

VALOX™ SHF4960 resin

Polybutylene Terephthalate
SABIC Innovative Plastics Europe

Message:

VALOX Super high flow grade, 30% glass filled Flame retardant, High CTI, heat stabilized with mold release.

General Information			
UL YellowCard	E45329-643225		
Filler / Reinforcement	Glass Fiber,30% Filler by Weight		
Additive	Heat Stabilizer		
	Mold Release		
Features	Flame Retardant		
	Heat Stabilized		
	High Flow		
RoHS Compliance	RoHS Compliant		
Processing Method	Injection Molding		
Physical	Nominal Value	Unit	Test Method
Specific Gravity	1.69	g/cm ³	ASTM D792, ISO 1183
Melt Mass-Flow Rate (MFR)			
250°C/2.16 kg	9.0	g/10 min	ASTM D1238
250°C/2.16 kg	8.0	g/10 min	ISO 1133
Melt Volume-Flow Rate (MVR)			ISO 1133
250°C/2.16 kg	6.00	cm ³ /10min	
250°C/5.0 kg	50.0	cm ³ /10min	
Molding Shrinkage			Internal Method
Flow ¹	0.10 to 0.30	%	
Flow : 3.20 mm	0.10 to 0.30	%	
Across Flow ²	0.40 to 0.70	%	
Water Absorption			ISO 62
Saturation, 23°C	0.25	%	
Equilibrium, 23°C, 50% RH	0.070	%	
Hardness	Nominal Value	Unit	Test Method
Rockwell Hardness (R-Scale)	115		ISO 2039-2
Ball Indentation Hardness (H 358/30)	220	MPa	ISO 2039-1
Mechanical	Nominal Value	Unit	Test Method
Tensile Modulus			
-- ³	11000	MPa	ASTM D638
--	11000	MPa	ISO 527-2/1

Tensile Strength			
Yield ⁴	125	MPa	ASTM D638
Yield	120	MPa	ISO 527-2/5
Break ⁵	125	MPa	ASTM D638
Break	120	MPa	ISO 527-2/5
Tensile Elongation			
Yield ⁶	2.0	%	ASTM D638
Yield	2.0	%	ISO 527-2/5
Break ⁷	2.0	%	ASTM D638
Break	2.0	%	ISO 527-2/5
Flexural Modulus			
50.0 mm Span ⁸	9450	MPa	ASTM D790
-- ⁹	9600	MPa	ISO 178
Flexural Stress			
--	185	MPa	ISO 178
Yield, 50.0 mm Span ¹⁰	177	MPa	ASTM D790
Flexural Strain at Break ¹¹	2.0	%	ISO 178
Filler Content	30	%	ASTM D229
Impact	Nominal Value	Unit	Test Method
Charpy Notched Impact Strength			
-30°C	10	kJ/m ²	ISO 179/2C
23°C ¹²	7.0	kJ/m ²	ISO 179/1eA
23°C	10	kJ/m ²	ISO 179/2C
Charpy Unnotched Impact Strength			ISO 179/2U
-30°C	40	kJ/m ²	
23°C	45	kJ/m ²	
Notched Izod Impact			
-30°C	80	J/m	ASTM D256
0°C	80	J/m	ASTM D256
23°C	80	J/m	ASTM D256
-30°C ¹³	9.0	kJ/m ²	ISO 180/1A
0°C ¹⁴	9.0	kJ/m ²	ISO 180/1A
23°C ¹⁵	9.0	kJ/m ²	ISO 180/1A
Unnotched Izod Impact			
-30°C	580	J/m	ASTM D4812
23°C	590	J/m	ASTM D4812
-30°C ¹⁶	40	kJ/m ²	ISO 180/1U
23°C ¹⁷	40	kJ/m ²	ISO 180/1U
Instrumented Dart Impact (23°C, Total Energy)	60.0	J	ASTM D3763
Thermal	Nominal Value	Unit	Test Method
Deflection Temperature Under Load			

