

# ULTEM™ 9085 resin

Polyether Imide

SABIC Innovative Plastics

## Message:

High flow Polyetherimide blend. Meets FAR 25.853 and OSU 55/55 with low toxicity, smoke and flame evolution.

| General Information |                           |
|---------------------|---------------------------|
| Features            | Low smoke                 |
|                     | Low toxicity              |
|                     | High liquidity            |
| Agency Ratings      | FAR 25.853                |
|                     | OSU 55/55                 |
| RoHS Compliance     | RoHS compliance           |
| Processing Method   | Profile extrusion molding |
|                     | Injection molding         |

| Physical                                   | Nominal Value | Unit                   | Test Method         |
|--------------------------------------------|---------------|------------------------|---------------------|
| Specific Gravity                           | 1.34          | g/cm <sup>3</sup>      | ASTM D792, ISO 1183 |
| Melt Mass-Flow Rate (MFR) (295°C/6.6 kg)   | 8.9           | g/10 min               | ASTM D1238          |
| Melt Volume-Flow Rate (MVR) (360°C/5.0 kg) | 65.5          | cm <sup>3</sup> /10min | ISO 1133            |
| Molding Shrinkage - Flow (3.20 mm)         | 0.50 - 0.70   | %                      | Internal method     |
| Water Absorption                           |               |                        | ISO 62              |
| Saturated, 23°C                            | 0.39          | %                      | ISO 62              |
| Equilibrium, 23°C, 50% RH                  | 0.17          | %                      | ISO 62              |
| Mechanical                                 | Nominal Value | Unit                   | Test Method         |
| Tensile Modulus                            |               |                        |                     |
| -- <sup>1</sup>                            | 3440          | MPa                    | ASTM D638           |
| --                                         | 3050          | MPa                    | ISO 527-2/1         |
| Tensile Strength                           |               |                        |                     |
| Yield <sup>2</sup>                         | 84.0          | MPa                    | ASTM D638           |
| Yield                                      | 88.0          | MPa                    | ISO 527-2/5         |
| Fracture <sup>3</sup>                      | 74.0          | MPa                    | ASTM D638           |
| Fracture                                   | 71.0          | MPa                    | ISO 527-2/5         |
| Tensile Elongation                         |               |                        |                     |
| Yield <sup>4</sup>                         | 7.0           | %                      | ASTM D638           |
| Yield                                      | 6.7           | %                      | ISO 527-2/5         |
| Fracture <sup>5</sup>                      | 72            | %                      | ASTM D638           |

|                                                |               |                         |              |
|------------------------------------------------|---------------|-------------------------|--------------|
| Fracture                                       | 50            | %                       | ISO 527-2/5  |
| Flexural Modulus                               |               |                         |              |
| 50.0mm span <sup>6</sup>                       | 2920          | MPa                     | ASTM D790    |
| -- <sup>7</sup>                                | 2750          | MPa                     | ISO 178      |
| Flexural Stress                                |               |                         |              |
| --                                             | 90.0          | MPa                     | ISO 178      |
| Yield, 50.0mm span <sup>8</sup>                | 138           | MPa                     | ASTM D790    |
| Impact                                         | Nominal Value | Unit                    | Test Method  |
| Charpy Notched Impact Strength (23°C)          | 11            | kJ/m <sup>2</sup>       | ISO 179/2C   |
| Notched Izod Impact                            |               |                         |              |
| 23°C                                           | 120           | J/m                     | ASTM D256    |
| 23°C <sup>9</sup>                              | 13            | kJ/m <sup>2</sup>       | ISO 180/1A   |
| Thermal                                        | Nominal Value | Unit                    | Test Method  |
| Deflection Temperature Under Load              |               |                         |              |
| 1.8 MPa, unannealed, 3.20mm                    | 153           | °C                      | ASTM D648    |
| 1.8 MPa, unannealed, 64.0mm span <sup>10</sup> | 152           | °C                      | ISO 75-2/Af  |
| Vicat Softening Temperature                    | 173           | °C                      | ISO 306/B120 |
| Linear thermal expansion coefficient           |               |                         | ASTM E831    |
| Flow: -30 to 80°C                              | 6.0E-5        | cm/cm/°C                | ASTM E831    |
| Horizontal: -30 to 80°C                        | 6.0E-5        | cm/cm/°C                | ASTM E831    |
| Flammability                                   | Nominal Value | Unit                    | Test Method  |
| Oxygen Index                                   | 49            | %                       | ASTM D2863   |
| FAA Flammability <sup>11</sup>                 |               |                         | FAR 25.853   |
| OSU peak heat release rate <sup>12</sup>       | 36.0          | kW/m <sup>2</sup>       | FAR 25.853   |
| OSU total heat release <sup>13</sup>           | 16.0          | kW · min/m <sup>2</sup> | FAR 25.853   |
| Vertical Burn Test - Test a (60 s), passes at  | 2.0           | sec                     | FAR 25.853   |
| Injection                                      | Nominal Value | Unit                    |              |
| Drying Temperature                             | 120 - 130     | °C                      |              |
| Drying Time                                    | 4.0 - 6.0     | hr                      |              |
| Suggested Max Moisture                         | 0.020         | %                       |              |
| Suggested Shot Size                            | 40 - 60       | %                       |              |
| Rear Temperature                               | 315 - 340     | °C                      |              |
| Middle Temperature                             | 325 - 345     | °C                      |              |
| Front Temperature                              | 330 - 350     | °C                      |              |
| Nozzle Temperature                             | 330 - 350     | °C                      |              |
| Processing (Melt) Temp                         | 330 - 350     | °C                      |              |
| Mold Temperature                               | 120 - 150     | °C                      |              |
| Back Pressure                                  | 0.300 - 0.700 | MPa                     |              |
| Screw Speed                                    | 40 - 70       | rpm                     |              |
| Vent Depth                                     | 0.025 - 0.076 | mm                      |              |
| Extrusion                                      | Nominal Value | Unit                    |              |
| Drying Temperature                             | 120 - 130     | °C                      |              |

|                          |            |    |
|--------------------------|------------|----|
| Drying Time              | 4.0 - 6.0  | hr |
| Suggested Max Moisture   | 0.020      | %  |
| Hopper Temperature       | 80.0 - 100 | °C |
| Cylinder Zone 1 Temp.    | 265 - 275  | °C |
| Cylinder Zone 2 Temp.    | 280 - 295  | °C |
| Cylinder Zone 3 Temp.    | 290 - 305  | °C |
| Cylinder Zone 4 Temp.    | 295 - 310  | °C |
| Adapter Temperature      | 270 - 310  | °C |
| Melt Temperature         | 280 - 310  | °C |
| Die Temperature          | 260 - 310  | °C |
| Calibration Temp, First  | 130 - 160  | °C |
| Calibration Temp, Second | 80.0 - 120 | °C |

#### NOTE

|     |                    |
|-----|--------------------|
| 1.  | 5.0 mm/min         |
| 2.  | Type 1, 5.0 mm/min |
| 3.  | Type 1, 5.0 mm/min |
| 4.  | Type 1, 5.0 mm/min |
| 5.  | Type 1, 5.0 mm/min |
| 6.  | 1.3 mm/min         |
| 7.  | 2.0 mm/min         |
| 8.  | 1.3 mm/min         |
| 9.  | 80*10*4            |
| 10. | 80*10*4 mm         |
| 11. | Method A/B         |
| 12. | 5 minute test      |
| 13. | 2 minute test      |

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