

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	E207780-100986524	E207780-101458997	
Filler / Reinforcement	Glass fiber reinforced material, 25% filler by weight		
Features	Chlorine Free		
	Bromine-free		
	Flame retardancy		
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	ASTM D1238
265°C/5.0 kg	27	g/10 min	ASTM D1238
Melt Volume-Flow Rate (MVR)			ISO 1133
250°C/5.0 kg	17.0	cm³/10min	ISO 1133
265°C/5.0 kg	20.0	cm³/10min	ISO 1133
Molding Shrinkage			Internal method
Flow ¹	0.10 - 0.50	%	Internal method
Flow: 3.20mm	0.10 - 0.50	%	Internal method
Transverse flow ²	0.60 - 1.2	%	Internal method
Transverse flow: 3.20mm	0.50 - 1.1	%	Internal method
Water Absorption			ISO 62
Saturated, 23°C	0.23	%	ISO 62
Equilibrium, 23°C, 50% RH	0.060	%	ISO 62
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			
-- ³	10300	MPa	ASTM D638
--	10400	MPa	ISO 527-2/1
Tensile Strength			
Yield ⁴	115	MPa	ASTM D638
Yield	112	MPa	ISO 527-2/5

Fracture ⁵	115	MPa	ASTM D638
Fracture	112	MPa	ISO 527-2/5
Tensile Elongation			
Yield ⁶	2.0	%	ASTM D638
Yield	2.0	%	ISO 527-2/5
Fracture ⁷	2.0	%	ASTM D638
Fracture	2.0	%	ISO 527-2/5
Flexural Modulus			
50.0mm span ⁸	8500	MPa	ASTM D790
-- ⁹	9200	MPa	ISO 178
Flexural Stress			
--	175	MPa	ISO 178
Yield, 50.0mm span ¹⁰	165	MPa	ASTM D790
Fracture, 50.0mm span ¹¹	165	MPa	ASTM D790
Flexural Strain at Break ¹²	2.0	%	ISO 178
Filler Content	25	%	ASTM D229
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	ISO 179/2U
23°C	45	kJ/m ²	ISO 179/2U
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, 3.20mm	220	°C	ASTM D648
0.45 MPa, unannealed, 64.0mm span ¹⁹	220	°C	ISO 75-2/Bf

1.8 MPa, unannealed, 3.20mm	205	°C	ASTM D648
1.8 MPa, unannealed, 64.0mm span ²⁰	210	°C	ISO 75-2/Af
Vicat Softening Temperature			
--	205	°C	ASTM D1525 ²¹
--	215	°C	ASTM D1525 ²²
--	220	°C	ISO 306/A50
--	208	°C	ISO 306/B50
--	207	°C	ISO 306/B120
Ball Pressure Test (125°C)	Pass		IEC 60695-10-2
Linear thermal expansion coefficient			
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
Lateral: -40 to 40°C	5.9E-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	9.1E-5	cm/cm/°C	ISO 11359-2
Horizontal: 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	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
1.60 mm, in Oil	24	kV/mm	ASTM D149
3.20 mm, in Air	21	kV/mm	ASTM D149
3.20 mm, in Oil	19	kV/mm	ASTM D149
0.800mm, in oil	30	kV/mm	IEC 60243-1
1.60mm, in oil	24	kV/mm	IEC 60243-1
3.20mm, in oil	19	kV/mm	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

0.400 mm	V-0		UL 94
3.00 mm	5VA		UL 94
Glow Wire Flammability Index			IEC 60695-2-12
0.750 mm	960	°C	IEC 60695-2-12
1.00 mm ²⁴	960	°C	IEC 60695-2-12
Glow Wire Ignition Temperature			IEC 60695-2-13
0.800 mm	775	°C	IEC 60695-2-13
3.00 mm	775	°C	IEC 60695-2-13
3.00 mm ²⁵	775	°C	IEC 60695-2-13
Fill Analysis	Nominal Value	Unit	Test Method
Melt Viscosity			ISO 11443
250°C, 1500 sec ⁻¹	210	Pa · s	ISO 11443
260°C, 1500 sec ⁻¹	160	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 - 240	°C	
Middle Temperature	235 - 250	°C	
Front Temperature	240 - 260	°C	
Nozzle Temperature	230 - 255	°C	
Processing (Melt) Temp	245 - 260	°C	
Mold Temperature	40.0 - 100	°C	
NOTE			
1.	Tensile Bar		
2.	Tensile Bar		
3.	5.0 mm/min		
4.	Type 1, 5.0 mm/min		
5.	Type 1, 5.0 mm/min		
6.	Type 1, 5.0 mm/min		
7.	Type 1, 5.0 mm/min		
8.	1.3 mm/min		
9.	2.0 mm/min		
10.	1.3 mm/min		
11.	1.3 mm/min		
12.	2 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.	标准 B (120°C/h), 载荷2 (50N)
22.	速率 A (50°C/h), 载荷2 (50N)
23.	Tungsten electrode
24.	by VDE
25.	by VDE

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Recommended distributors for this material

Susheng Import & Export Trading Co.,Ltd.

Tel: +86 21 5895 8519

Phone: +86 13424755533

Email: sales@su-jiao.com

No. 215, Lianhe North Road, Fengxian District, Shanghai, China

