VALOX™ 420 resin

Polybutylene Terephthalate

SABIC Innovative Plastics

PROSPECTOR®

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Technical Data

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

General			
Material Status	• Commercial: Active		
Literature [1]	• Technical Datasheet		
UL Yellow Card [2]	• E121562-220792		
Search for UL Yellow Card	• SABIC Innovative Plastics • VALOX™		
Availability	• North America		
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
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 [4]	0.50 to 0.80	%	
Flow [5]	0.30 to 0.50	%	
Flow [6]	0.30 to 0.70	%	
Flow : 3.20 mm	0.30 to 0.80	%	
Across Flow [7]	0.60 to 0.90	%	
Across Flow [5]	0.40 to 0.60	%	
Across Flow [6]	0.50 to 1.0	%	
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

Mechanical	Nominal Value	Unit	Test Method
Tensile Modulus			
-- [8]	9300	MPa	ASTM D638
--	9300	MPa	ISO 527-2/1

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Mechanical	Nominal Value	Unit	Test Method
Tensile Strength			
Yield [9]	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 [9]	2.7	%	ASTM D638
Yield	2.0	%	ISO 527-2/5
Break [9]	2.7	%	ASTM D638
Break	2.0	%	ISO 527-2/5
Flexural Modulus			
50.0 mm Span [10]	7580	MPa	ASTM D790
-- [11]	8500	MPa	ISO 178
Flexural Stress			
-- [11, 12]	195	MPa	ISO 178
Yield, 50.0 mm Span [10]	195	MPa	ASTM D790
Break, 50.0 mm Span [10]	190	MPa	ASTM D790
Taber Abrasion Resistance			ASTM D1044
1000 Cycles, 1000 g, CS-17 Wheel	19.0	mg	

Impact	Nominal Value	Unit	Test Method
Charpy Notched Impact Strength [13]			ISO 179/1eA
-30°C	5.0	kJ/m²	
23°C	5.0	kJ/m²	
Charpy Unnotched Impact Strength [13]			ISO 179/1eU
-30°C	45	kJ/m²	
23°C	45	kJ/m²	
Notched Izod Impact			
-30°C	80	J/m	ASTM D256
23°C	85	J/m	ASTM D256
-30°C [14]	7.0	kJ/m²	ISO 180/1A
23°C [14]	8.0	kJ/m²	ISO 180/1A
Unnotched Izod Impact			
23°C	800	J/m	ASTM D4812
-30°C [14]	45	kJ/m²	ISO 180/1U
23°C [14]	45	kJ/m²	ISO 180/1U
Instrumented Dart Impact			ASTM D3763
23°C, Total Energy	8.00	J	

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

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 [15]	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 [15]	204	°C	ISO 75-2/Af
Vicat Softening Temperature			
--	215	°C	ASTM D1525 [16]
--	223	°C	ISO 306/A50

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Thermal	Nominal Value	Unit	Test Method
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 [17]	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 [18]	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 (0.8 mm)	HB		UL 94
Glow Wire Flammability Index (1.0 mm)	750	°C	IEC 60695-2-12
Oxygen Index	19	%	ASTM D2863

Additional Information	Nominal Value	Unit	Test Method
Filler Content	30	%	ASTM D229

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

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Injection	Nominal Value	Unit
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	66 to 88	°C
Back Pressure	0.345 to 0.689	MPa
Screw Speed	50 to 80	rpm
Vent Depth	0.025 to 0.038	mm

Notes

[1] These links provide you with access to supplier literature. We work hard to keep them up to date; however you may find the most current literature from the supplier.

[2] A UL Yellow Card contains UL-verified flammability and electrical characteristics. UL Prospector continually works to link Yellow Cards to individual plastic materials in Prospector, however this list may not include all of the appropriate links. It is important that you verify the association between these Yellow Cards and the plastic material found in Prospector. For a complete listing of Yellow Cards, visit the UL Yellow Card Search.

[3] Typical properties: these are not to be construed as specifications.

[4] 3.2 to 4.6 mm

[5] 1.5 to 3.2 mm

[6] Tensile Bar

[7] 3.2-4.6 mm

[8] 5.0 mm/min

[9] Type I, 5.0 mm/min

[10] 1.3 mm/min

[11] 2.0 mm/min

[12] Yield

[13] 80*10*4 sp=62mm

[14] 80*10*4

[15] 80*10*4 mm

[16] Rate B (120°C/h), Loading 2 (50 N)

[17] Short-Time

[18] Tungsten Electrode

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Where to Buy

Supplier

SABIC Innovative Plastics
Pittsfield, MA USA
Telephone: 800-845-0600
Web: http://www.sabic-ip.com/

Distributor

Nexeo Solutions
Telephone: 888-594-6009
Web: http://www.nexeosolutions.com/
Availability: North America

Reseller

A Reseller is not a distributor authorized by the Supplier.

Guangzhou Huaxiu Plastics Co., Ltd.
Telephone: +86-20-82582555
Web: http://www.va-so.com
Availability: China

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