

VALOX™ FR Resin 4631 - Europe

Polybutylene Terephthalate

SABIC

PROSPECTOR®

www.ulprospector.com

Technical Data

Product Description

VALOX 4631 is a 30% glass filled, flame retardant Polybutylene Terephthalate (PBT) injection moldable grade. It has good electrical and mechanical properties and a UL94V0@0.75 flame rating.

General

Material Status	• Commercial: Active
UL Yellow Card ¹	• E45329-236605
Search for UL Yellow Card	• SABIC
Availability	• Europe
Uses	• Appliances • Automotive Under the Hood • Electrical/Electronic Applications • Electronic Displays
RoHS Compliance	• RoHS Compliant
Also Available In	• Asia Pacific

Physical	Nominal Value Unit	Test Method
Density / Specific Gravity	1.67 g/cm ³	ASTM D792 ISO 1183
Melt Mass-Flow Rate (MFR)		ASTM D1238
250°C/2.16 kg	13 g/10 min	
250°C/5.0 kg	67 g/10 min	
265°C/5.0 kg	90 g/10 min	
266°C/5.0 kg	90 g/10 min	
Melt Volume-Flow Rate (MVR)		ISO 1133
250°C/5.0 kg	40 cm ³ /10min	
265°C/5.0 kg	65 cm ³ /10min	
Molding Shrinkage ³		Internal Method
Across Flow	0.40 to 0.70 %	
Flow	0.10 to 0.30 %	
Water Absorption		ISO 62
Saturation, 23°C	0.25 %	
Equilibrium, 23°C, 50% RH	0.070 %	

Mechanical	Nominal Value Unit	Test Method
Tensile Modulus		
-- ⁴	11500 MPa	ASTM D638
--	11500 MPa	ISO 527-2/1
Tensile Strength		
Yield ⁵	130 MPa	ASTM D638
Yield	130 MPa	ISO 527-2/5
Break ⁵	130 MPa	ASTM D638
Break	130 MPa	ISO 527-2/5
Tensile Elongation		
Yield ⁵	2.0 %	ASTM D638
Yield	2.0 %	ISO 527-2/5
Break ⁵	2.0 %	ASTM D638
Break	2.0 %	ISO 527-2/5
Flexural Modulus		
50.0 mm Span ⁶	9000 MPa	ASTM D790
-- ⁷	9600 MPa	ISO 178



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Mechanical	Nominal Value Unit	Test Method
Flexural Stress		
-- 7, 8	200 MPa	ISO 178
Yield, 50.0 mm Span ⁶	200 MPa	ASTM D790
Break, 50.0 mm Span ⁶	200 MPa	ASTM D790
Flexural Strain - at Break ⁹	3.0 %	ISO 178
Impact	Nominal Value Unit	Test Method
Charpy Notched Impact Strength		
-30°C ¹⁰	10 kJ/m ²	ISO 179/1eA
-30°C	9.0 kJ/m ²	ISO 179/2C
23°C ¹⁰	10 kJ/m ²	ISO 179/1eA
23°C	11 kJ/m ²	ISO 179/2C
Charpy Unnotched Impact Strength		
-30°C ¹⁰	55 kJ/m ²	ISO 179/1eU
-30°C	50 kJ/m ²	ISO 179/2U
23°C ¹⁰	50 kJ/m ²	ISO 179/1eU ISO 179/2U
Notched Izod Impact		
-30°C	80 J/m	ASTM D256
0°C	80 J/m	ASTM D256
23°C	80 J/m	ASTM D256
-30°C ¹¹	8.0 kJ/m ²	ISO 180/1A
0°C ¹¹	8.0 kJ/m ²	ISO 180/1A
23°C ¹¹	8.0 kJ/m ²	ISO 180/1A
Unnotched Izod Impact		
-30°C	660 J/m	ASTM D4812
23°C	660 J/m	ASTM D4812
-30°C ¹¹	45 kJ/m ²	ISO 180/1U
23°C ¹¹	45 kJ/m ²	ISO 180/1U
Hardness	Nominal Value Unit	Test Method
Rockwell Hardness (R-Scale)	118	ISO 2039-2
Ball Indentation Hardness (H 358/30)	115 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, 4.00 mm, 100 mm Span ¹²	220 °C	ISO 75-2/Be
0.45 MPa, Unannealed, 4.00 mm, 64.0 mm Span ¹¹	220 °C	ISO 75-2/Bf
1.8 MPa, Unannealed, 3.20 mm	205 °C	ASTM D648
1.8 MPa, Unannealed, 4.00 mm, 64.0 mm Span ¹¹	205 °C	ISO 75-2/af
Vicat Softening Temperature		
--	220 °C	ASTM D1525 ¹³ ISO 306/A50 ¹³
--	205 °C	ASTM D1525 ¹⁴
Ball Pressure Test (123 to 127°C)	Pass	IEC 60695-10-2
CLTE		ISO 11359-2
Flow : -40 to 40°C	2.2E-5 cm/cm/°C	
Flow : 23 to 80°C	1.6E-5 cm/cm/°C	
Flow : 23 to 150°C	1.4E-5 cm/cm/°C	
Transverse : -40 to 40°C	8.2E-5 cm/cm/°C	
Transverse : 23 to 80°C	1.2E-4 cm/cm/°C	
Transverse : 23 to 150°C	1.3E-4 cm/cm/°C	
RTI Elec	130 °C	UL 746B



