

TYPICAL PROPERTIES OF EPOXY MOLDING AND CASTING RESINS

ASTM Test	Property	MOLDING COMPOUNDS		CASTING RESINS		
		Glass-fiber Filler	Mineral Filler	No Filler	Bisphenol A Silica Filler	Cycloaliphatic
PHYSICAL						
D792	Specific gravity	1.6-2.0	1.6-2.0	1.11-1.40	1.6-2.0	1.16-1.21
D792	Specific volume (in ³ /lb)	15.4-14.0	14.2-13.4	24.9-20.0	17.3-13.9	—
D570	Water absorption, 24 h, 1/8-in thk (%)	0.05-0.20	0.04	0.08-0.15	0.04-0.10	0.08-0.15
MECHANICAL						
D638	Tensile strength (psi)	10,000-20,000	5,000-10,000	4,000-13,000	7,000-13,000	10,000-20,000
D638	Elongation (%)	4	—	3-6	1-3	2-10
D638	Tensile modulus (10 ⁵ psi)	30.4	—	3.5	—	5-9
D790	Flexural strength (psi)	10,000-60,000	8,000-15,000	13,300-21,000	8,000-14,000	15,000-32,000
D256	Impact strength, Izod (ft-lb/in of notch)	2-30	0.3-0.4	0.2-1.0	0.3-0.45	0.2-1.0
D785	Hardness, Rockwell M	100-110	110	80-110	85-120	85-120
THERMAL						
C177	Thermal conductivity (10 ⁻⁴ cal-cm/sec-cm ² -°C)	4-10	4-30	4-5	10-20	—
D696	Coefficient of thermal expansion (10 ⁻⁵ in/in-°C)	1.1-3.5	2.0-5.0	4.5-6.0	2.0-4.0	—
D648	Deflection temperature (°F) At 264 psi	250-500	250-500	115-550	160-550	200-450
ELECTRICAL						
D149	Dielectric strength (V/mil) Short time, 1/8-in thk	300-400	300-400	300-500	400-550	420-440
D150	Dielectric constant At 1 kHz	3.5-5.0	3.5-5.0	3.5-4.5	3.2-4.0	3.9-4.5
D150	Dissipation factor At 1 kHz	0.01	0.01	0.002-0.02	0.008-0.03	—
D257	Volume resistivity (ohm-cm) At 73°F, 50% RH	>10 ¹⁴	>10 ¹⁴	10 ¹² -10 ¹⁷	10 ¹³ -10 ¹⁶	10 ¹⁵
D495	Arc resistance (s)	120-180	150-190	45-120	150-300	150-180

TYPICAL PROPERTIES OF EPOXY MOLDING AND CASTING RESINS

ISO Test	Property	MOLDING COMPOUNDS		CASTING RESINS		
		Glass-fiber Filler	Mineral Filler	Bisphenol A		Cycloaliphatic
		No Filler	Silica Filler			
PHYSICAL						
ISO1183	Specific gravity	1.6-2.0	1.6-2.0	1.11-1.40	1.6-2.0	1.16-1.21
ISO1183	Specific volume (cm ³ /g)	0.55-0.51	0.51-0.48	0.89-0.72	0.62-0.50	—
ISO62	Water absorption, 24 h, 3 mm thk (%)	0.05-0.20	0.04	0.08-0.15	0.04-0.10	0.08-0.15
MECHANICAL						
ISO527	Tensile strength (MPa)	69-138	34-69	27-90	48-90	69-138
ASTM D638	Elongation (%)	4	—	3-6	1-3	2-10
ISO527	Tensile modulus (10 ³ MPa)	20.96	—	2.41	—	3.44-6.21
ISO178	Flexural strength (MPa)	69-414	55-103	92-145	55-96	103-221
ISO180	Notched Izod impact strength (J/m)	107-1601	16-21	11-53	16-24	11-53
ISO2039	Hardness, Rockwell M	100-110	110	80-110	85-120	85-120
THERMAL						
ISO8302	Thermal conductivity (W/(mK))	—	—	0,6	—	—
ISO11359	Coefficient of thermal expansion (10 ⁻⁴ m/m-°C)	0.19-0.63	0.36-0.9	0.8-1.1	0.36-0.72	—
ISO75	Deflection temperature (°C)					
	At 1.80 MPa	121-260	121-160	46-288	71-288	93-232
ELECTRICAL						
IEC243	Dielectric strength (kV/mm)					
	Short time, 3 mm thk	11.8-15.7	11.8-15.7	11.8-19.7	15.7-21.6	16.5-17.3
IEC250	Dielectric constant					
	At 1 kHz	3.5-5.0	3.5-5.0	3.5-4.5	3.2-4.0	3.9-4.5
IEC250	Dissipation factor					
	At 1 kHz	0.01	0.01	0.002-0.02	0.008-0.03	—
IEC93	Volume resistivity (ohm-cm)					
	At 23°C, 50% RH	>10 ¹⁴	>10 ¹⁴	10 ¹² -10 ¹⁷	10 ¹³ -10 ¹⁶	10 ¹⁵
ASTM D495	Arc resistance (s)	120-180	150-190	45-120	150-300	150-180