

VALOX™ 420 resin

Polybutylene Terephthalate

SABIC Innovative Plastics

Message:

30% GR, excellent strength, stiffness and dimensional stability. High heat resistance. Appliance handles, spotlights, electric motors, connectors.

General Information	
UL YellowCard	E121562-220792
Filler / Reinforcement	Glass Fiber,30% Filler by Weight
Features	Good Dimensional Stability
	Good Stiffness
	Good Strength
	High Heat Resistance
Uses	Appliance Components
	Connectors
	Handles
Processing Method	Injection Molding
Multi-Point Data	Coefficient of Thermal Expansion vs. Temperature (ASTM E831)
	Elastic Modulus vs Temperature (ASTM D4065)
	Flexural DMA (ASTM D4065)
	Instrumented Impact (Energy) (ASTM D3763)
	Instrumented Impact (Load) (ASTM D3763)
	Pressure-Volume-Temperature (PVT - Zoller Method)
	Shear DMA (ASTM D4065)
	Specific Heat vs. Temperature (ASTM D3417)
	Tensile Creep (ASTM D2990)
	Tensile Fatigue
	Tensile Stress vs. Strain (ASTM D638)
	Thermal Conductivity vs. Temperature (ASTM E1530)
	Viscosity vs. Shear Rate (ASTM D3835)

Physical	Nominal Value	Unit	Test Method
Specific Gravity	1.53	g/cm³	ASTM D792
Specific Volume	0.660	cm³/g	ASTM D792
Filler Content	30	%	ASTM D229
Melt Mass-Flow Rate (MFR) (250°C/2.16 kg)	17	g/10 min	ISO 1133
Melt Volume-Flow Rate (MVR) (250°C/2.16 kg)	13.0	cm³/10min	ISO 1133

Molding Shrinkage			Internal Method
Flow ¹	0.30 to 0.70	%	
Flow ²	0.30 to 0.50	%	
Flow ³	0.50 to 0.80	%	
Flow : 3.20 mm	0.30 to 0.80	%	
Across Flow ⁴	0.50 to 1.0	%	
Across Flow ⁵	0.40 to 0.60	%	
Across Flow ⁶	0.60 to 0.90	%	
Across Flow : 3.20 mm	0.50 to 1.0	%	
Water Absorption			
24 hr	0.090	%	ASTM D570
Equilibrium, 23°C, 50% RH	0.080	%	ISO 62
Hardness	Nominal Value	Unit	Test Method
Rockwell Hardness (R-Scale)	118		ASTM D785, ISO 2039-2
Ball Indentation Hardness (H 358/30)	122	MPa	ISO 2039-1
Mechanical	Nominal Value	Unit	Test Method
Tensile Modulus			
-- ⁷	9300	MPa	ASTM D638
--	9300	MPa	ISO 527-2/1
Tensile Strength			
Yield ⁸	120	MPa	ASTM D638
Yield	125	MPa	ISO 527-2/5
Break ⁹	120	MPa	ASTM D638
Break	125	MPa	ISO 527-2/5
Tensile Elongation			
Yield ¹⁰	2.7	%	ASTM D638
Yield	2.0	%	ISO 527-2/5
Break ¹¹	2.7	%	ASTM D638
Break	2.0	%	ISO 527-2/5
Flexural Modulus			
50.0 mm Span ¹²	7580	MPa	ASTM D790
-- ¹³	8500	MPa	ISO 178
Flexural Stress			
--	195	MPa	ISO 178
Yield, 50.0 mm Span ¹⁴	195	MPa	ASTM D790
Break, 50.0 mm Span ¹⁵	190	MPa	ASTM D790
Taber Abrasion Resistance (1000 Cycles, 1000 g, CS-17 Wheel)	19.0	mg	ASTM D1044
Impact	Nominal Value	Unit	Test Method
Charpy Notched Impact Strength ¹⁶			ISO 179/1eA
-30°C	5.0	kJ/m ²	
23°C	5.0	kJ/m ²	

