

## SABIC Innovative Plastics ULTEM XH6050M PEI Copolymer

Category : Polymer , Thermoplastic , Polyetherimide (PEI)

### Material Notes:

Enhanced flow Polyetherimidesulfone copolymer (Tg 247C) with internal mold release. ECO Conforming, UL94 V0 listing. Resin is subject to U.S. Commerce Control Laws (15CFR Chapter VII, Part 774).

Order this product through the following link:

[http://www.lookpolymers.com/polymer\\_SABIC-Innovative-Plastics-ULTEM-XH6050M-PEI-Copolymer.php](http://www.lookpolymers.com/polymer_SABIC-Innovative-Plastics-ULTEM-XH6050M-PEI-Copolymer.php)

| Physical Properties               | Metric                                                 | English                                                | Comments                                |
|-----------------------------------|--------------------------------------------------------|--------------------------------------------------------|-----------------------------------------|
| Specific Gravity                  | 1.30 g/cc                                              | 1.30 g/cc                                              | ASTM D792                               |
| Density                           | 1.30 g/cc                                              | 0.0470 lb/in <sup>3</sup>                              | ISO 1183                                |
| Moisture Absorption               | 0.650 %                                                | 0.650 %                                                | 23Â°C / 50% RH; ISO 62                  |
| Water Absorption at Saturation    | 1.75 %                                                 | 1.75 %                                                 | 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                         | 12.5 g/10 min<br>@Load 6.60 kg,<br>Temperature 367 Â°C | 12.5 g/10 min<br>@Load 14.6 lb,<br>Temperature 693 Â°F | ASTM D1238                              |
| Melt Index of Compound            | 8.0 g/10 min<br>@Load 5.00 kg,<br>Temperature 360 Â°C  | 8.0 g/10 min<br>@Load 11.0 lb,<br>Temperature 680 Â°F  | MVR [cm <sup>3</sup> /10 min]; ISO 1133 |

| Mechanical Properties     | Metric   | English   | Comments                    |
|---------------------------|----------|-----------|-----------------------------|
| Hardness, H358/30         | 138 MPa  | 20000 psi | ISO 2039-1                  |
| Tensile Strength at Break | 78.0 MPa | 11300 psi | 5 mm/min; ISO 527           |
|                           | 96.0 MPa | 13900 psi | Type I, 5 mm/min; ASTM D638 |
| Tensile Strength, Yield   | 95.0 MPa | 13800 psi | 5 mm/min; ISO 527           |
|                           | 96.0 MPa | 13900 psi | Type I, 5 mm/min; ASTM D638 |
| Elongation at Break       | 16.3 %   | 16.3 %    | 5 mm/min; ISO 527           |
|                           | 25 %     | 25 %      | Type I, 5 mm/min; ASTM D638 |

