

VALOX™ DR51 resin

Polybutylene Terephthalate

SABIC Innovative Plastics

Message:

VALOX DR51 is a 15% glass fiber reinforced PBT injection moulding resin with excellent mechanical, thermal and electrical performance. Applications: spotlights, appliance housings, handles.

General Information			
UL YellowCard	E45329-236617		
Filler / Reinforcement	Glass fiber reinforced material, 15% filler by weight		
Features	Good electrical performance		
Uses	Handle		
	Home appliance components		
	Shell		
RoHS Compliance	RoHS compliance		
Processing Method	Injection molding		
Physical	Nominal Value	Unit	Test Method
Specific Gravity	1.45	g/cm ³	ASTM D792, ISO 1183
Specific Volume	0.710	cm ³ /g	ASTM D792
Flexural Strain at Break ¹	5.0	%	ISO 178
Filler Content	17	%	ASTM D229
Melt Mass-Flow Rate (MFR)			
265°C/5.0 kg	80	g/10 min	ASTM D1238
250°C/2.16 kg	18	g/10 min	ISO 1133
Melt Volume-Flow Rate (MVR)			ISO 1133
250°C/2.16 kg	15.0	cm ³ /10min	ISO 1133
250°C/5.0 kg	43.0	cm ³ /10min	ISO 1133
265°C/5.0 kg	65.0	cm ³ /10min	ISO 1133
Molding Shrinkage			Internal method
Flow ²	0.40 - 0.60	%	Internal method
Flow ³	0.60 - 0.90	%	Internal method
Flow ⁴	0.50 - 0.80	%	Internal method
Transverse flow ⁵	0.50 - 0.80	%	Internal method
Transverse flow ⁶	0.80 - 1.1	%	Internal method
Transverse flow ⁷	0.60 - 0.90	%	Internal method
Water Absorption			
24 hr	0.070	%	ASTM D570
Saturated, 23°C	0.20	%	ISO 62
Equilibrium, 23°C, 50% RH	0.070	%	ISO 62

Hardness	Nominal Value	Unit	Test Method
Rockwell Hardness			
Class r	118		ASTM D785
R scale	120		ISO 2039-2
Ball Indentation Hardness (H 358/30)	100	MPa	ISO 2039-1
Mechanical	Nominal Value	Unit	Test Method
Tensile Modulus			
-- ⁸	5900	MPa	ASTM D638
--	6000	MPa	ISO 527-2/1
Tensile Strength			
Yield ⁹	90.0	MPa	ASTM D638
Yield	95.0	MPa	ISO 527-2/5
Fracture ¹⁰	90.0	MPa	ASTM D638
Fracture	100	MPa	ISO 527-2/5
Tensile Elongation			
Yield ¹¹	3.0	%	ASTM D638
Yield	3.0	%	ISO 527-2/5
Fracture ¹²	3.0	%	ASTM D638
Fracture	3.0	%	ISO 527-2/5
Flexural Modulus			
50.0mm span ¹³	4500	MPa	ASTM D790
-- ¹⁴	5100	MPa	ISO 178
Flexural Stress			
--	150	MPa	ISO 178
--	155	MPa	ISO 178
Yield, 50.0mm span ¹⁵	140	MPa	ASTM D790
Fracture, 50.0mm span ¹⁶	140	MPa	ASTM D790
Taber Abrasion Resistance (1000 Cycles, 1000 g, CS-17 Wheel)	16.0	mg	Internal method
Impact	Nominal Value	Unit	Test Method
Charpy Notched Impact Strength			
-30°C ¹⁷	4.0	kJ/m ²	ISO 179/1eA, ISO 179/2C
23°C ¹⁸	5.0	kJ/m ²	ISO 179/1eA
23°C	4.0	kJ/m ²	ISO 179/2C
Charpy Unnotched Impact Strength			
-30°C ¹⁹	30	kJ/m ²	ISO 179/1eU
-30°C	27	kJ/m ²	ISO 179/2U
23°C ²⁰	30	kJ/m ²	ISO 179/1eU, ISO 179/2U
Notched Izod Impact			
-30°C	40	J/m	ASTM D256
0°C	40	J/m	ASTM D256
23°C	40	J/m	ASTM D256