0.45 MPa, Unannealed, 3.20 mm	220	°C	ASTM D648
0.45 MPa, Unannealed, 64.0 mm Span ¹⁸	220	°C	ISO 75-2/Bf
1.8 MPa, Unannealed, 3.20 mm	210	°C	ASTM D648
1.8 MPa, Unannealed, 64.0 mm Span ¹⁹	210	°C	ISO 75-2/Af
Vicat Softening Temperature			
--	218	°C	ASTM D1525, ISO 306/A50 13 ²⁰
--	205	°C	ASTM D1525, ISO 306/B50 14 ²¹
--	200	°C	ISO 306/B120
Ball Pressure Test (125°C)	Pass		IEC 60695-10-2
CLTE			
Flow : -40 to 40°C	2.4E-5	cm/cm/°C	ASTM E831
Flow : -40 to 40°C	2.5E-5	cm/cm/°C	ISO 11359-2
Transverse : -40 to 40°C	8.3E-5	cm/cm/°C	ASTM E831
Transverse : -40 to 40°C	8.6E-5	cm/cm/°C	ISO 11359-2
RTI Elec	130	°C	UL 746
RTI Imp	130	°C	UL 746
RTI Str	140	°C	UL 746
Electrical	Nominal Value	Unit	Test Method
Surface Resistivity	> 1.0E+12	ohms	IEC 60093
Volume Resistivity			
--	1.0E+11	ohms·cm	ASTM D257
--	> 1.0E+11	ohms·cm	IEC 60093
Electric Strength			IEC 60243-1
0.800 mm, in Oil	35	kV/mm	
1.50 mm, in Oil	25	kV/mm	
1.60 mm, in Oil	25	kV/mm	
3.20 mm, in Oil	18	kV/mm	
Dissipation Factor (1 MHz)	0.017		IEC 60250
Comparative Tracking Index (CTI)	PLC 2		UL 746
Comparative Tracking Index	275	V	IEC 60112
High Amp Arc Ignition (HAI)	PLC 0		UL 746
Hot-wire Ignition (HWI)	PLC 3		UL 746
Flammability	Nominal Value	Unit	Test Method
Flame Rating (0.800 mm)	V-0		UL 94
Glow Wire Flammability Index (0.750 to 1.50 mm)	960	°C	IEC 60695-2-12
Glow Wire Ignition Temperature			IEC 60695-2-13
0.800 mm	700	°C	
1.50 mm	700	°C	
Oxygen Index	32	%	ISO 4589-2
Fill Analysis	Nominal Value	Unit	Test Method

Melt Viscosity		ISO 11443
250°C, 1500 sec ⁻¹	110	Pa·s
260°C, 1500 sec ⁻¹	68.0	Pa·s
Injection	Nominal Value	Unit
Drying Temperature	110 to 120	°C
Drying Time	2.0 to 4.0	hr
Suggested Max Moisture	0.020	%
Hopper Temperature	40.0 to 60.0	°C
Rear Temperature	230 to 245	°C
Middle Temperature	240 to 255	°C
Front Temperature	245 to 265	°C
Nozzle Temperature	240 to 260	°C
Processing (Melt) Temp	250 to 270	°C
Mold Temperature	40.0 to 100	°C
NOTE		
1.	Tensile Bar	
2.	Tensile Bar	
3.	5.0 mm/min	
4.	Type I, 5.0 mm/min	
5.	Type I, 5.0 mm/min	
6.	Type I, 5.0 mm/min	
7.	Type I, 5.0 mm/min	
8.	1.3 mm/min	
9.	2.0 mm/min	
10.	1.3 mm/min	
11.	2 mm/min	
12.	80*10*4 sp=62mm	
13.	80*10*4	
14.	80*10*4	
15.	80*10*4	
16.	80*10*4	
17.	80*10*4	
18.	80*10*4 mm	
19.	80*10*4 mm	
20.	Rate A (50°C/h), Loading 2 (50 N)	
21.	Rate B (120°C/h), Loading 2 (50 N)	

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