| Mechanical Properties        | Metric                   | English                    | Comments                           |
|------------------------------|--------------------------|----------------------------|------------------------------------|
| Elongation at Yield          | 0.0 %                    | 0.0 %                      | Type I, 5 mm/min; ASTM D638        |
|                              | 8.4 %                    | 8.4 %                      | 5 mm/min; ISO 527                  |
| Tensile Modulus              | 3.12 GPa                 | 453 ksi                    | 1 mm/min; ISO 527                  |
|                              | 3.51 GPa                 | 509 ksi                    | 5 mm/min; ASTM D638                |
| Flexural Strength            | 123 MPa                  | 17800 psi                  | 2 mm/min; ISO 178                  |
|                              | 158 MPa                  | 22900 psi                  | 1.3 mm/min, 50 mm span; ASTM D790  |
| Flexural Yield Strength      | 155 MPa                  | 22500 psi                  | 2.6 mm/min, 100 mm span; ASTM D790 |
| Flexural Modulus             | 3.07 GPa                 | 445 ksi                    | 2 mm/min; ISO 178                  |
|                              | 3.17 GPa                 | 460 ksi                    | 1.3 mm/min, 50 mm span; ASTM D790  |
| Izod Impact, Notched         | 0.690 J/cm               | 1.29 ft-lb/in              | ASTM D256                          |
|                              | 0.740 J/cm               | 1.39 ft-lb/in              | ASTM D256                          |
|                              | @Temperature -30.0<br>°C | @Temperature -22.0<br>°F   | ASTM D256                          |
| Izod Impact, Unnotched       | NB                       | NB                         | ASTM D4812                         |
| Izod Impact, Notched (ISO)   | 6.00 kJ/m <sup>2</sup>   | 2.86 ft-lb/in <sup>2</sup> | 80*10*4; ISO 180/1A                |
|                              | 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   | 80*10*4; ISO 180/1A                |
| Izod Impact, Unnotched (ISO) | 196 kJ/m <sup>2</sup>    | 93.3 ft-lb/in <sup>2</sup> | 80*10*4; ISO 180/1U                |
|                              | 147 kJ/m <sup>2</sup>    | 69.9 ft-lb/in <sup>2</sup> | 80*10*4; ISO 180/1U                |
|                              | @Temperature -30.0<br>°C | @Temperature -22.0<br>°F   | 80*10*4; ISO 180/1U                |
| Charpy Impact Unnotched      | NB                       | NB                         | Edgew 80*10*4 sp=62mm; ISO 179/1eU |
|                              | NB                       | NB                         | Edgew 80*10*4 sp=62mm; ISO 179/1eU |
|                              | @Temperature -30.0<br>°C | @Temperature -22.0<br>°F   | Edgew 80*10*4 sp=62mm; ISO 179/1eU |
| Dart Drop, Total Energy      | 33.0 J                   | 24.3 ft-lb                 | ASTM D3763                         |
|                              | @Temperature 23.0<br>°C  | @Temperature 73.4 °F       | ASTM D3763                         |

| Thermal Properties | Metric | English | Comments |
|--------------------|--------|---------|----------|
|--------------------|--------|---------|----------|

