.22 0.12-0.13

Ref: Machine Design – 1985

TYPICAL PROPERTIES OF THERMOPLASTIC POLYESTERS

ISO or UL Test	Property	Unreinforced Resin	20 to 30% Glass Reinforced
PHYSICAL			
ISO1183	Specific gravity	1.31-1.43	1.49-1.56
ISO1183	Specific volume (cm ³ /g)	0.759-0.698	0.615-0.554
ISO62	Water absorption , 24 h, 3.1 mm thk (%)	0.08-0.09	0.07
MECHANICAL			
ISO527	Tensile strength (MPa)	55	113.76-158.58
ISO527	Elongation (%)	5-300	1-3
ISO527	Tensile modulus (10 ³ MPa)	1.93-2.4	8.3-11.7
ISO178	Flexural strength (MPa)	80	165.47-227.53
ISO178	Flexural modulus (10 ³ MPa)	2.3	7.58-9.65
ISO180	Notched Izod impact strength (kJ/m ²)	5	53-139
ASTM D671	Fatigue endurance limit , 10 ⁷ cycles (bar)	196	275-344
ISO2039	Hardness , Rockwell M	117	90-100
THERMAL			
ASTM C177	Thermal conductivity (W/mK)	0.16	
ISO11359	Coefficient of thermal expansion (10 ⁻⁴ m/m-°F)	0.77-1.60	0.23-0.97
ISO75	Deflection temperature (°C) At 1.80 MPa At 0.45 MPa	50-66 110	202-224 224-246
UL 94	Flammability rating	HB to V-O	HB to V-O and 5 V
ELECTRICAL			
IEC243	Dielectric strength (kV/mm) Short time, 3.1 mm thk	16.5-17.7	18.9-22.0
IEC250	Dielectric constant At 1 kHz	3.2-3.4	3.6-3.7
IEC250	Dissipation factor At 1 kHz	0.0014-0.0006	0.002-0.003
IEC93	Volume resistivity (ohm-cm) At 23°C, 50% RH	10 ¹⁵ -10 ¹⁶	5-10x10 ¹⁵
D495	Arc resistance (s)	110-130	80-130
FRICTIONAL			
—	Coefficient of friction Self Against steel	0.12-0.20 0.10-0.23	0.12-0.22 0.12-0.13

Ref: Machine Design – 1985