

VALOX* 4631 Resin

SABIC Innovative Plastics Europe - Polybutylene Terephthalate

General Information			
Product Description			
VALOX 4631 is a 30% glass reinforced, flame retarded PBT injection moulding resin with good electrical properties and excellent mechanical properties.			
General			
Filler / Reinforcement	• Glass Fiber Reinforcement, 30% Filler by Weight		
Features	• Flame Retardant	• Good Electrical Properties	
RoHS Compliance	• RoHS Compliant		
Forms	• Pellets		
Processing Method	• Injection Molding		
ASTM and ISO Properties ¹			
Physical	Nominal Value (English)	Nominal Value (SI)	Test Method
Density	1.65 g/cm³	1.65 g/cm³	ISO 1183
Melt Volume-Flow Rate (MVR) (250°C/2.16 kg)	0.732 in³/10min	12.0 cm³/10min	ISO 1133
Molding Shrinkage ²			Internal Method
Flow	0.0010 to 0.0030 in/in	0.10 to 0.30 %	
Across Flow	0.0040 to 0.0070 in/in	0.40 to 0.70 %	
Water Absorption			ISO 62
Saturation, 73°F (23°C)	0.25 %	0.25 %	
Equilibrium, 73°F (23°C), 50% RH	0.070 %	0.070 %	
Mechanical	Nominal Value (English)	Nominal Value (SI)	Test Method
Tensile Modulus	1.45E+6 psi	10000 MPa	ISO 527-2/1
Tensile Stress			ISO 527-2/5
Yield	17400 psi	120 MPa	
Break	17400 psi	120 MPa	
Tensile Strain (Break)	2.0 %	2.0 %	ISO 527-2/5
Flexural Modulus ³	1.31E+6 psi	9000 MPa	ISO 178
Flexural Strength ^{3, 4}	26800 psi	185 MPa	ISO 178

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Impact	Nominal Value (English)	Nominal Value (SI)	Test Method
Charpy Notched Impact Strength ⁵			ISO 179/1eA
-22°F (-30°C)	4.76 ft-lb/in ²	10.00 kJ/m ²	
73°F (23°C)	4.76 ft-lb/in ²	10.00 kJ/m ²	
Charpy Unnotched Impact Strength			ISO 179/1eU ISO 179/2U
-22°F (-30°C) ⁶	26.2 ft-lb/in ²	55.0 kJ/m ²	
73°F (23°C) ⁵	23.8 ft-lb/in ²	50.0 kJ/m ²	
Notched Izod Impact Strength ⁷			ISO 180/1A
-22°F (-30°C)	4.76 ft-lb/in ²	10.00 kJ/m ²	
73°F (23°C)	4.28 ft-lb/in ²	9.00 kJ/m ²	
Unnotched Izod Impact Strength ⁷			ISO 180/1U
-22°F (-30°C)	23.8 ft-lb/in ²	50.0 kJ/m ²	
73°F (23°C)	21.4 ft-lb/in ²	45.0 kJ/m ²	
Hardness	Nominal Value (English)	Nominal Value (SI)	Test Method
Rockwell Hardness (R-Scale)	119	119	ISO 2039-2
Ball Indentation Hardness (H 358/30)	18100 psi	125 MPa	ISO 2039-1
Thermal	Nominal Value (English)	Nominal Value (SI)	Test Method
Heat Deflection Temperature ⁸			
66 psi (0.45 MPa), Unannealed, 3.94 (100) Span	428 °F	220 °C	ISO 75-2/Be
264 psi (1.8 MPa), Unannealed, 3.94 in (100 mm) Span	401 °F	205 °C	ISO 75-2/Ae
Vicat Softening Temperature			
--	428 °F	220 °C	ISO 306/A50
--	410 °F	210 °C	ISO 306/B50
--	401 °F	205 °C	ISO 306/B120
CLTE			ISO 11359-2
Flow: 73 to 176°F (23 to 80°C)	8.9E-6 in/in/°F	0.000016 cm/cm/°C	
Flow: 73 to 302°F (23 to 150°C)	7.8E-6 in/in/°F	0.000014 cm/cm/°C	
Transverse: 73 to 176°F (23 to 80°C)	0.000067 in/in/°F	0.00012 cm/cm/°C	
Transverse: 73 to 302°F (23 to 150°C)	0.000072 in/in/°F	0.00013 cm/cm/°C	
Ball Pressure Test (257°F (125°C))	PASSES	PASSES	IEC 60695-10-2
Electrical	Nominal Value (English)	Nominal Value (SI)	Test Method
Surface Resistivity	> 1.0E+16 ohms	> 1.0E+16 ohms	IEC 60093
Volume Resistivity	> 1.0E+15 ohm-cm	> 1.0E+15 ohm-cm	IEC 60093
Relative Permittivity			IEC 60250
50 Hz	3.00	3.00	
60 Hz	3.00	3.00	
1E+6 Hz	3.00	3.00	
Dissipation Factor			IEC 60250
50 Hz	0.00100	0.00100	
60 Hz	0.00100	0.00100	
1E+6 Hz	0.01000	0.01000	
Comparative Tracking Index	250 V	250 V	IEC 60112
Electric Strength			IEC 60243-1
0.0315 in (0.800 mm), in Oil	685.80 V/mil	27.00 kV/mm	
0.0630 in (1.60 mm), in Oil	584.20 V/mil	23.00 kV/mm	
0.126 in (3.20 mm), in Oil	482.60 V/mil	19.00 kV/mm	

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Flammability	Nominal Value (English)	Nominal Value (SI)	Test Method
Flame Rating - UL (0.0295 in (0.750 mm))	V-0	V-0	UL 94
Glow Wire Flammability Index			IEC 60695-2-12
0.118 in (3.00 mm)	1760 °F	960 °C	
Oxygen Index	34 %	34 %	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
Processing Information			
Injection	Nominal Value (English)	Nominal Value (SI)	
Drying Temperature	230 to 248 °F	110 to 120 °C	
Drying Time	2.0 to 4.0 hr	2.0 to 4.0 hr	
Suggested Max Moisture	0.020 %	0.020 %	
Hopper Temperature	104 to 140 °F	40.0 to 60.0 °C	
Rear Temperature	446 to 473 °F	230 to 245 °C	
Middle Temperature	464 to 491 °F	240 to 255 °C	
Front Temperature	473 to 509 °F	245 to 265 °C	
Nozzle Temperature	464 to 500 °F	240 to 260 °C	
Processing (Melt) Temp	482 to 518 °F	250 to 270 °C	
Mold Temperature	104 to 212 °F	40.0 to 100 °C	