

## SABIC Innovative Plastics Ultem 1010KM PEI

Category : Polymer , Thermoplastic , Polyetherimide (PEI)

### Material Notes:

Enhanced flow Polyetherimide (Tg 217C) with internal mold release. ECO Conforming. This data was supplied by SABIC-IP for the Americas region.

Order this product through the following link:

[http://www.lookpolymers.com/polymer\\_SABIC-Innovative-Plastics-Ultem-1010KM-PEI.php](http://www.lookpolymers.com/polymer_SABIC-Innovative-Plastics-Ultem-1010KM-PEI.php)

| Physical Properties                | Metric  | English   | Comments   |
|------------------------------------|---|---|--|
| Specific Gravity                   | 1.27 g/cc   | 1.27 g/cc   | ASTM D 792   |
| Density                            | 1.27 g/cc   | 0.0459 lb/in <sup>3</sup>   | ISO 1183   |
| Moisture Absorption at Equilibrium | 0.70 %  | 0.70 %  | 23 <sup>o</sup> C / 50% RH; ISO 62                   |
| Water Absorption at Saturation     | 1.25 %<br>@Temperature 23.0 <sup>o</sup> C                        | 1.25 %<br>@Temperature 73.4 <sup>o</sup> F                        | ISO 62   |
| Linear Mold Shrinkage, Flow        | 0.0050 - 0.0070 cm/cm   | 0.0050 - 0.0070 in/in   | on tensile bar; SABIC Method                         |
|                                    | 0.0050 - 0.0070 cm/cm<br>@Thickness 3.20 mm                       | 0.0050 - 0.0070 in/in<br>@Thickness 0.126 in                      | SABIC Method   |
| Linear Mold Shrinkage, Transverse  | 0.0050 - 0.0070 cm/cm<br>@Thickness 3.20 mm                       | 0.0050 - 0.0070 in/in<br>@Thickness 0.126 in                      | SABIC Method   |
| Melt Flow                          | 17.8 g/10 min<br>@Load 6.60 kg,<br>Temperature 337 <sup>o</sup> C | 17.8 g/10 min<br>@Load 14.6 lb,<br>Temperature 639 <sup>o</sup> F | ASTM D 1238  |
|                                    | 25 g/10 min<br>@Load 5.00 kg,<br>Temperature 360 <sup>o</sup> C   | 25 g/10 min<br>@Load 11.0 lb,<br>Temperature 680 <sup>o</sup> F   | [cm <sup>3</sup> /10 min] Melt Volume Rate; ISO 1133 |

| Mechanical Properties     | Metric   | English   | Comments                     |
|---------------------------|----------|-----------|------------------------------|
| Tensile Strength at Break | 85.0 MPa | 12300 psi | 5 mm/min; ISO 527            |
|                           | 105 MPa  | 15200 psi | Type I, 5 mm/min; ASTM D 638 |
| Tensile Strength, Yield   | 105 MPa  | 15200 psi | 5 mm/min; ISO 527            |
|                           | 110 MPa  | 16000 psi | Type I, 5 mm/min; ASTM D 638 |
| Elongation at Break       | 60 %     | 60 %      | Type I, 5 mm/min; ASTM D 638 |

| Mechanical Properties        | 60 %<br>Metric           | 60 %<br>English            | 5 mm/min: ISO 527<br>Comments      |
|------------------------------|--------------------------|----------------------------|------------------------------------|
| Elongation at Yield          | 6.0 %                    | 6.0 %                      | 5 mm/min; ISO 527                  |
|                              | 7.0 %                    | 7.0 %                      | Type I, 5 mm/min; ASTM D 638       |
| Tensile Modulus              | 3.30 GPa                 | 479 ksi                    | 1 mm/min; ISO 527                  |
|                              | 3.59 GPa                 | 521 ksi                    | 5 mm/min; ASTM D 638               |
| Flexural Yield Strength      | 160 MPa                  | 23200 psi                  | 2 mm/min; ISO 178                  |
|                              | 165 MPa                  | 23900 psi                  | 1.3 mm/min, 50 mm span; ASTM D 790 |
| Flexural Modulus             | 3.30 GPa                 | 479 ksi                    | 2 mm/min; ISO 178                  |
|                              | 3.52 GPa                 | 511 ksi                    | 1.3 mm/min, 50 mm span; ASTM D 790 |
| Izod Impact, Notched         | 0.320 J/cm               | 0.599 ft-lb/in             | ASTM D 256                         |
|                              | @Temperature 23.0<br>°C  | @Temperature 73.4 °F       |                                    |
|                              | 0.350 J/cm               | 0.656 ft-lb/in             | ASTM D 256                         |
|                              | @Temperature -30.0<br>°C | @Temperature -22.0<br>°F   |                                    |
|                              | 14.95 J/cm               | 28.01 ft-lb/in             | reverse notched; ASTM D 256        |
|                              | @Thickness 3.20 mm       | @Thickness 0.126 in        |                                    |
| Izod Impact, Unnotched       | 13.35 J/cm               | 25.01 ft-lb/in             | ASTM D 4812                        |
|                              | @Temperature 23.0<br>°C  | @Temperature 73.4 °F       |                                    |
| Izod Impact, Notched (ISO)   | 5.00 kJ/m <sup>2</sup>   | 2.38 ft-lb/in <sup>2</sup> | 80*10*4; ISO 180/1A                |
|                              | @Temperature 23.0<br>°C  | @Temperature 73.4 °F       |                                    |
|                              | 5.00 kJ/m <sup>2</sup>   | 2.38 ft-lb/in <sup>2</sup> | 80*10*4; ISO 180/1A                |
|                              | @Temperature -30.0<br>°C | @Temperature -22.0<br>°F   |                                    |
| Izod Impact, Unnotched (ISO) | NB                       | NB                         | 80*10*4; ISO 180/1U                |
|                              | @Temperature 23.0<br>°C  | @Temperature 73.4 °F       |                                    |
|                              | NB                       | NB                         | 80*10*4; ISO 180/1U                |
|                              | @Temperature -30.0<br>°C | @Temperature -22.0<br>°F   |                                    |
|                              | 0.300 J/cm <sup>2</sup>  | 1.43 ft-lb/in <sup>2</sup> | V-notch Edgew 80*10*4 sp=62mm;     |

