

VALOX™ FR RESINS 357

REGION AMERICAS

DESCRIPTION

VALOX 357 is an unreinforced, impact modified flame retardant Polybutylene Terephthalate/Polycarbonate (PBT/PC) injection moldable grade. It has excellent chemical resistance and a UL94V0@0.63mm and 5VA@3.0mm flame rating. This is a good candidate for applications in the electrical industry including bobbins, switches, and enclosures.

TYPICAL PROPERTY VALUES

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
MECHANICAL			
Tensile Stress, yld, Type I, 50 mm/min	48	MPa	ASTM D638
Tensile Stress, brk, Type I, 50 mm/min	45	MPa	ASTM D638
Tensile Strain, yld, Type I, 50 mm/min	5	%	ASTM D638
Tensile Strain, brk, Type I, 50 mm/min	110	%	ASTM D638
Tensile Modulus, 5 mm/min	2020	MPa	ASTM D638
Flexural Stress, yld, 1.3 mm/min, 50 mm span	83	MPa	ASTM D790
Flexural Stress, brk, 1.3 mm/min, 50 mm span	83	MPa	ASTM D790
Flexural Modulus, 1.3 mm/min, 50 mm span	2060	MPa	ASTM D790
Hardness, Rockwell R	117	-	ASTM D785
Tensile Stress, yield, 50 mm/min	50	MPa	ISO 527
Tensile Stress, break, 50 mm/min	40	MPa	ISO 527
Tensile Strain, yield, 50 mm/min	5	%	ISO 527
Tensile Strain, break, 50 mm/min	30	%	ISO 527
Tensile Modulus, 1 mm/min	2200	MPa	ISO 527
Flexural Stress, yield, 2 mm/min	73	MPa	ISO 178
Flexural Modulus, 2 mm/min	2000	MPa	ISO 178
IMPACT			
Izod Impact, unnotched, 23°C	NB	J/m	ASTM D4812
Izod Impact, notched, 23°C	534	J/m	ASTM D256
Izod Impact, notched, -30°C	153	J/m	ASTM D256
Gardner, 23°C	43	J	ASTM D3029
Modified Gardner, 23°C	43	J	ASTM D3029
Instrumented Dart Impact Total Energy, 23°C	35	J	ASTM D3763
Izod Impact, notched 80*10*4 +23°C	45	kJ/m ²	ISO 180/1A
Izod Impact, notched 80*10*4 -30°C	10	kJ/m ²	ISO 180/1A
Izod Impact, unnotched 80*10*4 +23°C	NB	kJ/m ²	ISO 180/1U
Izod Impact, unnotched 80*10*4 -30°C	NB	kJ/m ²	ISO 180/1U
Charpy 23°C, V-notch Edgew 80*10*4 sp=62mm	45	kJ/m ²	ISO 179/1eA
Charpy 23°C, Unnotch Edgew 80*10*4 sp=62mm	NB	kJ/m ²	ISO 179/1eU
THERMAL			
Vicat Softening Temp, Rate B/50	134	°C	ASTM D1525
HDT, 0.45 MPa, 3.2 mm, unannealed	135	°C	ASTM D648
HDT, 1.82 MPa, 3.2mm, unannealed	98	°C	ASTM D648
HDT, 0.45 MPa, 6.4 mm, unannealed	138	°C	ASTM D648

