

VALOX™ 420 resin

Polybutylene Terephthalate

SABIC Innovative Plastics

Message:

VALOX 420 is a 30% glass fiber reinforced PBT injection moulding resin with excellent mechanical and thermal properties. Applications: appliance handles, spotlights, electric motors.

General Information			
UL YellowCard	E45329-236596		
Filler / Reinforcement	Glass fiber reinforced material, 30% filler by weight		
Uses	Handle		
	Home appliance components		
RoHS Compliance	RoHS compliance		
Processing Method	Injection molding		
Physical	Nominal Value	Unit	Test Method
Specific Gravity	1.53	g/cm ³	ASTM D792, ISO 1183
Melt Mass-Flow Rate (MFR) (266°C/5.0 kg)	55	g/10 min	ASTM D1238
Melt Volume-Flow Rate (MVR)			ISO 1133
250°C/2.16 kg	12.0	cm ³ /10min	ISO 1133
250°C/5.0 kg	30.0	cm ³ /10min	ISO 1133
265°C/5.0 kg	45.0	cm ³ /10min	ISO 1133
Molding Shrinkage ¹			Internal method
Flow	0.30 - 0.70	%	Internal method
Transverse flow	0.50 - 1.0	%	Internal method
Water Absorption			ISO 62
Saturated, 23°C	0.26	%	ISO 62
Equilibrium, 23°C, 50% RH	0.060	%	ISO 62
Hardness	Nominal Value	Unit	Test Method
Rockwell Hardness (R-Scale)	120		ISO 2039-2
Ball Indentation Hardness (H 358/30)	125	MPa	ISO 2039-1
Mechanical	Nominal Value	Unit	Test Method
Tensile Modulus			
-- ²	10300	MPa	ASTM D638
--	10300	MPa	ISO 527-2/1
Tensile Strength			
Yield ³	145	MPa	ASTM D638
Yield	135	MPa	ISO 527-2/5
Fracture ⁴	145	MPa	ASTM D638
Fracture	135	MPa	ISO 527-2/5

Tensile Elongation			
Yield ⁵	3.0	%	ASTM D638
Yield	2.0	%	ISO 527-2/5
Fracture ⁶	3.0	%	ASTM D638
Fracture	2.0	%	ISO 527-2/5
Flexural Modulus			
50.0mm span ⁷	8000	MPa	ASTM D790
-- ⁸	8500	MPa	ISO 178
Flexural Stress			
--	205	MPa	ISO 178
--	200	MPa	ISO 178
Yield, 50.0mm span ⁹	190	MPa	ASTM D790
Fracture, 50.0mm span ¹⁰	190	MPa	ASTM D790
Taber Abrasion Resistance (1000 Cycles, 1000 g, CS-17 Wheel)	19.0	mg	Internal method
Flexural Strain at Break ¹¹	4.0	%	ISO 178
Filler Content	30	%	ASTM D229
Impact	Nominal Value	Unit	Test Method
Charpy Notched Impact Strength			
-30°C ¹²	5.0	kJ/m ²	ISO 179/1eA
-30°C	11	kJ/m ²	ISO 179/2C
23°C ¹³	5.0	kJ/m ²	ISO 179/1eA
23°C	11	kJ/m ²	ISO 179/2C
Charpy Unnotched Impact Strength			
-30°C ¹⁴	45	kJ/m ²	ISO 179/1eU
-30°C	50	kJ/m ²	ISO 179/2U
23°C ¹⁵	45	kJ/m ²	ISO 179/1eU
23°C	55	kJ/m ²	ISO 179/2U
Notched Izod Impact			
-30°C	110	J/m	ASTM D256
0°C	110	J/m	ASTM D256
23°C	110	J/m	ASTM D256
-40°C ¹⁶	5.0	kJ/m ²	ISO 180/1A
-30°C ¹⁷	9.0	kJ/m ²	ISO 180/1A
0°C ¹⁸	10	kJ/m ²	ISO 180/1A
23°C ¹⁹	10	kJ/m ²	ISO 180/1A
Unnotched Izod Impact			
-30°C	970	J/m	ASTM D4812
23°C	970	J/m	ASTM D4812
-30°C ²⁰	45	kJ/m ²	ISO 180/1U
23°C ²¹	50	kJ/m ²	ISO 180/1U
Thermal	Nominal Value	Unit	Test Method

