

VALOX™ ENH4550 resin

Polybutylene Terephthalate
SABIC Innovative Plastics Europe

Message:
25% GF reinforced, Non-Brominated & Non-Chlorinated Flame Retardant, PBT resin.

General Information			
UL YellowCard	E45329-100051199	E45329-101458636	
Filler / Reinforcement	Glass Fiber,25% Filler by Weight		
Features	Bromine Free		
	Chlorine Free		
	Flame Retardant		
RoHS Compliance	RoHS Compliant		
Processing Method	Injection Molding		
Physical	Nominal Value	Unit	Test Method
Specific Gravity	1.52	g/cm³	ASTM D792, ISO 1183
Melt Mass-Flow Rate (MFR)			ASTM D1238
250°C/5.0 kg	25	g/10 min	
265°C/5.0 kg	25	g/10 min	
Melt Volume-Flow Rate (MVR)			ISO 1133
250°C/5.0 kg	17.0	cm³/10min	
265°C/5.0 kg	17.0	cm³/10min	
Molding Shrinkage			Internal Method
Flow ¹	0.10 to 0.50	%	
Flow : 3.20 mm	0.10 to 0.50	%	
Across Flow ²	0.60 to 1.2	%	
Across Flow : 3.20 mm	0.50 to 1.1	%	
Water Absorption			ISO 62
Saturation, 23°C	0.23	%	
Equilibrium, 23°C, 50% RH	0.060	%	
UV Weathering - Start F1 from 1mm onword	.75		UL 746C
Water Immersion - Start F1 from 1mm onword	.75		UL 746C
Flexural Strain at Break ³	2.0	%	ISO 178
Filler Content	25	%	ASTM D229
Hardness	Nominal Value	Unit	Test Method
Rockwell Hardness (R-Scale)	124		ISO 2039-2
Ball Indentation Hardness (H 358/30)	174	MPa	ISO 2039-1
Mechanical	Nominal Value	Unit	Test Method

Tensile Modulus			
-- ⁴	10300	MPa	ASTM D638
--	10400	MPa	ISO 527-2/1
Tensile Strength			
Yield ⁵	115	MPa	ASTM D638
Yield	112	MPa	ISO 527-2/5
Break ⁶	115	MPa	ASTM D638
Break	112	MPa	ISO 527-2/5
Tensile Elongation			
Yield ⁷	2.0	%	ASTM D638
Yield	2.0	%	ISO 527-2/5
Break ⁸	2.0	%	ASTM D638
Break	2.0	%	ISO 527-2/5
Flexural Modulus			
50.0 mm Span ⁹	8500	MPa	ASTM D790
-- ¹⁰	9200	MPa	ISO 178
Flexural Stress			
--	175	MPa	ISO 178
Yield, 50.0 mm Span ¹¹	165	MPa	ASTM D790
Break, 50.0 mm Span ¹²	165	MPa	ASTM D790
Impact	Nominal Value	Unit	Test Method
Charpy Notched Impact Strength			
-30°C	9.0	kJ/m ²	ISO 179/2C
23°C ¹³	5.0	kJ/m ²	ISO 179/1eA
23°C	9.0	kJ/m ²	ISO 179/2C
Charpy Unnotched Impact Strength			ISO 179/2U
-30°C	40	kJ/m ²	
23°C	45	kJ/m ²	
Notched Izod Impact			
-30°C	70	J/m	ASTM D256
0°C	70	J/m	ASTM D256
23°C	70	J/m	ASTM D256
-30°C ¹⁴	8.0	kJ/m ²	ISO 180/1A
0°C ¹⁵	8.0	kJ/m ²	ISO 180/1A
23°C ¹⁶	8.0	kJ/m ²	ISO 180/1A
Unnotched Izod Impact			
-30°C	550	J/m	ASTM D4812
23°C	550	J/m	ASTM D4812
-30°C ¹⁷	38	kJ/m ²	ISO 180/1U
23°C ¹⁸	40	kJ/m ²	ISO 180/1U
Instrumented Dart Impact (23°C, Total Energy)	6.50	J	ASTM D3763

