## SABIC Innovative Plastics ULTEM 1010 PEI

**Categories:** Polymer; Thermoplastic; Polyetherimide (PEI)

**Material Notes:** Transparent, enhanced flow Polyetherimide (Tg 217C). ECO Conforming, UL94 V0 and 5VA listing. US FDA and EU Food Contact compliant, NSF 51 listing. Effective June 2007, this grade will no longer be supported with biocompatibility information and should not be used for medical applications which require biocompatibility. Alternative grade HU1010.

**Vendors:** No vendors are listed for this material. Please click here if you are a supplier and would like information on how to add your listing to this material.

| Physical Properties | Metric | English | Comments |
|---|---|---|---|
| Specific Gravity | 1.27 g/cc | 1.27 g/cc | ASTM D792 |
| Water Absorption | 0.25 %<br>@Time 86400 sec | 0.25 %<br>@Time 24.0 hour | ASTM D570 |
| Moisture Absorption at Equilibrium | 1.25 % | 1.25 % | ASTM D570 |
| Linear Mold Shrinkage, Flow | 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 °C | 17.8 g/10 min<br>@Load 14.6 lb,<br>Temperature 639 °F | ASTM D1238 |

| Mechanical Properties | Metric | English | Comments |
|---|---|---|---|
| Hardness, Rockwell M | 109 | 109 | ASTM D785 |
| Tensile Strength, Yield | 110 MPa | 16000 psi | Type I, 5 mm/min; ASTM D638 |
| Elongation at Break | 60 % | 60 % | Type I, 5 mm/min; ASTM D638 |
| Elongation at Yield | 7.0 % | 7.0 % | Type I, 5 mm/min; ASTM D638 |
| Tensile Modulus | 3.58 GPa | 519 ksi | 5 mm/min; ASTM D638 |
| Flexural Yield Strength | 165 MPa | 23900 psi | 2.6 mm/min, 100 mm span; ASTM D790 |
| Flexural Modulus | 3.51 GPa | 509 ksi | 2.6 mm/min, 100 mm span; ASTM D790 |
| Izod Impact, Notched | 0.320 J/cm | 0.599 ft-lb/in | ASTM D256 |
| | 11.74 J/cm<br>@Thickness 3.20 mm | 21.99 ft-lb/in<br>@Thickness 0.126 in | ASTM D256 |
| Izod Impact, Unnotched | 13.35 J/cm | 25.01 ft-lb/in | ASTM D4812 |
| Gardner Impact | 33.0 J | 24.3 ft-lb | ASTM D3029 |
| Taber Abrasion, mg/1000 Cycles | 10 | 10 | CS-17, 1 kg; ASTM D1044 |

| Electrical Properties | Metric | English | Comments |
|---|---|---|---|
| Volume Resistivity | 1.00e+17 ohm-cm | 1.00e+17 ohm-cm | ASTM D257 |
| Dielectric Constant | 3.15<br>@Frequency 1000 Hz | 3.15<br>@Frequency 1000 Hz | ASTM D150 |
| Dielectric Strength | 27.9 kV/mm<br>@Thickness 1.60 mm | 709 kV/in<br>@Thickness 0.0630 in | in oil; ASTM D149 |
| | 32.6 kV/mm<br>@Thickness 1.60 mm | 828 kV/in<br>@Thickness 0.0630 in | in air; ASTM D149 |
| Dissipation Factor | 0.0013<br>@Frequency 1000 Hz | 0.0013<br>@Frequency 1000 Hz | ASTM D150 |
| | 0.0025<br>@Frequency 2.45e+9 Hz | 0.0025<br>@Frequency 2.45e+9 Hz | ASTM D150 |
| Arc Resistance | 120 - 180 sec | 120 - 180 sec | Tungsten; ASTM D495 |
| Comparative Tracking Index | 100 - 175 V | 100 - 175 V | UL 746A |
| Hot Wire Ignition, HWI | 60 - 120 sec | 60 - 120 sec | UL 746A |
| High Amp Arc Ignition, HAI | 15 - 30 arcs | 15 - 30 arcs | UL 746A |
| High Voltage Arc-Tracking Rate, HVTR | 25.4 - 80.0 mm/min | 1.00 - 3.15 in/min | UL 746A |

| Thermal Properties | Metric | English | Comments |
|---|---|---|---|
| CTE, linear, Parallel to Flow | 55.8 µm/m-°C<br>@Temperature -20.0 - 150 °C | 31.0 µin/in-°F<br>@Temperature -4.00 - 302 °F | ASTM E 831 |
| Thermal Conductivity | 0.220 W/m-K | 1.53 BTU-in/hr-ft²-°F | ASTM C177 |
| Deflection Temperature at 0.46 MPa (66 psi) | 207 °C<br>@Thickness 6.40 mm | 405 °F<br>@Thickness 0.252 in | unannealed; ASTM D648 |
| Deflection Temperature at 1.8 MPa (264 psi) | 198 °C<br>@Thickness 6.40 mm | 388 °F<br>@Thickness 0.252 in | unannealed; ASTM D648 |
| Vicat Softening Point | 218 °C | 424 °F | Rate B/50; ASTM D1525 |
| Glass Transition Temp, Tg | 217 °C | 423 °F | |
| UL RTI, Electrical | 170 °C | 338 °F | UL 746B |
| UL RTI, Mechanical with Impact | 170 °C | 338 °F | UL 746B |
| UL RTI, Mechanical without Impact | 170 °C | 338 °F | UL 746B |
| Flammability, UL94 | V-0<br>@Thickness 0.750 mm | V-0<br>@Thickness 0.0295 in | UL 94 |
| | 5VA | 5VA | UL 94 |

| | @Thickness 3.00 mm | @Thickness 0.118 in | |
|---|---|---|---|
| Oxygen Index | 44 % | 44 % | ASTM D2863 |

| Optical Properties | Metric | English | Comments |
|---|---|---|---|
| Transmission, Visible | 90 % | 90 % | transparent; thickness not quantified |

| Descriptive Properties | | | |
|---|---|---|---|
| NBS Smoke Density, Flaming, Ds 4 min | | 2 | ASTM E 662 |