

# VALOX™ FR RESIN ENH4560

REGION ASIA

## DESCRIPTION

VALOX ENH4560 Polybutylene Terephthalate (PBT) resin is a 30% glass fiber reinforced, injection moldable grade. This non-chlorinated, non-brominated flame retardant PBT has a UL V0 rating. VALOX ENH4560 resin is a general purpose resin that is an excellent candidate for a wide variety of applications.

## TYPICAL PROPERTY VALUES

Revision 20180905

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
<b>MECHANICAL</b>			
Tensile Stress, yld, Type I, 5 mm/min	105	MPa	ASTM D 638
Tensile Stress, brk, Type I, 5 mm/min	105	MPa	ASTM D 638
Tensile Strain, yld, Type I, 5 mm/min	2	%	ASTM D 638
Tensile Strain, brk, Type I, 5 mm/min	2	%	ASTM D 638
Tensile Modulus, 5 mm/min	11000	MPa	ASTM D 638
Flexural Stress, yld, 1.3 mm/min, 50 mm span	160	MPa	ASTM D 790
Flexural Stress, brk, 1.3 mm/min, 50 mm span	160	MPa	ASTM D 790
Flexural Modulus, 1.3 mm/min, 50 mm span	9300	MPa	ASTM D 790
Tensile Stress, yield, 5 mm/min	108	MPa	ISO 527
Tensile Stress, break, 5 mm/min	108	MPa	ISO 527
Tensile Strain, yield, 5 mm/min	2	%	ISO 527
Tensile Strain, break, 5 mm/min	2	%	ISO 527
Tensile Modulus, 1 mm/min	11000	MPa	ISO 527
Flexural Stress, yield, 2 mm/min	175	MPa	ISO 178
Flexural Stress, break, 2 mm/min	175	MPa	ISO 178
Flexural Modulus, 2 mm/min	10000	MPa	ISO 178
<b>IMPACT</b>			
Izod Impact, unnotched, 23°C	570	J/m	ASTM D 4812
Izod Impact, notched, 23°C	72	J/m	ASTM D 256
Izod Impact, notched, -30°C	65	J/m	ASTM D 256
Instrumented Impact Total Energy, 23°C	6	J	ASTM D 3763
Izod Impact, unnotched 80°10°4 +23°C	37	kJ/m <sup>2</sup>	ISO 180/1U
Izod Impact, notched 80°10°4 +23°C	8	kJ/m <sup>2</sup>	ISO 180/1A
Izod Impact, notched 80°10°4 -30°C	8	kJ/m <sup>2</sup>	ISO 180/1A
<b>THERMAL</b>			
Vicat Softening Temp, Rate B/50	200	°C	ASTM D 1525
HDT, 1.82 MPa, 3.2mm, unannealed	205	°C	ASTM D 648
HDT, 1.82 MPa, 6.4 mm, unannealed	210	°C	ASTM D 648
CTE, -40°C to 40°C, flow	2.4E-05	1/°C	ASTM E 831
CTE, -40°C to 40°C, xflow	8.E-05	1/°C	ASTM E 831
Ball Pressure Test, 125°C +/- 2°C	PASSES	-	IEC 60695-10-2
Vicat Softening Temp, Rate B/50	200	°C	ISO 306
Vicat Softening Temp, Rate B/120	205	°C	ISO 306
HDT/Af, 1.8 MPa Flatw 80°10°4 sp=64mm	205	°C	ISO 75/Af

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
<b>PHYSICAL</b>			
Specific Gravity	1.56	-	ASTM D 792
Mold Shrinkage, flow, 3.2 mm	0.28	%	SABIC method
Mold Shrinkage, xflow, 3.2 mm	0.57	%	SABIC method
Density	1.56	g/cm <sup>3</sup>	ISO 1183
Water Absorption, (23°C/sat)	0.23	%	ISO 62
Moisture Absorption (23°C / 50% RH)	0.09	%	ISO 62
Melt Volume Rate, MVR at 250°C/5.0 kg	16	cm <sup>3</sup> /10 min	ISO 1133
<b>ELECTRICAL</b>			
Volume Resistivity	1.0E+14	Ohm-cm	ASTM D 257
Hot Wire Ignition {PLC}	0	PLC Code	UL 746A
High Ampere Arc Ign, surface {PLC}	0	PLC Code	UL 746A
Comparative Tracking Index (UL) {PLC}	0	PLC Code	UL 746A
Comparative Tracking Index	600	V	IEC 60112
<b>FLAME CHARACTERISTICS</b>			
UL Recognized, 94V-0 Flame Class Rating	0.8	mm	UL 94
UL Recognized, 94-5VB Rating	3	mm	UL 94
Glow Wire Flammability Index 960°C, passes at	0.8	mm	IEC 60695-2-12
Glow Wire Ignitability Temperature, 3.0 mm	800	°C	IEC 60695-2-13
<b>INJECTION MOLDING</b>			
Drying Temperature	110 – 120	°C	
Drying Time	2 – 4	hrs	
Maximum Moisture Content	0.02	%	
Melt Temperature	245 – 260	°C	
Nozzle Temperature	230 – 255	°C	
Front - Zone 3 Temperature	240 – 260	°C	
Middle - Zone 2 Temperature	235 – 250	°C	
Rear - Zone 1 Temperature	230 – 240	°C	
Hopper Temperature	40 – 60	°C	
Mold Temperature	40 – 100	°C	

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