

ULTEM™ RESIN UF501 1S

REGION EUROPE

DESCRIPTION

Enhanced flow, Specialty filtered Polyetherimide (Tg 225C) with enhanced chemical resistance to strong acids, bases, aromatics and ketones. ECO Conforming.

TYPICAL PROPERTY VALUES

Revision 20231109

| PROPERTIES | TYPICAL VALUES | UNITS | TEST METHODS |
|--|----------------|-------------------|--------------|
| MECHANICAL | | | |
| Tensile Stress, yld, Type I, 5 mm/min | 100 | MPa | ASTM D638 |
| Tensile Stress, brk, Type I, 5 mm/min | 75 | MPa | ASTM D638 |
| Tensile Strain, yld, Type I, 5 mm/min | 8 | % | ASTM D638 |
| Tensile Strain, brk, Type I, 5 mm/min | 60 | % | ASTM D638 |
| Tensile Modulus, 5 mm/min | 2900 | MPa | ASTM D638 |
| Flexural Stress, yld, 1.3 mm/min, 50 mm span | 138 | MPa | ASTM D790 |
| Flexural Modulus, 1.3 mm/min, 50 mm span | 3100 | MPa | ASTM D790 |
| Tensile Stress, yield, 5 mm/min | 100 | MPa | ISO 527 |
| Tensile Stress, break, 5 mm/min | 85 | MPa | ISO 527 |
| Tensile Strain, yield, 5 mm/min | 8 | % | ISO 527 |
| Tensile Strain, break, 5 mm/min | 50 | % | ISO 527 |
| Tensile Modulus, 1 mm/min | 2900 | MPa | ISO 527 |
| Flexural Stress, yield, 2 mm/min | 110 | MPa | ISO 178 |
| Flexural Modulus, 2 mm/min | 2900 | MPa | ISO 178 |
| IMPACT | | | |
| Izod Impact, unnotched, 23°C | 2100 | J/m | ASTM D4812 |
| Izod Impact, notched, 23°C | 59 | J/m | ASTM D256 |
| Izod Impact, Reverse Notched, 3.2 mm | 2080 | J/m | ASTM D256 |
| Instrumented Dart Impact Total Energy, 23°C | 30 | J | ASTM D3763 |
| Izod Impact, unnotched 80°10°4 +23°C | NB | kJ/m ² | ISO 180/1U |
| Izod Impact, unnotched 80°10°4 -30°C | NB | kJ/m ² | ISO 180/1U |
| Izod Impact, notched 80°10°4 +23°C | 5 | kJ/m ² | ISO 180/1A |
| Izod Impact, notched 80°10°4 -30°C | 5 | kJ/m ² | ISO 180/1A |
| Charpy 23°C, V-notch Edgew 80°10°4 sp=62mm | 7 | kJ/m ² | ISO 179/1eA |
| Charpy -30°C, V-notch Edgew 80°10°4 sp=62mm | 7 | kJ/m ² | ISO 179/1eA |
| Charpy 23°C, Unnotch Edgew 80°10°4 sp=62mm | NB | kJ/m ² | ISO 179/1eU |
| Charpy -30°C, Unnotch Edgew 80°10°4 sp=62mm | NB | kJ/m ² | ISO 179/1eU |
| THERMAL | | | |
| Vicat Softening Temp, Rate B/50 | 227 | °C | ASTM D1525 |
| HDT, 0.45 MPa, 3.2 mm, unannealed | 213 | °C | ASTM D648 |
| HDT, 1.82 MPa, 3.2mm, unannealed | 201 | °C | ASTM D648 |
| HDT, 0.45 MPa, 6.4 mm, unannealed | 216 | °C | ASTM D648 |
| HDT, 1.82 MPa, 6.4 mm, unannealed | 204 | °C | ASTM D648 |
| CTE, -40°C to 150°C, flow | 5.5E-05 | 1/°C | ASTM E831 |

