# ULTEM™ Resin 1000P100

## DESCRIPTION

ULTEM 1000P100 Resin is an unreinforced amorphous polyetherimide (PEI) powder. This powder is available with an average particle size (D50) of 100 micron and a maximum particle size (D100) of 150 micron. It may offer a high glass transition temperature (Tg) of 217°C. Features are excellent mechanical, electrical and dimensional properties up to high temperatures. The material may offer very good chemical resistance for an amorphous material and is inherently flame retardant. The material is RoHS. The base material is transparent amber colored.

ISCC+ certified renewable bio-based solutions are available for this grade via differentiated color nomenclature.

| GENERAL INFORMATION | |
|---|---|
| **Features** | Flame Retardant, Chemical Resistance, Hydrolytic Stability, Low Smoke and Toxicity, Amorphous, Bio-Renewable, Food contact, Non halogenated flame retardant, Creep resistant, Dimensional stability, High stiffness/Strength, High temperature resistance, No PFAS intentionally added |
| **Fillers** | Unreinforced |
| **Polymer Types** | Polyetherimide (PEI) |
| **Processing Techniques** | Sintering, Powder Coating, Impregnation (composites) |
| **Regional Availability** | Asia, Americas |

| INDUSTRY | SUB INDUSTRY |
|---|---|
| Automotive | Heavy Truck, Automotive Under the Hood, Aerospace, Motorcycle, Recreational/Specialty Vehicles |
| Building and Construction | Building Component |
| Consumer | Personal Accessory, Home Appliances, Commercial Appliance, Furniture |
| Electrical and Electronics | Energy Management, Drone Solutions, Mobile Phone - Computer - Tablets, Circuit Boards/Additives, Lighting, Printer Copier, Speaker - Earphone, Wireless Communication |
| Industrial | Electrical, Material Handling, Eyewear |
| Mass Transportation | Rail |
| Packaging | Industrial Packaging |

## TYPICAL PROPERTY VALUES

Revision 20260505

| PROPERTIES | TYPICAL VALUES | UNITS | TEST METHODS |
|---|---|---|---|
| MECHANICAL [1] | | | |
| **Tensile Stress, yield, 50 mm/min** | 110 | MPa | ISO 527 |
| **Tensile Strain, yield, 50 mm/min** | 6 | % | ISO 527 |
| **Tensile Strain, break, 50 mm/min** | 50 | % | ISO 527 |
| **Tensile Modulus, 1 mm/min** | 3200 | MPa | ISO 527 |
| **Flexural Stress, yield, 2 mm/min** | 160 | MPa | ISO 178 |
| **Flexural Modulus, 2 mm/min** | 3300 | MPa | ISO 178 |
| **Ball Indentation Hardness, H358/30** | 140 | MPa | ISO 2039-1 |
| **Hardness, Rockwell M** | 106 | - | ISO 2039-2 |
| **Tensile Stress, yld, Type I, 50 mm/min** | 115 | MPa | ASTM D638 |
| **Tensile Strain, yld, Type I, 50 mm/min** | 7 | % | ASTM D638 |
| **Tensile Strain, brk, Type I, 50 mm/min** | 60 | % | ASTM D638 |
| **Tensile Stress, yld, Type I, 5 mm/min** | 110 | MPa | ASTM D638 |
| **Tensile Strain, yld, Type I, 5 mm/min** | 7 | % | ASTM D638 |