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Thermal	Nominal Value Unit	Test Method
RTI Imp	130 °C	UL 746B
RTI Str	140 °C	UL 746B
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
Electric Strength		IEC 60243-1
0.800 mm, in Oil	27 kV/mm	
1.60 mm, in Oil	23 kV/mm	
3.20 mm, in Oil	19 kV/mm	
Dielectric Constant		
1 MHz	3.50	ASTM D150 IEC 60250
50 Hz	3.00	IEC 60250
60 Hz	3.00	IEC 60250
Dissipation Factor		
1 MHz	0.010	ASTM D150 IEC 60250
50 Hz	1.0E-3	IEC 60250
60 Hz	1.0E-3	IEC 60250
Comparative Tracking Index (CTI)	PLC 2	UL 746
Comparative Tracking Index	250 V	IEC 60112
High Amp Arc Ignition (HAI) ¹⁵	PLC 3	UL 746
High Voltage Arc Tracking Rate (HVTR)	PLC 4	UL 746
Hot-wire Ignition (HWI)	PLC 0	UL 746
Flammability	Nominal Value Unit	Test Method
Flame Rating (0.75 mm)	V-0	UL 94
Glow Wire Flammability Index (3.0 mm)	960 °C	IEC 60695-2-12
Oxygen Index	34 %	ISO 4589-2
Fill Analysis	Nominal Value Unit	Test Method
Melt Viscosity (260°C, 1500 sec ⁻¹)	115 Pa·s	ISO 11443
Additional Information	Nominal Value Unit	Test Method
Filler Content	30 %	ASTM D229
Injection	Nominal Value Unit	
Drying Temperature	110 to 120 °C	
Drying Time	2.0 to 4.0 hr	
Suggested Max Moisture	0.020 %	
Hopper Temperature	40 to 60 °C	
Rear Temperature	230 to 245 °C	
Middle Temperature	240 to 255 °C	
Front Temperature	245 to 265 °C	
Nozzle Temperature	240 to 260 °C	
Processing (Melt) Temp	250 to 270 °C	
Mold Temperature	40 to 100 °C	



Notes

¹ 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.

² Typical properties: these are not to be construed as specifications.

³ Tensile Bar

⁴ 5.0 mm/min

⁵ Type I, 5.0 mm/min

⁶ 1.3 mm/min

⁷ 2.0 mm/min

⁸ at Yield

⁹ 2 mm/min

¹⁰ 80*10*4 sp=62mm

¹¹ 80*10*4 mm

¹² 120*10*4 mm

¹³ Rate A (50°C/h), Loading 1 (10 N)

¹⁴ Rate A (50°C/h), Loading 2 (50 N)

¹⁵ Surface



Where to Buy**Supplier****SABIC**

Web: <http://www.sabic.com/>

Distributor**3Polymer (Guangzhou) Chemical Technology Co., Ltd.**

Telephone: +86-20-3466-7988

Web: <http://3polymer.com>

Availability: China

AECTRA

Telephone: +33-4-72-54-36-42

Web: <https://www.aectra.fr/>

Availability: Bulgaria, Romania

AGI-Augusto Guimarães & Irmão

Telephone: +351-22753-7400

Web: <https://www.agi.pt/en/>

Availability: Portugal

GRÄSSLIN

Telephone: +49-7721-4040-261

Web: <https://www.graesslin-kunststoffe.de>

Availability: Germany

Guzmán Polymers

Telephone: +34-963-992-400

Web: <https://www.guzmanglobal.com/en/productos/plastics/>

Availability: Italy, Spain, Turkey

Lenorplastics

Telephone: +41-61-706-11-11

Web: <https://www.lenorplastics.ch>

Availability: Switzerland

Plastoplan

Telephone: +43-1-25040-0

Web: <https://www.plastoplan.com/>

Availability: Austria, Czech Republic, Hungary, Slovakia

POLYMIX

POLYMIX is a Pan European distribution company. Contact POLYMIX for availability of individual products by country.

Telephone: +33-3-8920-1380

Web: <http://www.polymix.eu/>

Availability: France

RESINEX Group

RESINEX is a Pan European distribution company. Contact RESINEX for availability of individual products by country.

Telephone: +32-14-672511

Web: <http://www.resinex.com/>

Availability: Europe

Ultrapolymers

Ultrapolymers is a Pan European distribution company. Contact Ultrapolymers for availability of individual products by country.

Telephone: +32-11-57-95-57

Web: <http://www.ultrapolymers.com/>

Availability: Belgium, Netherlands, South Africa