| Charpy Impact, Notched<br>Mechanical Properties | @Temperature 23.0<br>Metric<br>Â°C     | English<br>@ Temperature 73.4 Â°F       | ISO 179/1eA<br>Comments                          |
|---|--|---|--|
| Impact Test                                     | 33.0 J<br><br>@Temperature 23.0<br>Â°C | 24.3 ft-lb<br><br>@Temperature 73.4 Â°F | Instrumented Impact Total Energy;<br>ASTM D 3763 |

| Thermal Properties                             | Metric  | English   | Comments                              |
|--|---|---|---------------------------------------|
| CTE, linear, Parallel to Flow                  | 50.0 Âµm/m-Â°C<br><br>@Temperature 23.0 -<br>150 Â°C  | 27.8 Âµin/in-Â°F<br><br>@Temperature 73.4 -<br>302 Â°F  | ISO 11359-2                           |
|  | 55.0 Âµm/m-Â°C<br><br>@Temperature -40.0 -<br>150 Â°C | 30.6 Âµin/in-Â°F<br><br>@Temperature -40.0 -<br>302 Â°F | ASTM E 831                            |
| CTE, linear, Transverse to Flow                | 50.0 Âµm/m-Â°C<br><br>@Temperature 23.0 -<br>150 Â°C  | 27.8 Âµin/in-Â°F<br><br>@Temperature 73.4 -<br>302 Â°F  | ISO 11359-2                           |
|  | 55.0 Âµm/m-Â°C<br><br>@Temperature -40.0 -<br>150 Â°C | 30.6 Âµin/in-Â°F<br><br>@Temperature -40.0 -<br>302 Â°F | ASTM E 831                            |
| Thermal Conductivity                           | 0.220 W/m-K   | 1.53 BTU-in/hr-ftÂ²-<br>Â°F                             | ASTM C 177                            |
|  | 0.240 W/m-K   | 1.67 BTU-in/hr-ftÂ²-<br>Â°F                             | ISO 8302                              |
| Deflection Temperature at 0.46 MPa<br>(66 psi) | 195 Â°C   | 383 Â°F   | Edgew 120*10*4 sp=100mm; ISO<br>75/Be |
|  | 197 Â°C   | 387 Â°F   | Flatw 80*10*4 sp=64mm; ISO 75/Bf      |
|  | 205 Â°C<br><br>@Thickness 3.20 mm                     | 401 Â°F<br><br>@Thickness 0.126 in                      | unannealed; ASTM D 648                |
|  | 207 Â°C<br><br>@Thickness 6.40 mm                     | 405 Â°F<br><br>@Thickness 0.252 in                      | unannealed; ASTM D 648                |
|  | 190 Â°C   | 374 Â°F   | Edgew 120*10*4 sp=100mm; ISO<br>75/Ae |
| Deflection Temperature at 1.8 MPa<br>(264 psi) | 192 Â°C   | 378 Â°F   | Flatw 80*10*4 sp=64mm; ISO 75/Af      |
|  | 197 Â°C<br><br>@Thickness 3.20 mm                     | 387 Â°F<br><br>@Thickness 0.126 in                      | unannealed; ASTM D 648                |
|  | 199 Â°C   | 390 Â°F   | unannealed; ASTM D 648                |
|  |   |   |                                       |

| Thermal Properties        | @Thickness 6.40 mm<br>Metric | @Thickness 0.252 in<br>English | Comments               |
|---------------------------|------------------------------|--------------------------------|------------------------|
| Vicat Softening Point     | 211 Å°C                      | 412 Å°F                        | Rate B/50; ISO 306     |
|                           | 212 Å°C                      | 414 Å°F                        | Rate B/120; ISO 306    |
|                           | 215 Å°C                      | 419 Å°F                        | Rate A/50; ISO 306     |
|                           | 219 Å°C                      | 426 Å°F                        | Rate B/50; ASTM D 1525 |
| Glass Transition Temp, Tg | 217 Å°C                      | 423 Å°F                        |                        |

| Descriptive Properties              | Value  | Comments       |
|-------------------------------------|--------|----------------|
| Ball Pressure Test, 125Å°C +/- 2Å°C | Passes | IEC 60695-10-2 |

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