# ULTEM™ RESIN DH1004

REGION AMERICAS

## DESCRIPTION

High Temperature, Transparent, Polyetherimide Blend with Improved Ductility and Enhanced Hydrostability.

## TYPICAL PROPERTY VALUES

Revision 20231109

| PROPERTIES | TYPICAL VALUES | UNITS | TEST METHODS |
|---|---|---|---|
| MECHANICAL | | | |
| Tensile Stress, yld, Type I, 5 mm/min | 95 | MPa | ASTM D638 |
| Tensile Stress, brk, Type I, 5 mm/min | 90 | MPa | ASTM D638 |
| Tensile Strain, yld, Type I, 5 mm/min | 7 | % | ASTM D638 |
| Tensile Strain, brk, Type I, 5 mm/min | 85 | % | ASTM D638 |
| Tensile Modulus, 5 mm/min | 2900 | MPa | ASTM D638 |
| Flexural Stress, yld, 1.3 mm/min, 50 mm span | 140 | MPa | ASTM D790 |
| Flexural Modulus, 1.3 mm/min, 50 mm span | 3000 | MPa | ASTM D790 |
| Tensile Stress, yield, 50 mm/min | 97 | MPa | ISO 527 |
| Tensile Stress, break, 50 mm/min | 80 | MPa | ISO 527 |
| Tensile Strain, yield, 50 mm/min | 7 | % | ISO 527 |
| Tensile Strain, break, 50 mm/min | 80 | % | ISO 527 |
| Flexural Stress, yield, 2 mm/min | 136 | MPa | ISO 178 |
| Flexural Modulus, 2 mm/min | 2800 | MPa | ISO 178 |
| IMPACT | | | |
| Izod Impact, notched, 23°C | 70 | J/m | ASTM D256 |
| Izod Impact, Reverse Notched, 3.2 mm | 3300 | J/m | ASTM D256 |
| Instrumented Dart Impact Total Energy, 23°C | 88 | J | ASTM D3763 |
| Instrumented Impact Total Energy, 0°C | 99 | J | ASTM D3763 |
| Instrumented Impact Total Energy, -20°C | 88 | J | ASTM D3763 |
| Instrumented Dart Impact Ductility, 23°C | 100 | % | ASTM D3763 |
| Instrumented Dart Impact Ductility, 0°C | 100 | % | ASTM D3763 |
| Instrumented Dart Impact Ductility, -20°C | 90 | % | ASTM D3763 |
| 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 |
| Izod Impact, notched 80*10*4 +23°C | 6 | kJ/m² | ISO 180/1A |
| Izod Impact, notched 80*10*4 -30°C | 6 | kJ/m² | ISO 180/1A |
| Charpy Impact, notched, 23°C | 11 | kJ/m² | ISO 179/2C |
| THERMAL | | | |
| HDT, 0.45 MPa, 6.4 mm, unannealed | 214 | °C | ASTM D648 |
| HDT, 1.82 MPa, 6.4 mm, unannealed | 204 | °C | ASTM D648 |
| CTE, -20°C to 150°C, flow | 5.6E-05 | 1/°C | ASTM E831 |
| CTE, -20°C to 150°C, xflow | 5.5E-05 | 1/°C | ASTM E831 |
| Thermal Conductivity | 0.19 | W/m-°C | ASTM C177 |
| CTE, 23°C to 150°C, flow | 5.E-05 | 1/°C | ISO 11359-2 |
| CTE, 23°C to 150°C, xflow | 5.E-05 | 1/°C | ISO 11359-2 |

| PROPERTIES | TYPICAL VALUES | UNITS | TEST METHODS |
|---|---|---|---|
| Vicat Softening Temp, Rate A/50 | 219 | °C | ISO 306 |
| Vicat Softening Temp, Rate B/50 | 212 | °C | ISO 306 |
| Vicat Softening Temp, Rate B/120 | 212 | °C | ISO 306 |
| HDT/Be, 0.45MPa Edgew 120*10*4 sp=100mm | 205 | °C | ISO 75/Be |
| HDT/Ae, 1.8 MPa Edgew 120*10*4 sp=100mm | 190 | °C | ISO 75/Ae |
| Relative Temp Index, Elec [1] | 105 | °C | UL 746B |
| Relative Temp Index, Mech w/impact [1] | 105 | °C | UL 746B |
| Relative Temp Index, Mech w/o impact [1] | 105 | °C | UL 746B |
| PHYSICAL | | | |
| Specific Gravity | 1.28 | - | ASTM D792 |
| Mold Shrinkage, flow, 3.2 mm | 0.5 – 0.7 | % | SABIC method |
| Melt Flow Rate, 337°C/6.6 kgf | 10 | g/10 min | ASTM D1238 |
| Density | 1.28 | g/cm³ | ISO 1183 |
| Melt Volume Rate, MVR at 360°C/5.0 kg | 14 | cm³/10 min | ISO 1133 |
| ELECTRICAL | | | |
| Comparative Tracking Index (UL) {PLC} | 4 | PLC Code | UL 746A |
| Hot-Wire Ignition (HWI), PLC 1 | ≥1.5 | mm | UL 746A |
| Hot-Wire Ignition (HWI), PLC 2 | ≥0.75 | mm | UL 746A |
| High Amp Arc Ignition (HAI), PLC 1 | ≥0.75 | mm | UL 746A |
| FLAME CHARACTERISTICS [1] | | | |
| UL Yellow Card Link | E121562-100737020 | - | - |
| UL Recognized, 94V-0 Flame Class Rating | ≥0.75 | mm | UL 94 |
| Oxygen Index (LOI) | 46 | % | ASTM D2863 |
| NBS Smoke Density, Flaming, Ds 4 min | 0.7 | - | ASTM E662 |
| INJECTION MOLDING | | | |
| Drying Temperature | 150 | °C | |
| Drying Time | 6 – 8 | Hrs | |
| Drying Time (Cumulative) | 24 | Hrs | |
| Maximum Moisture Content | 0.02 | % | |
| Melt Temperature | 355 – 390 | °C | |
| Nozzle Temperature | 345 – 390 | °C | |
| Front - Zone 3 Temperature | 345 – 390 | °C | |
| Middle - Zone 2 Temperature | 335 – 390 | °C | |
| Rear - Zone 1 Temperature | 330 – 390 | °C | |
| Mold Temperature | 130 – 160 | °C | |
| Back Pressure | 0.3 – 0.7 | MPa | |
| Screw Speed | 40 – 70 | rpm | |
| Shot to Cylinder Size | 40 – 60 | % | |
| Vent Depth | 0.025 – 0.076 | mm | |

(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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