

# VALOX™ FR RESIN 357

REGION ASIA

## DESCRIPTION

VALOX 357 Polycarbonate/Polybutylene Terephthalate (PC/PBT) resin is a non-reinforced, impact modified, injection moldable grade. This brominated flame retardant PC/PBT has a UL V0 rating. VALOX 357 resin is a general purpose resin that is an excellent candidate for a wide variety of applications including bobbins, switches and enclosures.

## TYPICAL PROPERTY VALUES

Revision 20180524

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
<b>MECHANICAL</b>			
Tensile Stress, yld, Type I, 50 mm/min	48	MPa	ASTM D 638
Tensile Stress, brk, Type I, 50 mm/min	45	MPa	ASTM D 638
Tensile Strain, yld, Type I, 50 mm/min	5	%	ASTM D 638
Tensile Strain, brk, Type I, 50 mm/min	110	%	ASTM D 638
Tensile Modulus, 5 mm/min	2020	MPa	ASTM D 638
Flexural Stress, yld, 1.3 mm/min, 50 mm span	83	MPa	ASTM D 790
Flexural Stress, brk, 1.3 mm/min, 50 mm span	83	MPa	ASTM D 790
Flexural Modulus, 1.3 mm/min, 50 mm span	2060	MPa	ASTM D 790
Hardness, Rockwell R	117	-	ASTM D 785
<b>IMPACT</b>			
Izod Impact, unnotched, 23°C	NB	J/m	ASTM D 4812
Izod Impact, notched, 23°C	534	J/m	ASTM D 256
Izod Impact, notched, -30°C	153	J/m	ASTM D 256
Gardner, 23°C	43	J	ASTM D 3029
Modified Gardner, 23°C	43	J	ASTM D 3029
Instrumented Impact Total Energy, 23°C	35	J	ASTM D 3763
Izod Impact, notched 80*10*4 +23°C	45	kJ/m <sup>2</sup>	ISO 180/1A
Izod Impact, notched 80*10*4 -30°C	10	kJ/m <sup>2</sup>	ISO 180/1A
Charpy 23°C, V-notch Edgew 80*10*4 sp=62mm	45	kJ/m <sup>2</sup>	ISO 179/1eA
<b>THERMAL</b>			
Vicat Softening Temp, Rate B/50	134	°C	ASTM D 1525
HDT, 0.45 MPa, 6.4 mm, unannealed	138	°C	ASTM D 648
HDT, 1.82 MPa, 6.4 mm, unannealed	99	°C	ASTM D 648
CTE, -40°C to 40°C, flow	9.18E-05	1/°C	ASTM E 831
CTE, -40°C to 40°C, xflow	8.4E-05	1/°C	ASTM E 831
CTE, 60°C to 138°C, flow	1.24E-04	1/°C	ASTM E 831

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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
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
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
<b>PHYSICAL</b>			
Specific Gravity	1.34	-	ASTM D 792
Specific Volume	0.75	cm <sup>3</sup> /g	ASTM D 792
Water Absorption, 24 hours	0.08	%	ASTM D 570
Mold Shrinkage, flow, 3.2 mm (5)	1 – 1.4	%	SABIC method
Mold Shrinkage, flow, 0.75-2.3 mm (5)	0.8 – 1.1	%	SABIC method
Mold Shrinkage, flow, 2.3-4.6 mm (5)	1 – 1.4	%	SABIC method
Mold Shrinkage, xflow, 0.75-2.3 mm (5)	0.9 – 1.3	%	SABIC method
Mold Shrinkage, xflow, 2.3-4.6 mm (5)	1.2 – 1.6	%	SABIC method
Melt Flow Rate, 250°C/5.0 kgf	9.6	g/10 min	ASTM D 1238
Density	1.34	g/cm <sup>3</sup>	ISO 1183
Water Absorption, (23°C/sat)	0.5	%	ISO 62
Moisture Absorption (23°C / 50% RH)	0.15	%	ISO 62
Melt Volume Rate, MVR at 250°C/5.0 kg	8	cm <sup>3</sup> /10 min	ISO 1133
<b>ELECTRICAL</b>			
Volume Resistivity	>1.2E+16	Ohm-cm	ASTM D 257
Dielectric Strength, in air, 3.2 mm	18.5	kV/mm	ASTM D 149
Dielectric Strength, in oil, 1.6 mm	25.2	kV/mm	ASTM D 149
Dielectric Strength, in oil, 3.2 mm	18.5	kV/mm	ASTM D 149
Relative Permittivity, 100 Hz	3.2	-	ASTM D 150
Relative Permittivity, 1 MHz	3.2	-	ASTM D 150
Dissipation Factor, 100 Hz	0.003	-	ASTM D 150
Dissipation Factor, 1 MHz	0.03	-	ASTM D 150
Arc Resistance, Tungsten {PLC}	6	PLC Code	ASTM D 495
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
<b>FLAME CHARACTERISTICS</b>			
UL Recognized, 94HB Flame Class Rating (3)	0.46	mm	UL 94

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
UL Recognized, 94V-0 Flame Class Rating (3)	0.63	mm	UL 94
UL Recognized, 94-5VA Rating (3)	3	mm	UL 94
Oxygen Index (LOI)	30	%	ASTM D 2863
UV-light, water exposure/immersion	F2	-	UL 746C
<b>INJECTION MOLDING</b>			
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	

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