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
HDT, 1.82 MPa, 6.4 mm, unannealed	99	°C	ASTM D648
CTE, -40°C to 40°C, flow	9.18E-05	1 / °C	ASTM E831
CTE, -40°C to 40°C, xflow	8.4E-05	1 / °C	ASTM E831
CTE, 60°C to 138°C, flow	1.24E-04	1 / °C	ASTM E831
CTE, -40°C to 40°C, flow	7.2E-05	1 / °C	ISO 11359-2
CTE, -40°C to 40°C, xflow	8.4E-05	1 / °C	ISO 11359-2
Ball Pressure Test, 125°C +/- 2°C, by VDE	PASSES	-	IEC 60695-10-2
Vicat Softening Temp, Rate B/50	145	°C	ISO 306
Vicat Softening Temp, Rate B/120	150	°C	ISO 306
HDT/Af, 1.8 MPa Flatw 80*10*4 sp=64mm	84	°C	ISO 75/Af
HDT/Bf, 0.45 MPa Flatw 80*10*4 sp=64mm	125	°C	ISO 75/Bf
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	1.34	-	ASTM D792
Specific Volume	0.75	cm³/g	ASTM D792
Water Absorption, (23°C/24hrs)	0.08	%	ASTM D570
Moisture Absorption, (23°C/50% RH/24 hrs)	0.08	%	ASTM D570
Mold Shrinkage, flow, 3.2 mm	1 – 1.4	%	SABIC method
Mold Shrinkage, flow, 0.75-2.3 mm	0.8 – 1.1	%	SABIC method
Mold Shrinkage, flow, 2.3-4.6 mm	1 – 1.4	%	SABIC method
Mold Shrinkage, xflow, 0.75-2.3 mm	0.9 – 1.3	%	SABIC method
Mold Shrinkage, xflow, 2.3-4.6 mm	1.2 – 1.6	%	SABIC method
Melt Flow Rate, 250°C/5.0 kgf	9.6	g/10 min	ASTM D1238
Density	1.34	g/cm³	ISO 1183
Water Absorption, (23°C/saturated)	0.5	%	ISO 62-1
Moisture Absorption (23°C / 50% RH)	0.15	%	ISO 62
Melt Volume Rate, MVR at 250°C/5.0 kg	8	cm³/10 min	ISO 1133
ELECTRICAL			
Volume Resistivity	>1.2E+16	Ω.cm	ASTM D257
Dielectric Strength, in air, 3.2 mm	18.5	kV/mm	ASTM D149
Dielectric Strength, in oil, 1.6 mm	25.2	kV/mm	ASTM D149
Dielectric Strength, in oil, 3.2 mm	18.5	kV/mm	ASTM D149
Relative Permittivity, 100 Hz	3.2	-	ASTM D150
Relative Permittivity, 1 MHz	3.2	-	ASTM D150
Dissipation Factor, 100 Hz	0.003	-	ASTM D150
Dissipation Factor, 1 MHz	0.03	-	ASTM D150
Arc Resistance, Tungsten {PLC}	6	PLC Code	ASTM D495
Hot Wire Ignition {PLC}	2	PLC Code	UL 746A
High Voltage Arc Track Rate {PLC}	3	PLC Code	UL 746A
High Ampere Arc Ign, surface {PLC}	3	PLC Code	UL 746A
Comparative Tracking Index (UL) {PLC}	2	PLC Code	UL 746A
FLAME CHARACTERISTICS			
UL Yellow Card Link	E121562-100036617	-	-

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
UL Yellow Card Link 2	E121562-220786	-	-
UL Recognized, 94HB Flame Class Rating	0.46	mm	UL 94
UL Recognized, 94V-0 Flame Class Rating	0.63	mm	UL 94
UL Recognized, 94-5VA Flame Class Rating	3	mm	UL 94
Oxygen Index (LOI)	30	%	ASTM D2863
Glow Wire Flammability Index 960°C, passes at	1	mm	IEC 60695-2-12
Glow Wire Ignitability Temperature, 1.0 mm	775	°C	IEC 60695-2-13
Glow Wire Ignitability Temperature, 2.0 mm	750	°C	IEC 60695-2-13
Glow Wire Ignitability Temperature, 3.0 mm	725	°C	IEC 60695-2-13
UV-light, water exposure /immersion	F2	-	UL 746C
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	50 – 75	°C	
Back Pressure	0.3 – 0.7	MPa	
Screw Speed	50 – 100	rpm	
Shot to Cylinder Size	40 – 80	%	
Vent Depth	0.025 – 0.038	mm	