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, 64.0 mm Span ¹⁹	210	°C	ISO 75-2/Bf
1.8 MPa, Unannealed, 3.20 mm	205	°C	ASTM D648
1.8 MPa, Unannealed, 64.0 mm Span ²⁰	220	°C	ISO 75-2/Af
Vicat Softening Temperature			
--	215	°C	ASTM D1525 ²¹
--	205	°C	ASTM D1525, ISO 306/B50 14 ²²
--	220	°C	ISO 306/A50
--	207	°C	ISO 306/B120
Ball Pressure Test (125°C)	Pass		IEC 60695-10-2
CLTE			
Flow : -40 to 40°C	2.3E-5	cm/cm/°C	ASTM E831
Flow : -40 to 40°C	2.7E-5	cm/cm/°C	ISO 11359-2
Flow : 23 to 80°C	2.2E-5	cm/cm/°C	ISO 11359-2
Flow : 23 to 150°C	2.5E-5	cm/cm/°C	ISO 11359-2
Transverse : -40 to 40°C	2.3E-5	cm/cm/°C	ASTM E831
Transverse : -40 to 40°C	7.1E-5	cm/cm/°C	ISO 11359-2
Transverse : 23 to 80°C	9.1E-5	cm/cm/°C	ISO 11359-2
Transverse : 23 to 150°C	1.5E-4	cm/cm/°C	ISO 11359-2
RTI Elec	130	°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	1.0E+15	ohms · cm	ASTM D257, IEC 60093
Dielectric Strength			
0.800 mm, in Oil	30	kV/mm	ASTM D149, IEC 60243-1
1.60 mm, in Oil	24	kV/mm	ASTM D149, IEC 60243-1
3.20 mm, in Air	21	kV/mm	ASTM D149
3.20 mm, in Oil	19	kV/mm	ASTM D149, IEC 60243-1
Dielectric Constant (1 MHz)	3.40		ASTM D150, IEC 60250
Dissipation Factor (1 MHz)	0.12		ASTM D150, IEC 60250
Arc Resistance ²³	PLC 6		ASTM D495
Comparative Tracking Index (CTI)	PLC 2		UL 746
Comparative Tracking Index	300	V	IEC 60112
High Amp Arc Ignition (HAI)	PLC 0		UL 746
High Voltage Arc Tracking Rate (HVTR)	PLC 0		UL 746
Hot-wire Ignition (HWI)	PLC 0		UL 746
Flammability	Nominal Value	Unit	Test Method

Flame Rating			UL 94
0.300 mm	V-0		
2.00 mm	5VA		
Glow Wire Flammability Index (0.400 mm)	960	°C	IEC 60695-2-12
Glow Wire Ignition Temperature			IEC 60695-2-13
0.400 mm	775	°C	
0.800 mm	775	°C	
3.00 mm	775	°C	
3.00 mm ²⁴	775	°C	
Oxygen Index	34	%	ASTM D2863
Fill Analysis	Nominal Value	Unit	Test Method
Melt Viscosity			ISO 11443
250°C, 1500 sec ⁻¹	210	Pa · s	
260°C, 1500 sec ⁻¹	160	Pa · s	
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	40.0 to 60.0	°C	
Rear Temperature	230 to 240	°C	
Middle Temperature	235 to 250	°C	
Front Temperature	240 to 260	°C	
Nozzle Temperature	230 to 255	°C	
Processing (Melt) Temp	245 to 260	°C	
Mold Temperature	40.0 to 100	°C	
NOTE			
1.	Tensile Bar		
2.	Tensile Bar		
3.	2 mm/min		
4.	5.0 mm/min		
5.	Type I, 5.0 mm/min		
6.	Type I, 5.0 mm/min		
7.	Type I, 5.0 mm/min		
8.	Type I, 5.0 mm/min		
9.	1.3 mm/min		
10.	2.0 mm/min		
11.	1.3 mm/min		
12.	1.3 mm/min		
13.	80*10*4 sp=62mm		
14.	80*10*4		
15.	80*10*4		
16.	80*10*4		

17.	80*10*4
18.	80*10*4
19.	80*10*4 mm
20.	80*10*4 mm
21.	Rate A (50°C/h), Loading 2 (50 N)
22.	Rate B (120°C/h), Loading 2 (50 N)
23.	Tungsten Electrode
24.	by VDE

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