

VALOX* 420SE0 Resin

Polybutylene Terephthalate

SABIC Innovative Plastics



Prospector

Product Description

30% GR, UL94V-0/5V rated. Numerous applications; edge trimmers, food mixer motor stator and commutator, cooling fan, connectors, bobbins, switches etc

General

Material Status	• Commercial: Active		
Availability	• North America		
Filler / Reinforcement	• Glass Fiber Reinforcement, 30% Filler by Weight		
Uses	• Connectors	• Switches	
Forms	• Pellets		
Multi-Point Data	• Flexural DMA (ASTM D4065)	• Shear DMA (ASTM D4065)	• Tensile Fatigue
	• Instrumented Impact (Energy) (ASTM D3763)	• Specific Heat vs. Temperature (ASTM D3417)	• Tensile Stress vs. Strain (ASTM D638)
	• Instrumented Impact (Load) (ASTM D3763)	• Tensile Creep (ASTM D2990)	• Viscosity vs. Shear Rate (ASTM D3835)

Physical	Nominal Value (English)	Nominal Value (SI)	Test Method
Specific Gravity			
--	1.63	1.63 g/cm ³	ASTM D792
--	1.63 g/cm ³	1.63 g/cm ³	ISO 1183
Melt Mass-Flow Rate (MFR) (250°C/5.0 kg)	42 g/10 min	42 g/10 min	ASTM D1238
Melt Volume-Flow Rate (MVR) (250°C/5.0 kg)	1.77 in ³ /10min	29.0 cm ³ /10min	ISO 1133
Molding Shrinkage			Internal Method
Flow ²	0.0010 to 0.0050 in/in	0.10 to 0.50 %	
Flow: 0.126 in (3.20 mm)	0.0050 to 0.0070 in/in	0.50 to 0.70 %	
Across Flow ²	0.0040 to 0.0080 in/in	0.40 to 0.80 %	
Across Flow: 0.126 in (3.20 mm)	0.0050 to 0.010 in/in	0.50 to 1.0 %	
Water Absorption			ISO 62
Saturation, 73°F (23°C)	0.090 %	0.090 %	
Equilibrium, 73°F (23°C), 50% RH	0.070 %	0.070 %	

Mechanical	Nominal Value (English)	Nominal Value (SI)	Test Method
Tensile Modulus			
-- ³	1.74E+6 psi	12000 MPa	ASTM D638
--	1.45E+6 psi	10000 MPa	ISO 527-2/1
Tensile Strength			
Yield ⁴	13100 psi	90.0 MPa	ASTM D638
Yield	17400 psi	120 MPa	ISO 527-2/5
Break ⁴	13100 psi	90.0 MPa	ASTM D638
Break	17400 psi	120 MPa	ISO 527-2/5
Tensile Elongation			
Yield ⁴	1.0 %	1.0 %	ASTM D638
Yield	1.9 %	1.9 %	ISO 527-2/5
Break ⁴	1.0 %	1.0 %	ASTM D638
Break	1.9 %	1.9 %	ISO 527-2/5
Flexural Modulus			
1.97 in (50.0 mm) Span ⁵	1.42E+6 psi	9800 MPa	ASTM D790
-- ⁶	1.38E+6 psi	9500 MPa	ISO 178
Flexural Strength			
--	26100 psi	180 MPa	ISO 178
Break, 1.97 in (50.0 mm) Span ⁵	27000 psi	186 MPa	ASTM D790
Taber Abrasion Resistance			Internal Method
1000 Cycles, 1000 g, CS-17 Wheel	22.0 mg	22.0 mg	