| Thermal Properties                          | Metric $\mu\text{m}/\text{m}\cdot\text{Å}^\circ\text{C}$                                                            | English $\text{in}/\text{in}\cdot\text{Å}^\circ\text{F}$                                                              | Comments                         |
|---------------------------------------------|---------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|----------------------------------|
| CTE, linear, Parallel to Flow               | @Temperature -40.0 - 150 $\text{Å}^\circ\text{C}$                                                                   | @Temperature -40.0 - 302 $\text{Å}^\circ\text{F}$                                                                     | ASTM E 831                       |
|                                             | 50.0 $\text{Å}\mu\text{m}/\text{m}\cdot\text{Å}^\circ\text{C}$<br>@Temperature 23.0 - 150 $\text{Å}^\circ\text{C}$  | 27.8 $\text{Å}\mu\text{in}/\text{in}\cdot\text{Å}^\circ\text{F}$<br>@Temperature 73.4 - 302 $\text{Å}^\circ\text{F}$  | ISO 11359-2                      |
| CTE, linear, Transverse to Flow             | 50.0 $\text{Å}\mu\text{m}/\text{m}\cdot\text{Å}^\circ\text{C}$<br>@Temperature -40.0 - 150 $\text{Å}^\circ\text{C}$ | 27.8 $\text{Å}\mu\text{in}/\text{in}\cdot\text{Å}^\circ\text{F}$<br>@Temperature -40.0 - 302 $\text{Å}^\circ\text{F}$ | ASTM E 831                       |
|                                             | 50.0 $\text{Å}\mu\text{m}/\text{m}\cdot\text{Å}^\circ\text{C}$<br>@Temperature 23.0 - 150 $\text{Å}^\circ\text{C}$  | 27.8 $\text{Å}\mu\text{in}/\text{in}\cdot\text{Å}^\circ\text{F}$<br>@Temperature 73.4 - 302 $\text{Å}^\circ\text{F}$  | ISO 11359-2                      |
| Thermal Conductivity                        | 0.220 W/m-K                                                                                                         | 1.53 BTU-in/hr-ft $\text{Å}^2\cdot\text{Å}^\circ\text{F}$                                                             | ASTM E 1530                      |
| Deflection Temperature at 0.46 MPa (66 psi) | 237 $\text{Å}^\circ\text{C}$                                                                                        | 459 $\text{Å}^\circ\text{F}$                                                                                          | unannealed; ASTM D648            |
|                                             | @Thickness 6.40 mm                                                                                                  | @Thickness 0.252 in                                                                                                   |                                  |
| Deflection Temperature at 1.8 MPa (264 psi) | 228 $\text{Å}^\circ\text{C}$                                                                                        | 442 $\text{Å}^\circ\text{F}$                                                                                          | Flatw 80*10*4 sp=64mm; ISO 75/Af |
|                                             | 217 $\text{Å}^\circ\text{C}$<br>@Thickness 3.20 mm                                                                  | 423 $\text{Å}^\circ\text{F}$<br>@Thickness 0.126 in                                                                   | unannealed; ASTM D648            |
|                                             | 230 $\text{Å}^\circ\text{C}$<br>@Thickness 6.40 mm                                                                  | 446 $\text{Å}^\circ\text{F}$<br>@Thickness 0.252 in                                                                   | unannealed; ASTM D648            |
|                                             |                                                                                                                     |                                                                                                                       |                                  |
| Vicat Softening Point                       | 240 $\text{Å}^\circ\text{C}$                                                                                        | 464 $\text{Å}^\circ\text{F}$                                                                                          | Rate B/120; ISO 306              |
|                                             | 242 $\text{Å}^\circ\text{C}$                                                                                        | 468 $\text{Å}^\circ\text{F}$                                                                                          | Rate B/50; ASTM D1525            |
|                                             | 242 $\text{Å}^\circ\text{C}$                                                                                        | 468 $\text{Å}^\circ\text{F}$                                                                                          | Rate B/50; ISO 306               |
| Glass Transition Temp, Tg                   | 247 $\text{Å}^\circ\text{C}$                                                                                        | 477 $\text{Å}^\circ\text{F}$                                                                                          |                                  |
| Oxygen Index                                | 45 %                                                                                                                | 45 %                                                                                                                  | ISO 4589                         |
| Glow Wire Test                              | 850 $\text{Å}^\circ\text{C}$                                                                                        | 1560 $\text{Å}^\circ\text{F}$                                                                                         | IEC 60695-2-13                   |
|                                             | 960 $\text{Å}^\circ\text{C}$<br>@Thickness 3.20 mm                                                                  | 1760 $\text{Å}^\circ\text{F}$<br>@Thickness 0.126 in                                                                  | IEC 60695-2-12                   |

| Electrical Properties | Metric             | English             | Comments          |
|-----------------------|--------------------|---------------------|-------------------|
| Dielectric Strength   | 14.0 kV/mm         | 356 kV/in           | in oil; ASTM D149 |
|                       | @Thickness 3.20 mm | @Thickness 0.126 in |                   |

| Electrical Properties      | Metric                    | English                   | Comments  |
|----------------------------|---------------------------|---------------------------|-----------|
| Dissipation Factor         | @Frequency 1000 Hz        | @Frequency 1000 Hz        | IEC 60250 |
|                            | 0.0070                    | 0.0070                    |           |
|                            | @Frequency 1.00e+6 Hz     | @Frequency 1.00e+6 Hz     | IEC 60250 |
|                            | 0.0080                    | 0.0080                    |           |
|                            | @Frequency 100 Hz         | @Frequency 100 Hz         | IEC 60250 |
|                            | 0.018                     | 0.018                     |           |
|                            | @Frequency 50.0 - 60.0 Hz | @Frequency 50.0 - 60.0 Hz | IEC 60250 |
| Comparative Tracking Index | 175 V                     | 175 V                     | IEC 60112 |

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

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