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| CTE, -40°C to 150°C, xflow | 5.5E-05 | 1/°C | ASTM E831 |
| Thermal Conductivity | 0.31 | W/m-°C | ASTM C177 |
| CTE, 23°C to 150°C, flow | 5.5E-05 | 1/°C | ISO 11359-2 |
| CTE, 23°C to 150°C, xflow | 5.5E-05 | 1/°C | ISO 11359-2 |
| Ball Pressure Test, 125°C +/- 2°C | Passes | - | IEC 60695-10-2 |
| Vicat Softening Temp, Rate A/50 | 220 | °C | ISO 306 |
| Vicat Softening Temp, Rate B/50 | 215 | °C | ISO 306 |
| Vicat Softening Temp, Rate B/120 | 215 | °C | ISO 306 |
| HDT/Be, 0.45MPa Edgew 120*10*4 sp=100mm | 210 | °C | ISO 75/Be |
| HDT/Ae, 1.8 MPa Edgew 120*10*4 sp=100mm | 200 | °C | ISO 75/Ae |
| HDT/Bf, 0.45 MPa Flatw 80*10*4 sp=64mm | 208 | °C | ISO 75/Bf |
| HDT/Af, 1.8 MPa Flatw 80*10*4 sp=64mm | 198 | °C | ISO 75/Af |
| PHYSICAL | | | |
| Specific Gravity | 1.28 | - | ASTM D792 |
| Mold Shrinkage on Tensile Bar, flow | 0.4 – 0.7 | % | SABIC method |
| Mold Shrinkage, flow, 3.2 mm | 0.4 – 0.7 | % | SABIC method |
| Mold Shrinkage, xflow, 3.2 mm | 0.4 – 0.7 | % | SABIC method |
| Melt Flow Rate, 337°C/6.6 kgf | 11 | g/10 min | ASTM D1238 |
| Density | 1.28 | g/cm ³ | ISO 1183 |
| Water Absorption, (23°C/saturated) | 1.2 | % | ISO 62-1 |
| Moisture Absorption (23°C / 50% RH) | 0.2 | % | ISO 62 |
| Melt Volume Rate, MVR at 360°C/5.0 kg | 20 | cm ³ /10 min | ISO 1133 |
| ELECTRICAL | | | |
| Dielectric Strength, in oil, 3.2 mm | 18 | kV/mm | ASTM D149 |
| Relative Permittivity, 50/60 Hz | 3.2 | - | ASTM D150 |
| Dissipation Factor, 50/60 Hz | 0.0021 | - | ASTM D150 |
| Volume Resistivity | 2.5E+15 | Ω.cm | IEC 60093 |
| Surface Resistivity, ROA | >1.E+15 | Ω | IEC 60093 |
| Dielectric Strength, in oil, 3.2 mm | 18.1 | kV/mm | IEC 60243-1 |
| Dissipation Factor, 50/60 Hz | 0.0021 | - | IEC 60250 |
| Comparative Tracking Index | 150 | V | IEC 60112 |
| Comparative Tracking Index, M | 100 | V | IEC 60112 |
| INJECTION MOLDING | | | |
| Drying Temperature | 150 | °C | |
| Drying Time | 4 – 6 | Hrs | |
| Drying Time (Cumulative) | 24 | Hrs | |
| Maximum Moisture Content | 0.02 | % | |
| Melt Temperature | 365 – 390 | °C | |
| Nozzle Temperature | 360 – 380 | °C | |
| Front - Zone 3 Temperature | 365 – 390 | °C | |
| Middle - Zone 2 Temperature | 355 – 375 | °C | |
| Rear - Zone 1 Temperature | 345 – 365 | °C | |
| Mold Temperature | 135 – 165 | °C | |
| Back Pressure | 0.3 – 0.7 | MPa | |
| Screw Speed | 40 – 70 | rpm | |

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|-----------------------|----------------|-------|--------------|
| Shot to Cylinder Size | 40 – 60 | % | |
| Vent Depth | 0.025 – 0.076 | mm | |

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