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Thursday, June 18, 2009

Impact	Nominal Value (English)	Nominal Value (SI)	Test Method
Charpy Notched Impact Strength ⁷			ISO 179/1eA
-22°F (-30°C)	2.86 ft·lb/in ²	6.00 kJ/m ²	
73°F (23°C)	3.33 ft·lb/in ²	7.00 kJ/m ²	
Charpy Unnotched Impact Strength ⁷			ISO 179/1eU
-22°F (-30°C)	23.8 ft·lb/in ²	50.0 kJ/m ²	
73°F (23°C)	23.8 ft·lb/in ²	50.0 kJ/m ²	
Notched Izod Impact			
-22°F (-30°C)	1.07 ft·lb/in	57.0 J/m	ASTM D256
73°F (23°C)	1.12 ft·lb/in	60.0 J/m	ASTM D256
-22°F (-30°C) ⁸	2.86 ft·lb/in ²	6.00 kJ/m ²	ISO 180/1A
73°F (23°C) ⁸	3.33 ft·lb/in ²	7.00 kJ/m ²	ISO 180/1A
Unnotched Izod Impact			
73°F (23°C)	11.6 ft·lb/in	620 J/m	ASTM D4812
-22°F (-30°C) ⁸	21.4 ft·lb/in ²	45.0 kJ/m ²	ISO 180/1U
73°F (23°C) ⁸	21.4 ft·lb/in ²	45.0 kJ/m ²	ISO 180/1U
Instrumented Dart Impact			ASTM D3763
73°F (23°C), Total Energy	44.3 in·lb	5.00 J	
Hardness	Nominal Value (English)	Nominal Value (SI)	Test Method
Rockwell Hardness (R-Scale)	119	119	ASTM D785 ISO 2039-2
Ball Indentation Hardness (H 358/30)	17100 psi	118 MPa	ISO 2039-1
Thermal	Nominal Value (English)	Nominal Value (SI)	Test Method
Deflection Temperature Under Load			
66 psi (0.45 MPa), Unannealed, 0.126 in (3.20 mm)	414 °F	212 °C	ASTM D648
66 psi (0.45 MPa), Unannealed, 3.94 in (100 mm) Span ⁹	428 °F	220 °C	ISO 75-2/Be
264 psi (1.8 MPa), Unannealed, 0.126 in (3.20 mm)	392 °F	200 °C	ASTM D648
264 psi (1.8 MPa), Unannealed, 3.94 in (100 mm) Span ⁹	383 °F	195 °C	ISO 75-2/Ae
264 psi (1.8 MPa), Unannealed, 2.52 in (64.0 mm) Span ¹⁰	392 °F	200 °C	ISO 75-2/Af
Vicat Softening Temperature			
--	392 °F	200 °C	ASTM D1525 ¹¹
--	428 °F	220 °C	ISO 306/A50
CLTE			
Flow: -40 to 104°F (-40 to 40°C)	0.000014 in/in/°F	0.000025 cm/cm/°C	ASTM E831 ISO 11359-2
Flow: 73 to 176°F (23 to 80°C)	0.000014 in/in/°F	0.000025 cm/cm/°C	ISO 11359-2
Transverse: -40 to 104°F (-40 to 40°C)	0.000049 in/in/°F	0.000089 cm/cm/°C	ASTM E831 ISO 11359-2
Transverse: 73 to 176°F (23 to 80°C)	0.000067 in/in/°F	0.00012 cm/cm/°C	ISO 11359-2
Thermal Conductivity	1.7 Btu·in/hr/ft ² /°F	0.25 W/m/K	ISO 8302
Electrical	Nominal Value (English)	Nominal Value (SI)	Test Method
Surface Resistivity	> 1.0E+15 ohms	> 1.0E+15 ohms	IEC 60093
Volume Resistivity	> 1.0E+15 ohm·cm	> 1.0E+15 ohm·cm	ASTM D257 IEC 60093

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Electrical	Nominal Value (English)	Nominal Value (SI)	Test Method
Dielectric Strength			
0.0630 in (1.60 mm), in Oil	610 V/mil	24 kV/mm	ASTM D149
0.126 in (3.20 mm), in Air	480 V/mil	19 kV/mm	ASTM D149
0.0315 in (0.800 mm), in Oil	580 V/mil	23 kV/mm	IEC 60243-1
0.0630 in (1.60 mm), in Oil	560 V/mil	22 kV/mm	IEC 60243-1
0.126 in (3.20 mm), in Oil	410 V/mil	16 kV/mm	IEC 60243-1
Dielectric Constant			
100 Hz	3.80	3.80	ASTM D150 IEC 60250
1E+6 Hz	3.70	3.70	ASTM D150
50 Hz	3.30	3.30	IEC 60250
60 Hz	3.30	3.30	IEC 60250
1E+6 Hz	3.30	3.30	IEC 60250
Dissipation Factor			
100 Hz	0.0020	0.0020	ASTM D150 IEC 60250
1E+6 Hz	0.020	0.020	ASTM D150
50 Hz	0.0010	0.0010	IEC 60250
60 Hz	0.0010	0.0010	IEC 60250
1E+6 Hz	0.010	0.010	IEC 60250
Arc Resistance (PLC) ¹²	PLC 6	PLC 6	ASTM D495
Comparative Tracking Index			IEC 60112
--	175 V	175 V	
Solution B	125 V	125 V	
Flammability	Nominal Value (English)	Nominal Value (SI)	Test Method
Flame Rating - UL			
0.0157 in (0.400 mm)	V-2	V-2	UL 94
0.0280 in (0.710 mm)	V-0	V-0	
0.0787 in (2.00 mm)	5VA	5VA	
Glow Wire Flammability Index			
0.0394 in (1.00 mm)	1760 °F	960 °C	IEC 60695-2-12
Oxygen Index	32 %	32 %	ISO 4589-2
UL 746	Nominal Value (English)	Nominal Value (SI)	Test Method
RTI Str	284 °F	140 °C	UL 746
RTI Imp	266 °F	130 °C	UL 746
RTI Elec	266 °F	130 °C	UL 746
Comparative Tracking Index (CTI) (PLC)	PLC 3	PLC 3	UL 746
High Voltage Arc Tracking Rate (HVTR) (PLC)			UL 746
--	PLC 4	PLC 4	
Hot-wire Ignition (HWI) (PLC)	PLC 2	PLC 2	UL 746
High Amp Arc Ignition (HAI) (PLC)	PLC 0	PLC 0	UL 746
Outdoor Suitability	f2	f2	UL 746C
Additional Information	Nominal Value (English)	Nominal Value (SI)	Test Method
Ball Pressure Test (257°F (125°C))	PASSES	PASSES	IEC 60695-10-2
Specific Volume	0.610 cm ³ /g	0.610 cm ³ /g	ASTM D792

Notes

¹ Typical properties: these are not to be construed as specifications.

² Tensile Bar

³ 0.20 in/min (5.0 mm/min)

⁴ Type I, 0.20 in/min (5.0 mm/min)

⁵ 0.051 in/min (1.3 mm/min)

⁶ 0.079 in/min (2.0 mm/min)

⁷ 80*10*4 sp=62mm

⁸ 80*10*4

⁹ 120*10*4 mm

¹⁰ 80*10*4 mm

¹¹ Rate B (120°C/h), Loading 2 (50 N)

¹² Tungsten Electrode