-40°C ²¹	4.0	kJ/m ²	ISO 180/1A
-30°C ²²	4.0	kJ/m ²	ISO 180/1A
-20°C ²³	4.0	kJ/m ²	ISO 180/1A
0°C ²⁴	4.0	kJ/m ²	ISO 180/1A
23°C ²⁵	4.0	kJ/m ²	ISO 180/1A
Unnotched Izod Impact			
-30°C	330	J/m	ASTM D4812
23°C	330	J/m	ASTM D4812
-30°C ²⁶	30	kJ/m ²	ISO 180/1U
23°C ²⁷	30	kJ/m ²	ISO 180/1U
Thermal	Nominal Value	Unit	Test Method
Deflection Temperature Under Load			
0.45 MPa, unannealed, 6.40mm	210	°C	ASTM D648
0.45 MPa, unannealed, 100 mm span ²⁸	210	°C	ISO 75-2/Be
1.8 MPa, unannealed, 6.40mm	190	°C	ASTM D648
1.8 MPa, unannealed, 100 mm span ²⁹	175	°C	ISO 75-2/Ae
1.8 MPa, annealed, 3.20mm	193	°C	ASTM D648
Vicat Softening Temperature			
--	210	°C	ASTM D1525, ISO 306/B50 17 ³⁰
--	220	°C	ASTM D1525, ISO 306/A50 18 ³¹
--	205	°C	ISO 306/B120
Ball Pressure Test (125°C)	Pass		IEC 60695-10-2
Linear thermal expansion coefficient			
Flow: -40 to 40°C	2.2E-5	cm/cm/°C	ASTM E831
Flow: 60 to 138°C	2.2E-5	cm/cm/°C	ASTM E831
Flow: -40 to 40°C	3.4E-5	cm/cm/°C	ISO 11359-2
Flow: 23 to 80°C	3.5E-5	cm/cm/°C	ISO 11359-2
Flow: 23 to 150°C	3.4E-5	cm/cm/°C	ISO 11359-2
Lateral: -40 to 40°C	9.6E-5	cm/cm/°C	ASTM E831
Lateral: -40 to 40°C	7.1E-5	cm/cm/°C	ISO 11359-2
Lateral: 23 to 80°C	9.5E-5	cm/cm/°C	ISO 11359-2
Horizontal: 23 to 150°C	1.8E-4	cm/cm/°C	ISO 11359-2
Thermal Conductivity	0.19	W/m/K	ISO 8302
RTI Elec	130	°C	UL 746
RTI Imp	130	°C	UL 746
RTI	140	°C	UL 746
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
Dielectric Strength			
1.60 mm, in Oil	23	kV/mm	ASTM D149

3.20 mm, in Air	20	kV/mm	ASTM D149
0.800mm, in oil	26	kV/mm	IEC 60243-1
1.60mm, in oil	24	kV/mm	IEC 60243-1
3.20mm, in oil	18	kV/mm	IEC 60243-1
Dielectric Constant			
100 Hz	3.60		ASTM D150
1 MHz	3.40		ASTM D150
50 Hz	3.00		IEC 60250
60 Hz	3.00		IEC 60250
1 MHz	2.90		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
1 MHz	0.015		IEC 60250
Arc Resistance ³²	PLC 5		ASTM D495
Comparative Tracking Index (CTI)	PLC 2		UL 746
Comparative Tracking Index	300	V	IEC 60112
High Amp Arc Ignition (HAI)	PLC 1		UL 746
High Voltage Arc Tracking Rate (HVTR)	PLC 1		UL 746
Hot-wire Ignition (HWI)	PLC 3		UL 746
Flammability	Nominal Value	Unit	Test Method
Flame Rating			UL 94
0.750 mm	HB		UL 94
6.00 mm	HB		UL 94
Glow Wire Flammability Index (1.00 mm)	750	°C	IEC 60695-2-12
Fill Analysis	Nominal Value	Unit	Test Method
Melt Viscosity (260°C, 1500 sec ⁻¹)	170	Pa · s	ISO 11443
Injection	Nominal Value	Unit	
Drying Temperature	110 - 120	°C	
Drying Time	2.0 - 4.0	hr	
Suggested Max Moisture	0.020	%	
Hopper Temperature	40.0 - 60.0	°C	
Rear Temperature	230 - 245	°C	
Middle Temperature	240 - 255	°C	
Front Temperature	245 - 265	°C	
Nozzle Temperature	240 - 260	°C	
Processing (Melt) Temp	250 - 270	°C	
Mold Temperature	40.0 - 100	°C	
NOTE			
1.	2 mm/min		

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.	Tensile Bar
8.	5.0 mm/min
9.	Type 1, 5.0 mm/min
10.	Type 1, 5.0 mm/min
11.	Type 1, 5.0 mm/min
12.	Type 1, 5.0 mm/min
13.	1.3 mm/min
14.	2.0 mm/min
15.	1.3 mm/min
16.	1.3 mm/min
17.	80*10*4 sp=62mm
18.	80*10*4 sp=62mm
19.	80*10*4 sp=62mm
20.	80*10*4 sp=62mm
21.	80*10*4
22.	80*10*4
23.	80*10*4
24.	80*10*4
25.	80*10*4
26.	80*10*4
27.	80*10*4
28.	120*10*4 mm
29.	120*10*4 mm
30.	标准 B (120°C/h), 载荷2 (50N)
31.	速率 A (50°C/h), 载荷2 (50N)
32.	Tungsten electrode

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