

VALOX™ FR RESIN ENH4565

REGION EUROPE

DESCRIPTION

VALOX ENH4565 Polybutylene Terephthalate (PBT) resin is a 33% glass fiber reinforced, thermal shock resistant, low shrinkage, injection moldable grade. This non-chlorinated, non-brominated flame retardant PBT has a UL V0 rating. VALOX ENH4565 resin is a general purpose resin that is an excellent candidate for a wide variety of applications.

TYPICAL PROPERTY VALUES

Revision 20180115

| 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/m ² | ISO 179/2C |
| Charpy Impact, unnotched, -30°C | 60 | kJ/m ² | 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/m ² | ISO 180/1A |
| Izod Impact, notched 80*10*4 -30°C | 14 | kJ/m ² | ISO 180/1A |
| Charpy Impact, notched, 23°C | 12 | kJ/m ² | ISO 179/2C |
| Charpy Impact, notched, -30°C | 12 | kJ/m ² | ISO 179/2C |

| PROPERTIES | TYPICAL VALUES | UNITS | TEST METHODS |
|--|----------------|-------------------------|----------------|
| 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 |
| 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 | 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 | 1.6 | - | ASTM D 792 |
| Mold Shrinkage on Tensile Bar, flow (2) (5) | 0.1 – 0.4 | % | SABIC method |
| Mold Shrinkage, flow, 3.2 mm (5) | 0.1 – 0.4 | % | SABIC method |
| Mold Shrinkage on Tensile Bar, xflow (2) (5) | 0.4 – 0.8 | % | SABIC method |
| Mold Shrinkage, xflow, 3.2 mm (5) | 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/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 | 18 | cm ³ /10 min | ISO 1133 |
| Melt Volume Rate, MVR at 265°C/5.0 kg | 20 | cm ³ /10 min | ISO 1133 |
| FLAME CHARACTERISTICS | | | |
| UL Recognized, 94V-0 Flame Class Rating (3) | 0.75 | mm | UL 94 |
| 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 | |

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|-----------------------------|----------------|-------|--------------|
| 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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