



ULTEM™ Resin CRS5011R

Americas: COMMERCIAL

Enhanced flow Polyetherimide copolymer (Tg 225C) with internal mold release and enhanced chemical resistance to strong acids, bases, aromatics and ketones. ECO Conforming.

| TYPICAL PROPERTIES <sup>1</sup>              | TYPICAL VALUE | Unit                | Standard    |
|----------------------------------------------|---------------|---------------------|-------------|
| MECHANICAL                                   |               |                     |             |
| Tensile Stress, yld, Type I, 5 mm/min        | 1010          | kgf/cm <sup>2</sup> | ASTM D 638  |
| Tensile Stress, brk, Type I, 5 mm/min        | 760           | kgf/cm <sup>2</sup> | ASTM D 638  |
| Tensile Strain, yld, Type I, 5 mm/min        | 8             | %                   | ASTM D 638  |
| Tensile Strain, brk, Type I, 5 mm/min        | 60            | %                   | ASTM D 638  |
| Tensile Modulus, 5 mm/min                    | 29500         | kgf/cm <sup>2</sup> | ASTM D 638  |
| Flexural Stress, yld, 1.3 mm/min, 50 mm span | 1400          | kgf/cm <sup>2</sup> | ASTM D 790  |
| Flexural Modulus, 1.3 mm/min, 50 mm span     | 31600         | kgf/cm <sup>2</sup> | ASTM D 790  |
| 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                 | 214           | cm-kgf/cm           | ASTM D 4812 |
| Izod Impact, notched, 23°C                   | 6             | cm-kgf/cm           | ASTM D 256  |
| Izod Impact, Reverse Notched, 3.2 mm         | 212           | cm-kgf/cm           | ASTM D 256  |
| Instrumented Impact Total Energy, 23°C       | 305           | cm-kgf              | ASTM D 3763 |
| Izod Impact, unnotched 80*10*4 +23°C         | NB            | kJ/m <sup>2</sup>   | ISO 180/1U  |
| Izod Impact, unnotched 80*10*4 -30°C         | NB            | kJ/m <sup>2</sup>   | ISO 180/1U  |
| Izod Impact, notched 80*10*4 +23°C           | 5             | kJ/m <sup>2</sup>   | ISO 180/1A  |

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(3) This rating is not intended to reflect hazards presented by this or any other material under actual fire conditions.

(4) Internal measurements according to UL standards.

(5) Measurements made from laboratory test coupon. Actual shrinkage may vary outside of range due to differences in processing conditions, equipment, part geometry and tool design. It is recommended that mold shrinkage studies be performed with surrogate or legacy tooling prior to cutting tools for new molded article.

(6) Needs hard coat to consistently pass 60 sec Vertical Burn.





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|---------------------------------------------|---------------|-------------------|----------------|
| <b>IMPACT</b>                               |               |                   |                |
| Izod Impact, notched 80*10*4 -30°C          | 5             | kJ/m <sup>2</sup> | ISO 180/1A     |
| Charpy 23°C, V-notch Edgew 80*10*4 sp=62mm  | 7             | kJ/m <sup>2</sup> | ISO 179/1eA    |
| Charpy -30°C, V-notch Edgew 80*10*4 sp=62mm | 7             | kJ/m <sup>2</sup> | ISO 179/1eA    |
| Charpy 23°C, Unnotch Edgew 80*10*4 sp=62mm  | NB            | kJ/m <sup>2</sup> | ISO 179/1eU    |
| Charpy -30°C, Unnotch Edgew 80*10*4 sp=62mm | NB            | kJ/m <sup>2</sup> | ISO 179/1eU    |
| <b>THERMAL</b>                              |               |                   |                |
| Vicat Softening Temp, Rate B/50             | 227           | °C                | ASTM D 1525    |
| HDT, 0.45 MPa, 3.2 mm, unannealed           | 213           | °C                | ASTM D 648     |
| HDT, 1.82 MPa, 3.2mm, unannealed            | 201           | °C                | ASTM D 648     |
| HDT, 0.45 MPa, 6.4 mm, unannealed           | 216           | °C                | ASTM D 648     |
| HDT, 1.82 MPa, 6.4 mm, unannealed           | 204           | °C                | ASTM D 648     |
| CTE, -40°C to 150°C, flow                   | 5.5E-05       | 1/°C              | ASTM E 831     |
| CTE, -40°C to 150°C, xflow                  | 5.5E-05       | 1/°C              | ASTM E 831     |
| Thermal Conductivity                        | 0.31          | W/m-°C            | ASTM C 177     |
| 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      |

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|---------------------------------------------|---------------|-------------------------|--------------|
| <b>PHYSICAL</b>                             |               |                         |              |
| Specific Gravity                            | 1.28          | -                       | ASTM D 792   |
| Mold Shrinkage on Tensile Bar, flow (2) (5) | 0.4 - 0.7     | %                       | SABIC Method |
| Mold Shrinkage, flow, 3.2 mm (5)            | 0.4 - 0.7     | %                       | SABIC Method |
| Mold Shrinkage, xflow, 3.2 mm (5)           | 0.4 - 0.7     | %                       | SABIC Method |
| Melt Flow Rate, 337°C/6.6 kgf               | 11            | g/10 min                | ASTM D 1238  |
| Density                                     | 1.28          | g/cm <sup>3</sup>       | ISO 1183     |
| Water Absorption, (23°C/sat)                | 1.2           | %                       | ISO 62       |
| Moisture Absorption (23°C / 50% RH)         | 0.2           | %                       | ISO 62       |
| Melt Volume Rate, MVR at 360°C/5.0 kg       | 20            | cm <sup>3</sup> /10 min | ISO 1133     |
| <b>ELECTRICAL</b>                           |               |                         |              |
| Dielectric Strength, in oil, 3.2 mm         | 18            | kV/mm                   | ASTM D 149   |
| Relative Permittivity, 50/60 Hz             | 3.2           | -                       | ASTM D 150   |
| Dissipation Factor, 50/60 Hz                | 0.0021        | -                       | ASTM D 150   |
| Volume Resistivity                          | 2.5E+15       | Ohm-cm                  | IEC 60093    |
| Surface Resistivity, ROA                    | >1.E+15       | Ohm                     | IEC 60093    |
| Dielectric Strength, in oil, 3.2 mm         | 18.1          | kV/mm                   | IEC 60243-1  |
| Dissipation Factor, 50/60 Hz                | 0.002         | -                       | IEC 60250    |
| Comparative Tracking Index                  | 150           | V                       | IEC 60112    |
| Comparative Tracking Index, M               | 100           | V                       | IEC 60112    |

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| PROCESSING PARAMETERS       | TYPICAL VALUE | Unit |
|-----------------------------|---------------|------|
| <b>Injection Molding</b>    |               |      |
| 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  |
| Shot to Cylinder Size       | 40 - 60       | %    |
| Vent Depth                  | 0.025 - 0.076 | mm   |

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