

## TYPICAL PROPERTIES OF THERMOPLASTIC POLYESTERS

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

Ref: Machine Design – 1985

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

Ref: Machine Design – 1985