

## SABIC Innovative Plastics EXTEM VH1003 PEI Copolymer

Category : Polymer , Thermoplastic , Polyetherimide (PEI)

### Material Notes:

Transparent, Thermoplastic Polyimide (TPI) resin with a glass transition temperature (Tg) of 247C. This product has thinwall FR capability and has a UL94 V0 listing. This material is RoHS compliant and also halogen free according VDE/DIN 472 part 815. 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-EXTEM-VH1003-PEI-Copolymer.php](http://www.lookpolymers.com/polymer_SABIC-Innovative-Plastics-EXTEM-VH1003-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               | 0.600 %   | 0.600 %   | 23°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                         | 15.5 g/10 min<br>@Load 6.60 kg,<br>Temperature 367 °C | 15.5 g/10 min<br>@Load 14.6 lb,<br>Temperature 693 °F | ASTM D1238                              |
| Melt Index of Compound            | 8.0 g/10 min<br>@Load 5.00 kg,<br>Temperature 360 °C  | 8.0 g/10 min<br>@Load 11.0 lb,<br>Temperature 680 °F  | MVR [cm <sup>3</sup> /10 min]; ISO 1133 |

| Mechanical Properties     | Metric   | English   | Comments                    |
|---------------------------|----------|-----------|-----------------------------|
| Hardness, H358/30         | 140 MPa  | 20300 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       | 16.8 %   | 16.8 %    | 5 mm/min; ISO 527           |

| Mechanical Properties        | Metric  | English   | Comments                           |
|------------------------------|---|---|------------------------------------|
| Elongation at Yield          | 6.0 %   | 6.0 %   | Type I, 5 mm/min; ASTM D638        |
|                              | 8.5 %   | 8.5 %   | 5 mm/min; ISO 527                  |
| Tensile Modulus              | 3.11 GPa  | 451 ksi   | 1 mm/min; ISO 527                  |
|                              | 3.51 GPa  | 509 ksi   | 5 mm/min; ASTM D638                |
| Flexural Strength            | 159 MPa   | 23100 psi   | 1.3 mm/min, 50 mm span; ASTM D790  |
| Flexural Yield Strength      | 123 MPa   | 17800 psi   | 2 mm/min; ISO 178                  |
|                              | 155 MPa   | 22500 psi   | 2.6 mm/min, 100 mm span; ASTM D790 |
| Flexural Modulus             | 3.08 GPa  | 447 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<br>@Temperature -30.0 °C             | 1.39 ft-lb/in<br>@Temperature -22.0 °F              | ASTM D256                          |
| Izod Impact, Unnotched       | NB  | NB  | ASTM D4812                         |
| Izod Impact, Notched (ISO)   | 4.00 kJ/m <sup>2</sup>                          | 1.90 ft-lb/in <sup>2</sup>                          | 80*10*4; ISO 180/1A                |
|                              | 5.00 kJ/m <sup>2</sup><br>@Temperature -30.0 °C | 2.38 ft-lb/in <sup>2</sup><br>@Temperature -22.0 °F | 80*10*4; ISO 180/1A                |
| Izod Impact, Unnotched (ISO) | NB  | NB  | 80*10*4; ISO 180/1U                |
|                              | NB<br>@Temperature -30.0 °C                     | NB<br>@Temperature -22.0 °F                         | 80*10*4; ISO 180/1U                |
| Charpy Impact Unnotched      | NB  | NB  | Edgew 80*10*4 sp=62mm; ISO 179/1eU |
|                              | NB<br>@Temperature -30.0 °C                     | NB<br>@Temperature -22.0 °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 °C                            | @Temperature 73.4 °F                                |                                    |

| Thermal Properties            | Metric       | English        | Comments   |
|-------------------------------|--------------|----------------|------------|
| CTE, linear, Parallel to Flow | 50.0 µm/m-°C | 27.8 µin/in-°F | ASTM E 831 |