Charpy Unnotched Impact Strength ¹⁷			ISO 179/1eU
-30°C	45	kJ/m ²	
23°C	45	kJ/m ²	
Notched Izod Impact			
-30°C	80	J/m	ASTM D256
23°C	85	J/m	ASTM D256
-30°C ¹⁸	7.0	kJ/m ²	ISO 180/1A
23°C ¹⁹	8.0	kJ/m ²	ISO 180/1A
Unnotched Izod Impact			
23°C	800	J/m	ASTM D4812
-30°C ²⁰	45	kJ/m ²	ISO 180/1U
23°C ²¹	45	kJ/m ²	ISO 180/1U
Instrumented Dart Impact (23°C, Total Energy)	8.00	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, 6.40 mm	216	°C	ASTM D648
0.45 MPa, Unannealed, 64.0 mm Span ²²	217	°C	ISO 75-2/Bf
1.8 MPa, Unannealed, 3.20 mm	203	°C	ASTM D648
1.8 MPa, Unannealed, 6.40 mm	207	°C	ASTM D648
1.8 MPa, Unannealed, 64.0 mm Span ²³	204	°C	ISO 75-2/Af
Vicat Softening Temperature			
--	215	°C	ASTM D1525, ISO 306/B50, ISO 306/B120 ²⁴
--	223	°C	ISO 306/A50
Ball Pressure Test (125°C)	Pass		IEC 60695-10-2
CLTE			
Flow : -40 to 40°C	2.5E-5	cm/cm/°C	ASTM E831, ISO 11359-2
Flow : 60 to 138°C	2.5E-5	cm/cm/°C	ASTM E831
Transverse : -40 to 40°C	1.2E-4	cm/cm/°C	ASTM E831, 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 Str	140	°C	UL 746
Electrical	Nominal Value	Unit	Test Method
Surface Resistivity	> 1.0E+15	ohms	IEC 60093
Volume Resistivity			
--	> 3.2E+16	ohms · cm	ASTM D257
--	> 1.0E+15	ohms · cm	IEC 60093
Dielectric Strength			
1.60 mm, in Oil	25	kV/mm	ASTM D149
3.20 mm, in Air	19	kV/mm	ASTM D149

0.800 mm, in Oil	28	kV/mm	IEC 60243-1
1.00 mm ²⁵	19	kV/mm	IEC 60243-1
1.60 mm, in Oil	24	kV/mm	IEC 60243-1
3.20 mm, in Oil	16	kV/mm	IEC 60243-1
Dielectric Constant			
100 Hz	3.80		ASTM D150
1 MHz	3.70		ASTM D150
50 Hz	3.10		IEC 60250
60 Hz	3.10		IEC 60250
1 MHz	3.10		IEC 60250
Dissipation Factor			
100 Hz	2.0E-3		ASTM D150
1 MHz	0.020		ASTM D150
50 Hz	1.0E-3		IEC 60250
60 Hz	1.0E-3		IEC 60250
100 Hz	1.0E-3		IEC 60250
1 MHz	0.010		IEC 60250
Arc Resistance ²⁶	PLC 5		ASTM D495
Comparative Tracking Index (CTI)	PLC 0		UL 746
Comparative Tracking Index	300	V	IEC 60112
High Voltage Arc Tracking Rate (HVTR)	PLC 1		UL 746
Flammability	Nominal Value	Unit	Test Method
Flame Rating (0.840 mm)	HB		UL 94
Glow Wire Flammability Index (1.00 mm)	750	°C	IEC 60695-2-12
Oxygen Index	19	%	ASTM D2863
Injection	Nominal Value	Unit	
Drying Temperature	121	°C	
Drying Time	3.0 to 4.0	hr	
Drying Time, Maximum	12	hr	
Suggested Max Moisture	0.020	%	
Suggested Shot Size	40 to 80	%	
Rear Temperature	238 to 254	°C	
Middle Temperature	243 to 260	°C	
Front Temperature	249 to 266	°C	
Nozzle Temperature	243 to 260	°C	
Processing (Melt) Temp	249 to 266	°C	
Mold Temperature	65.6 to 87.8	°C	
Back Pressure	0.345 to 0.689	MPa	
Screw Speed	50 to 80	rpm	
Vent Depth	0.025 to 0.038	mm	
NOTE			
1.	Tensile Bar		

2.	1.5 to 3.2 mm
3.	3.2 to 4.6 mm
4.	Tensile Bar
5.	1.5 to 3.2 mm
6.	3.2-4.6 mm
7.	5.0 mm/min
8.	Type I, 5.0 mm/min
9.	Type I, 5.0 mm/min
10.	Type I, 5.0 mm/min
11.	Type I, 5.0 mm/min
12.	1.3 mm/min
13.	2.0 mm/min
14.	1.3 mm/min
15.	1.3 mm/min
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.	80*10*4
22.	80*10*4 mm
23.	80*10*4 mm
24.	Rate B (120°C/h), Loading 2 (50 N)
25.	Short-Time
26.	Tungsten Electrode

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