# ULTEM™ RESIN HU2310

REGION ASIA

## DESCRIPTION

30% Glass fiber filled, enhanced flow Polyetherimide (Tg 217C). ECO Conforming. For medical devices and pharmaceutical applications. Healthcare management of change, biocompatible (ISO 10993 or USP Class VI); food contact compliant; Steam, Gamma, EtO, and E-beam sterilizable.

| INDUSTRY | SUB INDUSTRY |
|---|---|
| Consumer | Ophthalmics, Personal Accessory, Personal Recreation |
| Healthcare | Pharmaceutical, Surgical, Respiratory and Sleep Therapy, Healthcare, Patient Testing, Fluid and Blood Handling, Medical Facility Infrastructure |

## TYPICAL PROPERTY VALUES

Revision 20190925

| PROPERTIES | TYPICAL VALUES | UNITS | TEST METHODS |
|---|---|---|---|
| **MECHANICAL** | | | |
| Tensile Stress, yld, Type I, 5 mm/min | 168 | MPa | ASTM D 638 |
| Tensile Stress, brk, Type I, 5 mm/min | 158 | MPa | ASTM D 638 |
| Tensile Strain, yld, Type I, 5 mm/min | 3 | % | ASTM D 638 |
| Tensile Strain, brk, Type I, 5 mm/min | 3 | % | ASTM D 638 |
| Tensile Modulus, 5 mm/min | 9230 | MPa | ASTM D 638 |
| Flexural Stress, yld, 1.3 mm/min, 50 mm span | 220 | MPa | ASTM D 790 |
| Flexural Modulus, 1.3 mm/min, 50 mm span | 9250 | MPa | ASTM D 790 |
| Tensile Stress, yield, 5 mm/min | 165 | MPa | ISO 527 |
| Tensile Stress, break, 5 mm/min | 165 | 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 | 9500 | MPa | ISO 527 |
| Flexural Stress, yield, 2 mm/min | 225 | MPa | ISO 178 |
| Flexural Modulus, 2 mm/min | 8500 | MPa | ISO 178 |
| **IMPACT** | | | |
| Izod Impact, notched, 23°C | 85 | J/m | ASTM D 256 |
| Izod Impact, notched, -30°C | 90 | J/m | ASTM D 256 |
| Instrumented Impact Total Energy, 23°C | 10 | J | ASTM D 3763 |
| Izod Impact, notched 80*10*4 +23°C | 10 | kJ/m² | ISO 180/1A |
| Izod Impact, notched 80*10*4 -30°C | 10 | kJ/m² | ISO 180/1A |
| Charpy 23°C, V-notch Edgew 80*10*4 sp=62mm | 10 | kJ/m² | ISO 179/1eA |
| **THERMAL** | | | |
| Vicat Softening Temp, Rate B/50 | 228 | °C | ASTM D 1525 |
| HDT, 1.82 MPa, 3.2mm, unannealed | 208 | °C | ASTM D 648 |
| HDT, 1.82 MPa, 6.4 mm, unannealed | 210 | °C | ASTM D 648 |
| CTE, -20°C to 150°C, flow | 1.6E-05 | 1/°C | ASTM E 831 |
| CTE, -20°C to 150°C, xflow | 4.1E-05 | 1/°C | ASTM E 831 |
| CTE, 23°C to 150°C, flow | 1.6E-05 | 1/°C | ISO 11359-2 |
| CTE, 23°C to 150°C, xflow | 4.1E-05 | 1/°C | ISO 11359-2 |

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| PROPERTIES | TYPICAL VALUES | UNITS | TEST METHODS |
|---|---|---|---|
| Vicat Softening Temp, Rate B/50 | 213 | °C | ISO 306 |
| Vicat Softening Temp, Rate B/120 | 220 | °C | ISO 306 |
| HDT/Af, 1.8 MPa Flatw 80*10*4 sp=64mm | 210 | °C | ISO 75/Af |
| Relative Temp Index, Elec [1] | 180 | °C | UL 746B |
| Relative Temp Index, Mech w/impact [1] | 170 | °C | UL 746B |
| Relative Temp Index, Mech w/o impact [1] | 180 | °C | UL 746B |
| PHYSICAL | | | |
| Specific Gravity | 1.51 | - | ASTM D 792 |
| Mold Shrinkage, flow, 3.2 mm | 0.2 – 0.4 | % | SABIC method |
| Melt Flow Rate, 337°C/6.6 kgf | 7.6 | g/10 min | ASTM D 1238 |
| Density | 1.51 | g/cm³ | ISO 1183 |
| Water Absorption, (23°C/sat) | 0.9 | % | ISO 62 |
| Moisture Absorption (23°C / 50% RH) | 0.5 | % | ISO 62 |
| Melt Volume Rate, MVR at 360°C/5.0 kg | 8 | cm³/10 min | ISO 1133 |
| ELECTRICAL | | | |
| Comparative Tracking Index (UL) {PLC} | 4 | PLC Code | UL 746A |
| Hot-Wire Ignition (HWI), PLC 1 | ≥3 | mm | UL 746A |
| Hot-Wire Ignition (HWI), PLC 3 | ≥1.5 | mm | UL 746A |
| High Amp Arc Ignition (HAI), PLC 3 | ≥1.5 | mm | UL 746A |
| High Amp Arc Ignition (HAI), PLC 4 | ≥3 | mm | UL 746A |
| High Voltage Arc Track Rate {PLC} | 3 | PLC Code | UL 746A |
| Arc Resistance, Tungsten {PLC} | 6 | PLC Code | ASTM D 495 |
| FLAME CHARACTERISTICS [1] | | | |
| UL Yellow Card Link | E121562-221099 | - | - |
| UL Recognized, 94-5VA Flame Class Rating | ≥1.2 | mm | UL 94 |
| UL Recognized, 94V-0 Flame Class Rating | ≥0.25 | mm | UL 94 |
| Glow Wire Ignitability Temperature, 2.0 mm | 900 | °C | IEC 60695-2-13 |
| Glow Wire Flammability Index, 2.0 mm | 960 | °C | IEC 60695-2-12 |
| INJECTION MOLDING | | | |
| Drying Temperature | 150 | °C | |
| Drying Time | 4 – 6 | hrs | |
| Drying Time (Cumulative) | 24 | hrs | |
| Maximum Moisture Content | 0.02 | % | |
| Melt Temperature | 350 – 400 | °C | |
| Nozzle Temperature | 345 – 400 | °C | |
| Front - Zone 3 Temperature | 345 – 400 | °C | |
| Middle - Zone 2 Temperature | 340 – 400 | °C | |
| Rear - Zone 1 Temperature | 330 – 400 | °C | |
| Mold Temperature | 135 – 165 | °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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