| Thermal Properties                             | Metric<br>@Temperature -40.0 -<br>150 °C | English<br>@Temperature -40.0 -<br>302 °F | Comments                         |
|--|--|---|----------------------------------|
|  | 50.0 µm/m-°C                             | 27.8 µin/in-°F                            | ISO 11359-2                      |
|  | @Temperature 23.0 -<br>150 °C            | @Temperature 73.4 -<br>302 °F             |                                  |
| CTE, linear, Transverse to Flow                | 50.0 µm/m-°C                             | 27.8 µin/in-°F                            | ASTM E 831                       |
|  | @Temperature -40.0 -<br>150 °C           | @Temperature -40.0 -<br>302 °F            |                                  |
|  | 50.0 µm/m-°C                             | 27.8 µin/in-°F                            | ISO 11359-2                      |
|  | @Temperature 23.0 -<br>150 °C            | @Temperature 73.4 -<br>302 °F             |                                  |
| Thermal Conductivity                           | 0.220 W/m-K                              | 1.53 BTU-in/hr-ft <sup>2</sup> -°F        | ASTM E 1530                      |
| Deflection Temperature at 0.46 MPa<br>(66 psi) | 237 °C                                   | 459 °F                                    | unannealed; ASTM D648            |
|  | @Thickness 6.40 mm                       | @Thickness 0.252 in                       |                                  |
| Deflection Temperature at 1.8 MPa<br>(264 psi) | 228 °C                                   | 442 °F                                    | Flatw 80*10*4 sp=64mm; ISO 75/Af |
|  | 217 °C                                   | 423 °F                                    | unannealed; ASTM D648            |
|  | @Thickness 3.20 mm                       | @Thickness 0.126 in                       |                                  |
|  | 230 °C                                   | 446 °F                                    | unannealed; ASTM D648            |
|  | @Thickness 6.40 mm                       | @Thickness 0.252 in                       |                                  |
| Vicat Softening Point                          | 238 °C                                   | 460 °F                                    | Rate B/120; ISO 306              |
|  | 242 °C                                   | 468 °F                                    | Rate B/50; ASTM D1525            |
|  | 242 °C                                   | 468 °F                                    | Rate B/50; ISO 306               |
| Glass Transition Temp, Tg                      | 247 °C                                   | 477 °F                                    |                                  |
| Oxygen Index                                   | 45 %                                     | 45 %                                      | ISO 4589                         |
| Glow Wire Test                                 | 850 °C                                   | 1560 °F                                   | IEC 60695-2-13                   |
|  | 960 °C                                   | 1760 °F                                   | IEC 60695-2-12                   |
|  | @Thickness 3.20 mm                       | @Thickness 0.126 in                       |                                  |
| Optical Properties                             | Metric                                   | English                                   | Comments                         |
| Haze   | 2.0 %                                    | 2.0 %                                     | ASTM D1003                       |
|  | @Thickness 2.54 mm                       | @Thickness 0.100 in                       |                                  |
| Transmission, Visible                          | 58 %                                     | 58 %                                      | 2.54 mm; ASTM D1003              |

| Electrical Properties      | Metric                    | English                   | Comments          |
|----------------------------|---------------------------|---------------------------|-------------------|
| Dielectric Constant        | 3.41                      | 3.41                      | ASTM D150         |
|                            | @Frequency 100 Hz         | @Frequency 100 Hz         |                   |
|                            | 3.41                      | 3.41                      | ASTM D150         |
|                            | @Frequency 1000 Hz        | @Frequency 1000 Hz        |                   |
| Dielectric Strength        | 17.0 kV/mm                | 432 kV/in                 | in oil; ASTM D149 |
|                            | @Thickness 3.20 mm        | @Thickness 0.126 in       |                   |
| Dissipation Factor         | 0.0010                    | 0.0010                    | IEC 60250         |
|                            | @Frequency 1000 Hz        | @Frequency 1000 Hz        |                   |
|                            | 0.0070                    | 0.0070                    | IEC 60250         |
|                            | @Frequency 1.00e+6 Hz     | @Frequency 1.00e+6 Hz     |                   |
|                            | 0.0080                    | 0.0080                    | IEC 60250         |
|                            | @Frequency 100 Hz         | @Frequency 100 Hz         |                   |
|                            | 0.025                     | 0.025                     | IEC 60250         |
|                            | @Frequency 50.0 - 60.0 Hz | @Frequency 50.0 - 60.0 Hz |                   |
| Comparative Tracking Index | 175 V                     | 175 V                     | IEC 60112         |

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

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