



VALOX™ FR RESINS 457

REGION AMERICAS

DESCRIPTION

VALOX 457 Polybutylene Terephthalate (PBT) resin is a 6.5% glass fiber reinforced, injection moldable grade. This brominated flame retardant PBT has a UL V0 and 5VA rating . VALOX 457 resin is a general purpose resin that is an excellent candidate for a wide variety of electrical component applications.

TYPICAL PROPERTY VALUES

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
MECHANICAL			
Tensile Stress, brk, Type I, 5 mm/min	79	MPa	ASTM D638
Flexural Stress, brk, 1.3 mm/min, 50 mm span	124	MPa	ASTM D790
Flexural Modulus, 1.3 mm/min, 50 mm span	3510	MPa	ASTM D790
Hardness, Rockwell R	121	-	ASTM D785
IMPACT			
Izod Impact, unnotched, 23°C	275	J/m	ASTM D4812
Izod Impact, notched, 23°C	32	J/m	ASTM D256
THERMAL			
HDT, 0.45 MPa, 6.4 mm, unannealed	204	°C	ASTM D648
HDT, 1.82 MPa, 6.4 mm, unannealed	151	°C	ASTM D648
CTE, -40°C to 40°C, flow	6.66E-05	1/°C	ASTM E831
CTE, 60°C to 138°C, flow	6.66E-05	1/°C	ASTM E831
Ball Pressure Test, 125°C +/- 2°C	PASSES	-	IEC 60695-10-2
Relative Temp Index, Elec	120	°C	UL 746B
Relative Temp Index, Mech w/impact	120	°C	UL 746B
Relative Temp Index, Mech w/o impact	140	°C	UL 746B
PHYSICAL			
Specific Gravity	1.44	-	ASTM D792
Specific Volume	0.69	cm³/g	ASTM D792
Water Absorption, (23°C/24hrs)	0.06	%	ASTM D570
Mold Shrinkage, flow, 1.5-3.2 mm	0.6 – 0.8	%	SABIC method
Mold Shrinkage, flow, 3.2-4.6 mm	0.8 – 1	%	SABIC method
Mold Shrinkage, xflow, 1.5-3.2 mm	0.7 – 0.9	%	SABIC method
Mold Shrinkage, xflow, 3.2-4.6 mm	0.9 – 1.2	%	SABIC method
ELECTRICAL			
Volume Resistivity	>5.5E+16	Ω.cm	ASTM D257
Dielectric Strength, in air, 3.2 mm	17.7	kV/mm	ASTM D149
Dielectric Strength, in oil, 1.6 mm	23	kV/mm	ASTM D149
Relative Permittivity, 100 Hz	3.5	-	ASTM D150
Relative Permittivity, 1 MHz	3.4	-	ASTM D150
Dissipation Factor, 100 Hz	0.002	-	ASTM D150
Dissipation Factor, 1 MHz	0.02	-	ASTM D150
Arc Resistance, Tungsten {PLC}	7	PLC Code	ASTM D495
Hot Wire Ignition {PLC}	3	PLC Code	UL 746A

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
High Voltage Arc Track Rate {PLC}	4	PLC Code	UL 746A
High Ampere Arc Ign, surface {PLC}	3	PLC Code	UL 746A
Comparative Tracking Index (UL) {PLC}	3	PLC Code	UL 746A
FLAME CHARACTERISTICS			
UL Yellow Card Link	<u>E121562-220798</u>	-	-
UL Recognized, 94V-0 Flame Class Rating	0.71	mm	UL 94
UL Recognized, 94-5VA Flame Class Rating	3.0	mm	UL 94
Oxygen Index (LOI)	31.5	%	ASTM D2863
Glow Wire Flammability Index 960°C, passes at	1	mm	IEC 60695-2-12
Glow Wire Flammability Index 960°C, passes at, by VDE	3	mm	IEC 60695-2-12
Glow Wire Ignitability Temperature, 1.0 mm	750	°C	IEC 60695-2-13
Glow Wire Ignitability Temperature, 3.0 mm	725	°C	IEC 60695-2-13
INJECTION MOLDING			
Drying Temperature	120	°C	
Drying Time	3 – 4	Hrs	
Drying Time (Cumulative)	12	Hrs	
Maximum Moisture Content	0.02	%	
Melt Temperature	250 – 265	°C	
Nozzle Temperature	245 – 260	°C	
Front - Zone 3 Temperature	250 – 265	°C	
Middle - Zone 2 Temperature	245 – 260	°C	
Rear - Zone 1 Temperature	240 – 255	°C	
Mold Temperature	65 – 90	°C	
Back Pressure	0.3 – 0.7	MPa	
Screw Speed	50 – 80	rpm	
Shot to Cylinder Size	40 – 80	%	
Vent Depth	0.025 – 0.038	mm	