

VALOX™ 310SE0 resin

Polybutylene Terephthalate

SABIC Innovative Plastics

Message:

VALOX 310SE0 is an unreinforced, flame retardant PBT injection moulding resin. Applications: electrical industry, bobbins, keyboard, switches and switch components and appliance housings.

General Information			
UL YellowCard	E45329-236586		
Features	Flame retardancy		
Uses	Electrical/Electronic Applications		
	Home appliance components		
	Switch		
	Shell		
	spool		
RoHS Compliance	RoHS compliance		
Processing Method	Injection molding		
Physical	Nominal Value	Unit	Test Method
Specific Gravity	1.40	g/cm ³	ASTM D792, ISO 1183
Specific Volume	0.710	cm ³ /g	ASTM D792
Melt Mass-Flow Rate (MFR)			ASTM D1238
250°C/2.16 kg	8.6	g/10 min	ASTM D1238
265°C/5.0 kg	33	g/10 min	ASTM D1238
266°C/5.0 kg	33	g/10 min	ASTM D1238
Melt Volume-Flow Rate (MVR)			ISO 1133
250°C/2.16 kg	8.00	cm ³ /10min	ISO 1133
250°C/5.0 kg	15.0	cm ³ /10min	ISO 1133
265°C/5.0 kg	30.0	cm ³ /10min	ISO 1133
Molding Shrinkage			Internal method
Flow ¹	1.1 - 1.8	%	Internal method
Flow ²	0.90 - 1.6	%	Internal method
Flow ³	1.5 - 2.3	%	Internal method
Flow: 3.20mm	1.5 - 2.3	%	Internal method
Transverse flow ⁴	0.90 - 1.9	%	Internal method
Transverse flow ⁵	1.0 - 1.7	%	Internal method
Transverse flow ⁶	1.6 - 2.4	%	Internal method
Water Absorption			ISO 62
Saturated, 23°C	0.36	%	ISO 62
Equilibrium, 23°C, 50% RH	0.080	%	ISO 62

Hardness	Nominal Value	Unit	Test Method
Rockwell Hardness (R-Scale)	120		ISO 2039-2
Ball Indentation Hardness (H 358/30)	150	MPa	ISO 2039-1
Mechanical	Nominal Value	Unit	Test Method
Tensile Modulus			
-- ⁷	2700	MPa	ASTM D638
--	2700	MPa	ISO 527-2/1
Tensile Strength			
Yield ⁸	60.0	MPa	ASTM D638
Yield	60.0	MPa	ISO 527-2/50
Fracture ⁹	40.0	MPa	ASTM D638
Fracture	40.0	MPa	ISO 527-2/50
Tensile Elongation			
Yield ¹⁰	5.0	%	ASTM D638
Yield	5.0	%	ISO 527-2/50
Fracture ¹¹	15	%	ASTM D638
Fracture	15	%	ISO 527-2/50
Flexural Modulus			
50.0mm span ¹²	2620	MPa	ASTM D790
-- ¹³	2600	MPa	ISO 178
Flexural Stress			
--	90.0	MPa	ISO 178
Yield, 50.0mm span ¹⁴	101	MPa	ASTM D790
Taber Abrasion Resistance (1000 Cycles, 1000 g, CS-17 Wheel)	19.0	mg	Internal method
Impact	Nominal Value	Unit	Test Method
Charpy Notched Impact Strength			
-30°C ¹⁵	4.0	kJ/m ²	ISO 179/1eA
-30°C	5.0	kJ/m ²	ISO 179/2C
23°C ¹⁶	8.0	kJ/m ²	ISO 179/1eA
23°C	6.0	kJ/m ²	ISO 179/2C
Charpy Unnotched Impact Strength ¹⁷			ISO 179/1eU, ISO 179/2U
-30°C	No Break		ISO 179/1eU, ISO 179/2U
23°C	No Break		ISO 179/1eU, ISO 179/2U
Notched Izod Impact			
-30°C	40	J/m	ASTM D256
0°C	45	J/m	ASTM D256
23°C	45	J/m	ASTM D256
-30°C ¹⁸	5.0	kJ/m ²	ISO 180/1A
0°C ¹⁹	5.0	kJ/m ²	ISO 180/1A
23°C ²⁰	5.0	kJ/m ²	ISO 180/1A
Unnotched Izod Impact			ASTM D4812, ISO 180/1U

