

# ULTEM™ HU2110 resin

Polyether Imide

SABIC Innovative Plastics

## Message:

10% Glass fiber filled, enhanced flow Polyetherimide (Tg 217C). ECO Conforming. For medical devices and pharmaceutical applications. Healthcare management of change, biocompatible (ISO 10993 or USP Class VI), food contact compliant.

| General Information                      |                                  |                   |                 |
|------------------------------------------|----------------------------------|-------------------|-----------------|
| UL YellowCard                            | E121562-101082080                |                   |                 |
| Filler / Reinforcement                   | Glass Fiber,10% Filler by Weight |                   |                 |
| Features                                 | Biocompatible                    |                   |                 |
|                                          | ECO Compliant                    |                   |                 |
|                                          | Food Contact Acceptable          |                   |                 |
|                                          | Good Flow                        |                   |                 |
| Uses                                     | Medical/Healthcare Applications  |                   |                 |
|                                          | Pharmaceuticals                  |                   |                 |
| Agency Ratings                           | EU Eco                           |                   |                 |
|                                          | ISO 10993                        |                   |                 |
|                                          | USP Class VI                     |                   |                 |
| Processing Method                        | Injection Molding                |                   |                 |
| Physical                                 | Nominal Value                    | Unit              | Test Method     |
| Specific Gravity                         |                                  |                   |                 |
| --                                       | 1.34                             | g/cm <sup>3</sup> | ASTM D792       |
| --                                       | 1.42                             | g/cm <sup>3</sup> | ISO 1183        |
| Melt Mass-Flow Rate (MFR) (337°C/6.6 kg) | 11                               | g/10 min          | ASTM D1238      |
| Molding Shrinkage - Flow (3.20 mm)       | 0.20 to 0.40                     | %                 | Internal Method |
| Water Absorption                         |                                  |                   | ISO 62          |
| Saturation, 23°C                         | 0.90                             | %                 |                 |
| Equilibrium, 23°C, 50% RH                | 0.50                             | %                 |                 |
| Mechanical                               | Nominal Value                    | Unit              | Test Method     |
| Tensile Modulus                          |                                  |                   |                 |
| -- <sup>1</sup>                          | 4620                             | MPa               | ASTM D638       |
| --                                       | 9500                             | MPa               | ISO 527-2/1     |
| Tensile Strength                         |                                  |                   |                 |
| Yield <sup>2</sup>                       | 114                              | MPa               | ASTM D638       |
| Yield                                    | 165                              | MPa               | ISO 527-2/5     |
| Break <sup>3</sup>                       | 116                              | MPa               | ASTM D638       |

|                                                    |               |                   |                                                     |
|----------------------------------------------------|---------------|-------------------|-----------------------------------------------------|
| Break                                              | 165           | MPa               | ISO 527-2/5                                         |
| Tensile Elongation                                 |               |                   |                                                     |
| Yield <sup>4</sup>                                 | 3.0           | %                 | ASTM D638                                           |
| Yield                                              | 2.0           | %                 | ISO 527-2/5                                         |
| Break <sup>5</sup>                                 | 3.0           | %                 | ASTM D638                                           |
| Break                                              | 2.0           | %                 | ISO 527-2/5                                         |
| Flexural Modulus                                   |               |                   |                                                     |
| 50.0 mm Span <sup>6</sup>                          | 6850          | MPa               | ASTM D790                                           |
| -- <sup>7</sup>                                    | 6890          | MPa               | ISO 178                                             |
| Flexural Stress                                    |               |                   |                                                     |
| --                                                 | 228           | MPa               | ISO 178                                             |
| Yield, 50.0 mm Span <sup>8</sup>                   | 225           | MPa               | ASTM D790                                           |
| Impact                                             | Nominal Value | Unit              | Test Method                                         |
| Charpy Notched Impact Strength <sup>9</sup> (23°C) | 65            | kJ/m <sup>2</sup> | ISO 179/1eA                                         |
| Notched Izod Impact                                |               |                   |                                                     |
| -30°C                                              | 64            | J/m               | ASTM D256                                           |
| 23°C                                               | 48            | J/m               | ASTM D256                                           |
| -30°C <sup>10</sup>                                | 70            | kJ/m <sup>2</sup> | ISO 180/1A                                          |
| 23°C <sup>11</sup>                                 | 64            | kJ/m <sup>2</sup> | ISO 180/1A                                          |
| Instrumented Dart Impact (23°C, Total Energy)      | 8.00          | J                 | ASTM D3763                                          |
| Thermal                                            | Nominal Value | Unit              | Test Method                                         |
| Deflection Temperature Under Load                  |               |                   |                                                     |
| 1.8 MPa, Unannealed, 6.40 mm                       | 208           | °C                | ASTM D648                                           |
| 1.8 MPa, Unannealed, 64.0 mm Span <sup>12</sup>    | 205           | °C                | ISO 75-2/Af                                         |
| Vicat Softening Temperature                        |               |                   |                                                     |
| --                                                 | 220           | °C                | ASTM D1525, ISO 306/B50 <sup>11</sup> <sup>13</sup> |
| --                                                 | 213           | °C                | ISO 306/B120                                        |
| CLTE                                               |               |                   |                                                     |
| Flow : -40 to 40°C                                 | 2.5E-5        | cm/cm/°C          |                                                     |
| Transverse : -40 to 40°C                           | 5.0E-5        | cm/cm/°C          |                                                     |
| Injection                                          | Nominal Value | Unit              |                                                     |
| Drying Temperature                                 | 149           | °C                |                                                     |
| Drying Time                                        | 4.0 to 6.0    | hr                |                                                     |
| Drying Time, Maximum                               | 24            | hr                |                                                     |
| Suggested Max Moisture                             | 0.020         | %                 |                                                     |
| Suggested Shot Size                                | 40 to 60      | %                 |                                                     |
| Rear Temperature                                   | 332 to 399    | °C                |                                                     |
| Middle Temperature                                 | 338 to 399    | °C                |                                                     |
| Front Temperature                                  | 343 to 399    | °C                |                                                     |
| Nozzle Temperature                                 | 343 to 399    | °C                |                                                     |
| Processing (Melt) Temp                             | 349 to 399    | °C                |                                                     |

|                  |                |     |
|------------------|----------------|-----|
| Mold Temperature | 135 to 163     | °C  |
| Back Pressure    | 0.345 to 0.689 | MPa |
| Screw Speed      | 40 to 70       | rpm |
| Vent Depth       | 0.025 to 0.076 | mm  |

| NOTE |                                    |  |
|------|------------------------------------|--|
| 1.   | 5.0 mm/min                         |  |
| 2.   | Type I, 5.0 mm/min                 |  |
| 3.   | Type I, 5.0 mm/min                 |  |
| 4.   | Type I, 5.0 mm/min                 |  |
| 5.   | Type I, 5.0 mm/min                 |  |
| 6.   | 1.3 mm/min                         |  |
| 7.   | 2.0 mm/min                         |  |
| 8.   | 1.3 mm/min                         |  |
| 9.   | 80*10*4 sp=62mm                    |  |
| 10.  | 80*10*4                            |  |
| 11.  | 80*10*4                            |  |
| 12.  | 80*10*4 mm                         |  |
| 13.  | Rate B (120°C/h), Loading 2 (50 N) |  |

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