



VALOX™ Resin ENH4550
Americas: COMMERCIAL

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

TYPICAL PROPERTIES ¹	TYPICAL VALUE	Unit	Standard
MECHANICAL			
Tensile Stress, yld, Type I, 5 mm/min	1070	kgf/cm ²	ASTM D 638
Tensile Stress, brk, Type I, 5 mm/min	1070	kgf/cm ²	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	100900	kgf/cm ²	ASTM D 638
Flexural Stress, yld, 1.3 mm/min, 50 mm span	1640	kgf/cm ²	ASTM D 790
Flexural Modulus, 1.3 mm/min, 50 mm span	92700	kgf/cm ²	ASTM D 790
Tensile Stress, yield, 5 mm/min	112	MPa	ISO 527
Tensile Stress, break, 5 mm/min	112	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	10350	MPa	ISO 527
Flexural Stress, yield, 2 mm/min	170	MPa	ISO 178
Flexural Strain, break, 2 mm/min	2	%	ISO 178
Flexural Modulus, 2 mm/min	9400	MPa	ISO 178
IMPACT			
Charpy Impact, unnotched, 23°C	36	kJ/m ²	ISO 179/2C
Charpy Impact, unnotched, -30°C	33	kJ/m ²	ISO 179/2C
Izod Impact, unnotched, 23°C	52	cm-kgf/cm	ASTM D 4812
Izod Impact, unnotched, -30°C	47	cm-kgf/cm	ASTM D 4812
Izod Impact, notched, 23°C	6	cm-kgf/cm	ASTM D 256
Izod Impact, notched, -30°C	6	cm-kgf/cm	ASTM D 256



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IMPACT			
Instrumented Impact Total Energy, 23°C	66	cm-kgf	ASTM D 3763
Izod Impact, unnotched 80*10*4 +23°C	33	kJ/m ²	ISO 180/1U
Izod Impact, unnotched 80*10*4 -30°C	29	kJ/m ²	ISO 180/1U
Izod Impact, notched 80*10*4 +23°C	7	kJ/m ²	ISO 180/1A
Izod Impact, notched 80*10*4 -30°C	7	kJ/m ²	ISO 180/1A
Charpy 23°C, V-notch Edgew 80*10*4 sp=62mm	5	kJ/m ²	ISO 179/1eA
Charpy Impact, notched, 23°C	7	kJ/m ²	ISO 179/2C
Charpy Impact, notched, -30°C	7	kJ/m ²	ISO 179/2C
THERMAL			
Vicat Softening Temp, Rate A/50	215	°C	ASTM D 1525
Vicat Softening Temp, Rate B/50	202	°C	ASTM D 1525
HDT, 0.45 MPa, 3.2 mm, unannealed	216	°C	ASTM D 648
HDT, 1.82 MPa, 3.2mm, unannealed	204	°C	ASTM D 648
CTE, -40°C to 40°C, flow	2.7E-05	1/°C	ASTM E 831
CTE, -40°C to 40°C, xflow	7.1E-05	1/°C	ASTM E 831
CTE, -40°C to 150°C, flow	2.2E+01	1/°C	ASTM E 831
CTE, -40°C to 150°C, xflow	7.7E+01	1/°C	ASTM E 831
CTE, -40°C to 40°C, flow	3.E-05	1/°C	ISO 11359-2
CTE, -40°C to 40°C, xflow	7.6E-05	1/°C	ISO 11359-2
CTE, 23°C to 80°C, flow	2.2E+01	1/°C	ISO 11359-2
CTE, 23°C to 80°C, xflow	9.1E+01	1/°C	ISO 11359-2
Ball Pressure Test, 125°C +/- 2°C	Pass	-	IEC 60695-10-2
Vicat Softening Temp, Rate A/50	219	°C	ISO 306
Vicat Softening Temp, Rate B/50	206	°C	ISO 306



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THERMAL			
Vicat Softening Temp, Rate B/120	206	°C	ISO 306
HDT/Bf, 0.45 MPa Flatw 80*10*4 sp=64mm	219	°C	ISO 75/Bf
HDT/Af, 1.8 MPa Flatw 80*10*4 sp=64mm	201	°C	ISO 75/Af
Relative Temp Index, Elec	130	°C	UL 746B
Relative Temp Index, Mech w/impact	140	°C	UL 746B
Relative Temp Index, Mech w/o impact	140	°C	UL 746B
PHYSICAL			
Specific Gravity	1.53	-	ASTM D 792
Mold Shrinkage on Tensile Bar, flow (2) (5)	0.1 - 0.5	%	SABIC Method
Mold Shrinkage, flow, 3.2 mm (5)	0.1 - 0.5	%	SABIC Method
Mold Shrinkage on Tensile Bar, xflow (2) (5)	0.6 - 1.2	%	SABIC Method
Mold Shrinkage, xflow, 3.2 mm (5)	0.5 - 1.1	%	SABIC Method
Melt Flow Rate, 250°C/5.0 kgf	27	g/10 min	ASTM D 1238
Density	1.52	g/cm ³	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	20	cm ³ /10 min	ISO 1133
Melt Viscosity, 250°C, 1500 sec-1	210	Pa-s	ISO 11443
ELECTRICAL			
Volume Resistivity	1.E+15 - 1.E+16	Ohm-cm	ASTM D 257
Dielectric Strength, in air, 3.2 mm	21	kV/mm	ASTM D 149
Dielectric Strength, in oil, 3.2 mm	21	kV/mm	ASTM D 149
Arc Resistance, Tungsten {PLC}	6	PLC Code	ASTM D 495
Hot Wire Ignition {PLC}	0	PLC Code	UL 746A
High Voltage Arc Track Rate {PLC}	0	PLC Code	UL 746A
High Ampere Arc Ign, surface {PLC}	0	PLC Code	UL 746A
Comparative Tracking Index (UL) {PLC}	2	PLC Code	UL 746A
Volume Resistivity	1.E+15 - 1.E+16	Ohm-cm	IEC 60093



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ELECTRICAL			
Comparative Tracking Index	300	V	IEC 60112
FLAME CHARACTERISTICS			
UL Recognized, 94V-0 Flame Class Rating (3)	0.75	mm	UL 94
UL Recognized, 94-5VA Rating (3)	3	mm	UL 94
Glow Wire Flammability Index 960°C, passes at	0.75	mm	IEC 60695-2-12
Glow Wire Ignitability Temperature, 0.8 mm	775	°C	IEC 60695-2-13
Glow Wire Ignitability Temperature, 3.0 mm, by VDE	775	°C	IEC 60695-2-13



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PROCESSING PARAMETERS	TYPICAL VALUE	Unit
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