-30°C	No Break		ASTM D4812, ISO 180/1U
23°C	No Break		ASTM D4812, ISO 180/1U
Instrumented Dart Impact (23°C, Total Energy)	200	J	ASTM D3763
Thermal	Nominal Value	Unit	Test Method
Deflection Temperature Under Load			
0.45 MPa, unannealed, 3.20mm	160	°C	ASTM D648
0.45 MPa, unannealed, 6.40mm	162	°C	ASTM D648
0.45 MPa, unannealed, 100 mm span ²¹	160	°C	ISO 75-2/Be
1.8 MPa, unannealed, 3.20mm	75.0	°C	ASTM D648
1.8 MPa, unannealed, 6.40mm	71.0	°C	ASTM D648
1.8 MPa, unannealed, 100 mm span ²²	60.0	°C	ISO 75-2/Ae
1.8 MPa, unannealed, 64.0mm span ²³	75.0	°C	ISO 75-2/Af
Vicat Softening Temperature			
--	170	°C	ASTM D1525, ISO 306/B50, ISO 306/B120 ²⁴
--	212	°C	ASTM D1525, ISO 306/A50 16 ²⁵
Ball Pressure Test (125°C)	Pass		IEC 60695-10-2
Linear thermal expansion coefficient			
Flow: -40 to 40°C	7.9E-5	cm/cm/°C	ASTM E831
Flow: 60 to 138°C	1.3E-4	cm/cm/°C	ASTM E831
Flow: -40 to 40°C	7.6E-5	cm/cm/°C	ISO 11359-2
Flow: 23 to 60°C	1.0E-4	cm/cm/°C	ISO 11359-2
Lateral: -40 to 40°C	7.9E-5	cm/cm/°C	ASTM E831
Lateral: -40 to 40°C	7.3E-5	cm/cm/°C	ISO 11359-2
Lateral: 23 to 60°C	1.0E-4	cm/cm/°C	ISO 11359-2
Thermal Conductivity	0.24	W/m/K	ISO 8302
RTI Elec	120	°C	UL 746
RTI Imp	120	°C	UL 746
RTI	140	°C	UL 746
Electrical	Nominal Value	Unit	Test Method
Surface Resistivity	> 1.0E+15	ohms	IEC 60093
Volume Resistivity	> 1.0E+15	ohms · cm	ASTM D257, IEC 60093
Dielectric Strength			
1.60 mm, in Oil	26	kV/mm	ASTM D149
3.20 mm, in Air	18	kV/mm	ASTM D149
3.20 mm, in Oil	18	kV/mm	ASTM D149
0.800mm, in oil	39	kV/mm	IEC 60243-1
1.00 mm ²⁶	18	kV/mm	IEC 60243-1
1.60mm, in oil	26	kV/mm	IEC 60243-1
3.20mm, in oil	18	kV/mm	IEC 60243-1
Dielectric Constant			

1 MHz	3.00		ASTM D150, IEC 60250
50 Hz	2.90		IEC 60250
60 Hz	2.90		IEC 60250
100 Hz	3.10		IEC 60250
Dissipation Factor			
1 MHz	0.015		ASTM D150
50 Hz	1.0E-3		IEC 60250
60 Hz	1.0E-3		IEC 60250
100 Hz	2.0E-3		IEC 60250
1 MHz	1.5E-3		IEC 60250
Arc Resistance ²⁷	PLC 6		ASTM D495
Comparative Tracking Index (CTI)	PLC 3		UL 746
Comparative Tracking Index			IEC 60112
--	175	V	IEC 60112
Solution B	100	V	IEC 60112
High Amp Arc Ignition (HAI)	PLC 0		UL 746
High Voltage Arc Resistance to Ignition (HVAR)	PLC 6		UL 746
High Voltage Arc Tracking Rate (HVTR)	PLC 4		UL 746
Hot-wire Ignition (HWI)	PLC 2		UL 746
Flammability	Nominal Value	Unit	Test Method
Flame Rating			UL 94
0.710 mm	V-0		UL 94
3.00 mm	5VA		UL 94
Glow Wire Flammability Index (1.00 mm)	960	°C	IEC 60695-2-12
Oxygen Index	30	%	ISO 4589-2
Fill Analysis	Nominal Value	Unit	Test Method
Melt Viscosity (260°C, 1500 sec ⁻¹)	260	Pa · s	ISO 11443
Injection	Nominal Value	Unit	
Drying Temperature	121	°C	
Drying Time	3.0 - 4.0	hr	
Drying Time, Maximum	12	hr	
Suggested Max Moisture	0.020	%	
Suggested Shot Size	40 - 80	%	
Rear Temperature	232 - 249	°C	
Middle Temperature	238 - 254	°C	
Front Temperature	243 - 260	°C	
Nozzle Temperature	238 - 254	°C	
Processing (Melt) Temp	243 - 260	°C	
Mold Temperature	48.9 - 76.7	°C	
Back Pressure	0.345 - 0.689	MPa	
Screw Speed	50 - 100	rpm	

Vent Depth	0.013 - 0.025	mm
NOTE		
1.	Tensile Bar	
2.	0.75 to 2.3 mm	
3.	2.3 to 4.6 mm	
4.	Tensile Bar	
5.	0.75 to 2.3 mm	
6.	2.3 to 4.6 mm	
7.	5.0 mm/min	
8.	Type 1, 50mm/min	
9.	Type 1, 50mm/min	
10.	Type 1, 50mm/min	
11.	Type 1, 50mm/min	
12.	1.3 mm/min	
13.	2.0 mm/min	
14.	1.3 mm/min	
15.	80*10*4 sp=62mm	
16.	80*10*4 sp=62mm	
17.	80*10*4 sp=62mm	
18.	80*10*4	
19.	80*10*4	
20.	80*10*4	
21.	120*10*4 mm	
22.	120*10*4 mm	
23.	80*10*4 mm	
24.	标准 B (120°C/h), 载荷2 (50N)	
25.	速率 A (50°C/h), 载荷2 (50N)	
26.	Short-Time	
27.	Tungsten electrode	

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