VALOX™ FR RESIN ENH3500

REGION ASIA

DESCRIPTION

VALOX ENH3500 is an unreinforced, non-chlorinated/brominated flame retardant Polybutylene Terephthalate (PBT) injection moldable grade with excellent chemical resistance. It has a UL94V0@0.80mm flame rating. This is a good candidate for a variety of applications needing a sustainable FR PBT solution.

TYPICAL PROPERTY VALUES

Revision 20190925

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
MECHANICAL			
Tensile Stress, yld, Type I, 50 mm/min	44	MPa	ASTM D 638
Tensile Stress, brk, Type I, 50 mm/min	42	MPa	ASTM D 638
Tensile Strain, yld, Type I, 50 mm/min	3	%	ASTM D 638
Tensile Strain, brk, Type I, 50 mm/min	10	%	ASTM D 638
Tensile Modulus, 5 mm/min	3150	MPa	ASTM D 638
Flexural Stress, yld, 1.3 mm/min, 50 mm span	77	MPa	ASTM D 790
Flexural Modulus, 1.3 mm/min, 50 mm span	2750	MPa	ASTM D 790
Tensile Stress, yield, 50 mm/min	39	MPa	ISO 527
Tensile Stress, break, 50 mm/min	38	MPa	ISO 527
Tensile Strain, yield, 50 mm/min	3	%	ISO 527
Tensile Strain, break, 50 mm/min	8	%	ISO 527
Tensile Modulus, 1 mm/min	3200	MPa	ISO 527
Flexural Stress, yield, 2 mm/min	70	MPa	ISO 178
Flexural Modulus, 2 mm/min	2700	MPa	ISO 178
IMPACT			
Izod Impact, notched, 23°C	40	J/m	ASTM D 256
Izod Impact, unnotched, 23°C	NB	J/m	ASTM D 4812
Izod Impact, notched 80*10*4 +23°C	5	kJ/m²	ISO 180/1A
Izod Impact, notched 80*10*4 -30°C	5	kJ/m²	ISO 180/1A
Izod Impact, unnotched 80*10*4 +23°C	NB	kJ/m²	ISO 180/1U
Izod Impact, unnotched 80*10*4 -30°C	NB	kJ/m²	ISO 180/1U
Charpy 23°C, V-notch Edgew 80*10*4 sp=62mm	6	kJ/m²	ISO 179/1eA
Charpy 23°C, Unnotch Edgew 80*10*4 sp=62mm	NB	kJ/m²	ISO 179/1eU
THERMAL			
HDT, 1.82 MPa, 3.2mm, unannealed	60	°C	ASTM D 648
HDT, 0.45 MPa, 3.2 mm, unannealed	160	°C	ASTM D 648
Vicat Softening Temp, Rate B/50	170	°C	ASTM D 1525
CTE, -40°C to 95°C, flow	8.00E-05	1/°C	ASTM E 831
CTE, -40°C to 95°C, xflow	8.00E-05	1/°C	ASTM E 831
HDT/Af, 1.8 MPa Flatw 80*10*4 sp=64mm	60	°C	ISO 75/Af
HDT/Bf, 0.45 MPa Flatw 80*10*4 sp=64mm	160	°C	ISO 75/Bf
Vicat Softening Temp, Rate B/50	170	°C	ISO 306
Vicat Softening Temp, Rate B/120	170	°C	ISO 306

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PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
Relative Temp Index, Elec [1]	150	°C	UL 746B
Relative Temp Index, Mech w/impact [1]	105	°C	UL 746B
Relative Temp Index, Mech w/o impact [1]	150	°C	UL 746B
PHYSICAL			
Specific Gravity	1.31	-	ASTM D 792
Moisture Absorption, 50% RH, 24 hrs	0.08	%	ASTM D 570
Water Absorption, 24 hours	0.35	%	ASTM D 570
Mold Shrinkage on Tensile Bar, flow	1.8 – 2.8	%	SABIC method
Density	1.31	g/cm³	ISO 1183
Melt Volume Rate, MVR at 250°C/2.16 kg	20	cm³/10 min	ISO 1133
Moisture Absorption (23°C / 50% RH)	0.08	%	ISO 62
Water Absorption, (23°C/sat)	0.35	%	ISO 62
ELECTRICAL			
Comparative Tracking Index (UL) {PLC}	0	PLC Code	UL 746A
Comparative Tracking Index [2]	600	V	IEC 60112
Hot-Wire Ignition (HWI), PLC 2	≥3	mm	UL 746A
Hot-Wire Ignition (HWI), PLC 3	≥1.5	mm	UL 746A
Hot-Wire Ignition (HWI), PLC 4	≥0.8	mm	UL 746A
High Amp Arc Ignition (HAI), PLC 0	≥0.8	mm	UL 746A
FLAME CHARACTERISTICS [1]			
UL Yellow Card Link	E207780-100208979	-	-
UL Recognized, 94-5VA Flame Class Rating	≥3	mm	UL 94
UL Recognized, 94-5VB Flame Class Rating	≥2	mm	UL 94
UL Recognized, 94V-0 Flame Class Rating	≥0.8	mm	UL 94
Glow Wire Ignitability Temperature, 3.0 mm	700	°C	IEC 60695-2-13
Glow Wire Ignitability Temperature, 2.0 mm	700	°C	IEC 60695-2-13
Glow Wire Ignitability Temperature, 1.5 mm	700	°C	IEC 60695-2-13
Glow Wire Ignitability Temperature, 0.8 mm	750	°C	IEC 60695-2-13
Glow Wire Flammability Index, 3.0 mm	960	°C	IEC 60695-2-12
Glow Wire Flammability Index, 2.0 mm	960	°C	IEC 60695-2-12
Glow Wire Flammability Index, 1.5 mm	960	°C	IEC 60695-2-12
Glow Wire Flammability Index, 0.8 mm	960	°C	IEC 60695-2-12
Oxygen Index (LOI)	31	%	ASTM D 2863
Oxygen Index (LOI)	31	%	ISO 4589
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	
Rear - Zone 1 Temperature	230 – 240	°C	
Hopper Temperature	40 – 60	°C	
Mold Temperature	40 – 100	°C	

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(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.

(2) Value shown here is based on internal measurement.

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