

ULTEM™ RESIN AUT210

REGION AMERICAS

DESCRIPTION

Transparent, Thermoplastic Polyimide (TPI). Glass transition Temperature (Tg) of 227degC. Haze onset temperature of 212degC (SABIC IP method). Very low outgassing and plateout, for automotive lighting applications where highly metallized, reflective surfaces are required.

| INDUSTRY | SUB INDUSTRY |
|------------|---------------------------|
| Automotive | Automotive Under the Hood |

TYPICAL PROPERTY VALUES

Revision 20231109

| PROPERTIES | TYPICAL VALUES | UNITS | TEST METHODS |
|--|----------------|-------------------|--------------|
| MECHANICAL | | | |
| Tensile Stress, yld, Type I, 5 mm/min | 105 | MPa | ASTM D638 |
| Tensile Stress, brk, Type I, 5 mm/min | 88 | MPa | ASTM D638 |
| Tensile Strain, yld, Type I, 5 mm/min | 8 | % | ASTM D638 |
| Tensile Strain, brk, Type I, 5 mm/min | 75 | % | ASTM D638 |
| Tensile Modulus, 5 mm/min | 3590 | MPa | ASTM D638 |
| Flexural Stress, yld, 1.3 mm/min, 50 mm span | 170 | MPa | ASTM D790 |
| Flexural Modulus, 1.3 mm/min, 50 mm span | 3330 | MPa | ASTM D790 |
| Tensile Stress, yield, 5 mm/min | 103 | MPa | ISO 527 |
| Tensile Stress, break, 5 mm/min | 88 | MPa | ISO 527 |
| Tensile Strain, yield, 5 mm/min | 7 | % | ISO 527 |
| Tensile Strain, break, 5 mm/min | 54 | % | ISO 527 |
| Tensile Modulus, 1 mm/min | 3320 | MPa | ISO 527 |
| Flexural Modulus, 2 mm/min | 3140 | MPa | ISO 178 |
| IMPACT | | | |
| Izod Impact, unnotched, 23°C | 2440 | J/m | ASTM D4812 |
| Izod Impact, notched, 23°C | 37 | J/m | ASTM D256 |
| Izod Impact, notched, -30°C | 38 | J/m | ASTM D256 |
| Instrumented Dart Impact Total Energy, 23°C | 33 | 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 | 4 | kJ/m ² | ISO 180/1A |
| Charpy 23°C, V-notch Edgew 80*10*4 sp=62mm | 16 | kJ/m ² | ISO 179/1eA |
| THERMAL | | | |
| Vicat Softening Temp, Rate B/50 | 222 | °C | ASTM D1525 |
| HDT, 0.45 MPa, 3.2 mm, unannealed | 215 | °C | ASTM D648 |
| HDT, 1.82 MPa, 3.2mm, unannealed | 201 | °C | ASTM D648 |
| HDT, 1.82 MPa, 6.4 mm, unannealed | 211 | °C | ASTM D648 |
| CTE, -40°C to 150°C, flow | 5.E-05 | 1/°C | ASTM E831 |
| CTE, -40°C to 150°C, xflow | 5.E-05 | 1/°C | ASTM E831 |
| CTE, 23°C to 150°C, flow | 5.E-05 | 1/°C | ISO 11359-2 |

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| CTE, 23°C to 150°C, xflow | 5.E-05 | 1/°C | ISO 11359-2 |
| Vicat Softening Temp, Rate B/50 | 221 | °C | ISO 306 |
| HDT/Ae, 1.8 MPa Edgew 120*10*4 sp=100mm | 196 | °C | ISO 75/Ae |
| Metallized Haze Onset | 212 | °C | SABIC method |
| PHYSICAL | | | |
| Specific Gravity | 1.29 | - | ASTM D792 |
| Mold Shrinkage, flow, 3.2 mm | 0.5 – 0.7 | % | SABIC method |
| Melt Flow Rate, 337°C/6.6 kgf | 11 | g/10 min | ASTM D1238 |
| Density | 1.29 | g/cm ³ | ISO 1183 |
| Water Absorption, (23°C/saturated) | 1.03 | % | ISO 62-1 |
| Moisture Absorption (23°C / 50% RH) | 0.2 | % | ISO 62 |
| Melt Volume Rate, MVR at 360°C/5.0 kg | 16 | cm ³ /10 min | ISO 1133 |
| INJECTION MOLDING | | | |
| Drying Temperature | 150 | °C | |
| Drying Time | 4 – 6 | Hrs | |
| Drying Time (Cumulative) | 24 | Hrs | |
| Maximum Moisture Content | 0.02 | % | |
| Melt Temperature | 380 – 405 | °C | |
| Nozzle Temperature | 375 – 400 | °C | |
| Front - Zone 3 Temperature | 380 – 405 | °C | |
| Middle - Zone 2 Temperature | 370 – 395 | °C | |
| Rear - Zone 1 Temperature | 360 – 380 | °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 | |

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