Deflection Temperature Under Load			
0.45 MPa, unannealed, 3.20mm	220	°C	ASTM D648
0.45 MPa, unannealed, 64.0mm span ²²	220	°C	ISO 75-2/Bf
1.8 MPa, unannealed, 3.20mm	205	°C	ASTM D648
1.8 MPa, unannealed, 64.0mm span ²³	205	°C	ISO 75-2/Af
Vicat Softening Temperature			
--	210	°C	ASTM D1525 ²⁴
--	220	°C	ASTM D1525, ISO 306/A50 15 ²⁵
--	215	°C	ISO 306/B50, ISO 306/B120
Ball Pressure Test (125°C)	Pass		IEC 60695-10-2
Linear thermal expansion coefficient			ISO 11359-2
Flow: -40 to 40°C	2.1E-5	cm/cm/°C	ISO 11359-2
Flow: 23 to 80°C	2.5E-5	cm/cm/°C	ISO 11359-2
Flow: 23 to 150°C	2.1E-5	cm/cm/°C	ISO 11359-2
Lateral: -40 to 40°C	6.7E-5	cm/cm/°C	ISO 11359-2
Lateral: 23 to 80°C	1.2E-4	cm/cm/°C	ISO 11359-2
Horizontal: 23 to 150°C	1.8E-4	cm/cm/°C	ISO 11359-2
Thermal Conductivity	0.19	W/m/K	ISO 8302
RTI Elec	140	°C	UL 746
RTI Imp	140	°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			
0.800 mm, in Oil	30	kV/mm	ASTM D149
1.60 mm, in Oil	24	kV/mm	ASTM D149
3.20 mm, in Oil	16	kV/mm	ASTM D149
0.800mm, in oil	30	kV/mm	IEC 60243-1
1.00 mm ²⁶	19	kV/mm	IEC 60243-1
1.60mm, in oil	24	kV/mm	IEC 60243-1
3.20mm, in oil	16	kV/mm	IEC 60243-1
Relative Permittivity			IEC 60250
50 Hz	3.10		IEC 60250
60 Hz	3.10		IEC 60250
1 MHz	3.10		IEC 60250
Dissipation Factor			IEC 60250
50 Hz	1.0E-3		IEC 60250
60 Hz	1.0E-3		IEC 60250
1 MHz	0.010		IEC 60250
Arc Resistance ²⁷	PLC 5		ASTM D495

Comparative Tracking Index (CTI)	PLC 0		UL 746
Comparative Tracking Index	> 600	V	IEC 60112
High Amp Arc Ignition (HAI)	PLC 1		UL 746
High Voltage Arc Tracking Rate (HVTR)	PLC 1		UL 746
Hot-wire Ignition (HWI)	PLC 1		UL 746
Flammability	Nominal Value	Unit	Test Method
Flame Rating			UL 94
0.840 mm	HB		UL 94
6.00 mm	HB		UL 94
Glow Wire Flammability Index (1.00 mm)	750	°C	IEC 60695-2-12
Glow Wire Ignition Temperature			IEC 60695-2-13
1.00 mm	775	°C	IEC 60695-2-13
3.00 mm	825	°C	IEC 60695-2-13
Fill Analysis	Nominal Value	Unit	Test Method
Melt Viscosity (260°C, 1500 sec ⁻¹)	130	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	238 - 254	°C	
Middle Temperature	243 - 260	°C	
Front Temperature	249 - 266	°C	
Nozzle Temperature	243 - 260	°C	
Processing (Melt) Temp	249 - 266	°C	
Mold Temperature	65.6 - 87.8	°C	
Back Pressure	0.345 - 0.689	MPa	
Screw Speed	50 - 80	rpm	
Vent Depth	0.025 - 0.038	mm	
NOTE			
1.	Tensile Bar		
2.	5.0 mm/min		
3.	Type 1, 5.0 mm/min		
4.	Type 1, 5.0 mm/min		
5.	Type 1, 5.0 mm/min		
6.	Type 1, 5.0 mm/min		
7.	1.3 mm/min		
8.	2.0 mm/min		
9.	1.3 mm/min		
10.	1.3 mm/min		
11.	2 mm/min		

12.	80*10*4 sp=62mm
13.	80*10*4 sp=62mm
14.	80*10*4 sp=62mm
15.	80*10*4 sp=62mm
16.	80*10*4
17.	80*10*4
18.	80*10*4
19.	80*10*4
20.	80*10*4
21.	80*10*4
22.	80*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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Recommended distributors for this material

Susheng Import & Export Trading Co.,Ltd.

Tel: +86 21 5895 8519

Phone: +86 13424755533

Email: sales@su-jiao.com

No. 215, Lianhe North Road, Fengxian District, Shanghai, China