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| PROPERTIES | TYPICAL VALUES | UNITS | TEST METHODS |
|---|---|---|---|
| Tensile Strain, brk, Type I, 5 mm/min | 60 | % | ASTM D638 |
| Tensile Modulus, 5 mm/min | 3350 | MPa | ASTM D638 |
| Flexural Stress, yld, 1.3 mm/min, 50 mm span | 165 | MPa | ASTM D790 |
| Flexural Modulus, 1.3 mm/min, 50 mm span | 3200 | MPa | ASTM D790 |
| Flexural Stress, yld, 2.6 mm/min, 100 mm span | 160 | MPa | ASTM D790 |
| Flexural Modulus, 2.6 mm/min, 100 mm span | 3400 | MPa | ASTM D790 |
| Hardness, Rockwell M | 109 | - | ASTM D785 |
| Taber Abrasion, CS-17, 1 kg | 10 | mg/1000cy | ASTM D1044 |
| IMPACT [1] | | | |
| Izod Impact, Unnotched | | | |
| 80*10*4 +23°C | NB | kJ/m² | ISO 180/1U |
| 80*10*4 -30°C | NB | kJ/m² | ISO 180/1U |
| 23°C | 1800 | J/m | ASTM D4812 |
| -30°C | 1540 | J/m | ASTM D4812 |
| Izod impact, notched | | | |
| 80*10*4 +23°C | 6 | kJ/m² | ISO 180/1A |
| 80*10*4 -30°C | 6 | kJ/m² | ISO 180/1A |
| 23°C | 53 | J/m | ASTM D256 |
| -30°C | 50 | J/m | ASTM D256 |
| Charpy 23°C, V-notch Edgew 80*10*4 sp=62mm | 4 | kJ/m² | ISO 179/1eA |
| Charpy -30°C, V-notch Edgew 80*10*4 sp=62mm | 4 | kJ/m² | ISO 179/1eA |
| Izod Impact, Reverse Notched, 3.2 mm | 1335 | J/m | ASTM D256 |
| Gardner, 23°C | 36 | J | ASTM D3029 |
| THERMAL [1] | | | |
| HDT/Bf, 0.45 MPa Flatw 80*10*4 sp=64mm | 209 | °C | ISO 75/Bf |
| HDT/Af, 1.8 MPa Flatw 80*10*4 sp=64mm | 192 | °C | ISO 75/Af |
| Vicat Softening Temp, Rate A/50 | 215 | °C | ISO 306 |
| Vicat Softening Temp, Rate B/50 | 211 | °C | ISO 306 |
| Vicat Softening Temp, Rate B/120 | 212 | °C | ISO 306 |
| CTE, -40°C to 150°C, flow | 5.2E-05 | 1/°C | ISO 11359-2 |
| CTE, -40°C to 150°C, xflow | 5.2E-05 | 1/°C | ISO 11359-2 |
| Ball Pressure Test, 125°C +/- 2°C | PASS | - | IEC 60695-10-2 |
| Thermal Conductivity | 0.22 | W/m-°C | ISO 8302 |
| HDT, 0.45 MPa, 6.4 mm, unannealed | 210 | °C | ASTM D648 |
| HDT, 1.82 MPa, 6.4 mm, unannealed | 201 | °C | ASTM D648 |
| HDT, 0.45 MPa, 3.2 mm, unannealed | 207 | °C | ASTM D648 |
| HDT, 1.82 MPa, 3.2mm, unannealed | 190 | °C | ASTM D648 |
| Vicat Softening Temp, Rate B/50 | 211 | °C | ASTM D1525 |
| CTE, -20°C to 150°C, flow | 5.6E-05 | 1/°C | ASTM E831 |
| CTE, -20°C to 150°C, xflow | 5.4E-05 | 1/°C | ASTM E831 |
| Thermal Conductivity | 0.22 | W/m-°C | ASTM C177 |
| PHYSICAL [1] | | | |
| Density | 1.27 | g/cm³ | ISO 1183 |
| Moisture Absorption, (23°C/50% RH/24hrs) | 0.2 | % | ISO 62-4 |
| Moisture Absorption, (23°C/50% RH/Equilibrium) | 0.7 | % | ISO 62-4 |

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| PROPERTIES | TYPICAL VALUES | UNITS | TEST METHODS |
|---|---|---|---|
| Water Absorption, (23°C/24hrs) | 0.25 | % | ISO 62-1 |
| Water Absorption, (23°C/saturated) | 1.25 | % | ISO 62-1 |
| Melt Volume Rate, MVR at 360°C/5.0 kg | 13 | cm³/10 min | ISO 1133 |
| Specific Gravity | 1.27 | - | ASTM D792 |
| Water Absorption, (23°C/24hrs) | 0.25 | % | ASTM D570 |
| Water Absorption, (23°C/Saturated) | 1.25 | % | ASTM D570 |
| Melt Flow Rate, 337°C/6.6 kgf | 9 | g/10 min | ASTM D1238 |
| Poisson's Ratio | 0.36 | - | ASTM E132 |
| ELECTRICAL [1] | | | |
| Volume Resistivity | 1.E+15 | Ω.cm | IEC 60093 |
| Surface Resistivity, ROA | >1.E+15 | Ω | IEC 60093 |
| Dielectric Strength, in oil, 0.8 mm | 33 | kV/mm | IEC 60243-1 |
| Dielectric Strength, in oil, 1.6 mm | 25 | kV/mm | IEC 60243-1 |
| Dielectric Strength, in oil, 3.2 mm | 16 | kV/mm | IEC 60243-1 |
| Relative Permittivity, 1 MHz | 2.9 | - | IEC 60250 |
| Dissipation Factor | | | |
| 1.1 GHz [2] | 0.0012 | - | - |
| 5 GHz [2] | 0.0024 | - | - |
| 10 GHz [2] | 0.0027 | - | - |
| Relative Permittivity, 50/60 Hz | 2.9 | - | IEC 60250 |
| Dielectric Constant | | | |
| 1.1 GHz [2] | 3.01 | - | - |
| 5 GHz [2] | 3.02 | - | - |
| 10 GHz [2] | 3.02 | - | - |
| Comparative Tracking Index [3] | 150 | V | IEC 60112 |
| Comparative Tracking Index, M [3] | 100 | V | IEC 60112 |
| Volume Resistivity | 1.E+17 | Ω.cm | ASTM D257 |
| Dielectric Strength, in air, 1.6 mm | 32.7 | kV/mm | ASTM D149 |
| Dielectric Strength, in oil, 1.6 mm | 28.0 | kV/mm | ASTM D149 |
| Dielectric Strength, in oil, 3.2 mm | 19.7 | kV/mm | ASTM D149 |
| Relative Permittivity, 100 Hz | 3.15 | - | ASTM D150 |
| Relative Permittivity, 1 kHz | 3.15 | - | ASTM D150 |
| FLAME CHARACTERISTICS [4] | | | |
| Oxygen Index (LOI) | 47 | % | ASTM D2863 |
| Oxygen Index (LOI) | 47 | % | ISO 4589 |

(1) The information stated on Technical Datasheets should be used as indicative only for material selection purposes and not be utilized as specification or used for part or tool design.
(2) Based on SPDR testing technique on dry as molded specimens.
(3) Value shown here is based on internal measurement.
(4) 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.

## MORE INFORMATION

For curve data and CAE cards, please visit and register at https://materialfinder.sabic-specialties.com

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