VALOX™ FR RESIN ENH4565

REGION ASIA

DESCRIPTION

VALOX ENH4565 is a 33% glass reinforced, non-chlorinated/brominated flame retardant Polybutylene Terephthalate (PBT) injection moldable grade with excellent chemical resistance. It has a UL94V0@0.75mm flame rating. This is a good candidate for a variety of applications needing a sustainable FRPBT solution.

TYPICAL PROPERTY VALUES

Revision 20190717

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
MECHANICAL			
Tensile Stress, yld, Type I, 5 mm/min	137	MPa	ASTM D 638
Tensile Stress, brk, Type I, 5 mm/min	137	MPa	ASTM D 638
Tensile Strain, yld, Type I, 5 mm/min	2.4	%	ASTM D 638
Tensile Strain, brk, Type I, 5 mm/min	2.4	%	ASTM D 638
Tensile Modulus, 5 mm/min	11600	MPa	ASTM D 638
Flexural Stress, yld, 1.3 mm/min, 50 mm span	180	MPa	ASTM D 790
Flexural Modulus, 1.3 mm/min, 50 mm span	9400	MPa	ASTM D 790
Tensile Stress, yield, 5 mm/min	140	MPa	ISO 527
Tensile Stress, break, 5 mm/min	140	MPa	ISO 527
Tensile Strain, yield, 5 mm/min	2.4	%	ISO 527
Tensile Strain, break, 5 mm/min	2.4	%	ISO 527
Tensile Modulus, 1 mm/min	11500	MPa	ISO 527
Flexural Stress, yield, 2 mm/min	185	MPa	ISO 178
Flexural Modulus, 2 mm/min	9400	MPa	ISO 178
IMPACT			
Charpy Impact, unnotched, 23°C	60	kJ/m²	ISO 179/2C
Charpy Impact, unnotched, -30°C	60	kJ/m²	ISO 179/2C
Izod Impact, unnotched, 23°C	800	J/m	ASTM D 4812
Izod Impact, unnotched, -30°C	600	J/m	ASTM D 4812
Izod Impact, notched, 23°C	80	J/m	ASTM D 256
Izod Impact, notched, -30°C	60	J/m	ASTM D 256
Instrumented Impact Total Energy, 23°C	9	J	ASTM D 3763
Izod Impact, notched 80*10*4 +23°C	14	kJ/m²	ISO 180/1A
Izod Impact, notched 80*10*4 -30°C	14	kJ/m²	ISO 180/1A
Charpy Impact, notched, 23°C	12	kJ/m²	ISO 179/2C
Charpy Impact, notched, -30°C	12	kJ/m²	ISO 179/2C
THERMAL			
Vicat Softening Temp, Rate B/50	205	°C	ASTM D 1525
HDT, 0.45 MPa, 3.2 mm, unannealed	218	°C	ASTM D 648
HDT, 1.82 MPa, 3.2mm, unannealed	206	°C	ASTM D 648
CTE, -40°C to 40°C, flow	1.9E-05	1/°C	ASTM E 831
CTE, -40°C to 40°C, xflow	7.E-05	1/°C	ASTM E 831
CTE, -40°C to 150°C, flow	2.E-05	1/°C	ASTM E 831

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CTE, -40°C to 150°C, xflow	9.8E-05	1/°C	ASTM E 831
CTE, -40°C to 40°C, flow	1.9E-05	1/°C	ISO 11359-2
CTE, -40°C to 40°C, xflow	7.E-05	1/°C	ISO 11359-2
CTE, 23°C to 80°C, flow	1.9E-05	1/°C	ISO 11359-2
CTE, 23°C to 80°C, xflow	8.E-05	1/°C	ISO 11359-2
Ball Pressure Test, 125°C +/- 2°C	Pass	-	IEC 60695-10-2
Relative Temp Index, Elec [1]	130	°C	UL 746B
Relative Temp Index, Mech w/impact [1]	140	°C	UL 746B
Relative Temp Index, Mech w/o impact [1]	140	°C	UL 746B
PHYSICAL			
Specific Gravity	1.6	-	ASTM D 792
Mold Shrinkage on Tensile Bar, flow	0.1 – 0.4	%	SABIC method
Mold Shrinkage, flow, 3.2 mm	0.1 – 0.4	%	SABIC method
Mold Shrinkage on Tensile Bar, xflow	0.4 – 0.8	%	SABIC method
Mold Shrinkage, xflow, 3.2 mm	0.4 – 0.8	%	SABIC method
Melt Flow Rate, 250°C/5.0 kgf	24	g/10 min	ASTM D 1238
Density	1.61	g/cm³	ISO 1183
Water Absorption, (23°C/sat)	0.23	%	ISO 62
Moisture Absorption (23°C / 50% RH)	0.06	%	ISO 62
Melt Volume Rate, MVR at 250°C/5.0 kg	18	cm³/10 min	ISO 1133
Melt Volume Rate, MVR at 265°C/5.0 kg	20	cm³/10 min	ISO 1133
ELECTRICAL			
Comparative Tracking Index (UL) {PLC}	2	PLC Code	UL 746A
Hot-Wire Ignition (HWI), PLC 0	≥0.75	mm	UL 746A
High Amp Arc Ignition (HAI), PLC 0	≥0.75	mm	UL 746A
High Voltage Arc Track Rate {PLC}	0	PLC Code	UL 746A
Arc Resistance, Tungsten {PLC}	6	PLC Code	ASTM D 495
FLAME CHARACTERISTICS [1]			
UL Yellow Card Link	E207780-101188061	-	-
UL Recognized, 94V-0 Flame Class Rating	≥0.75	mm	UL 94
UL Recognized, 94-5VB Flame Class Rating	≥3	mm	UL 94
Glow Wire Ignitability Temperature, 3.0 mm	775	°C	IEC 60695-2-13
Glow Wire Ignitability Temperature, 1.5 mm	750	°C	IEC 60695-2-13
Glow Wire Ignitability Temperature, 0.75 mm	775	°C	IEC 60695-2-13
Glow Wire Flammability Index, 3.0 mm	960	°C	IEC 60695-2-12
Glow Wire Flammability Index, 1.5 mm	960	°C	IEC 60695-2-12
Glow Wire Flammability Index, 0.75 mm	960	°C	IEC 60695-2-12
INJECTION MOLDING			
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	

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PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
Rear - Zone 1 Temperature	230 – 240	°C	
Hopper Temperature	40 – 60	°C	
Mold Temperature	40 – 100	°C	

(1) UL Ratings shown on the technical datasheet might not cover the full range of thicknesses and colors. For details, please see the UL Yellow Card.

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