# ULTEM™ RESIN 1010

REGION ASIA

## DESCRIPTION

ULTEM 1010 resin is an amorphous, transparent polyetherimide (PEI) plastic offering enhanced flow and a glass transition temperature (Tg) of 217°C. This inherently flame retardant resin has UL94 V0 and 5VA ratings. ULTEM 1010 resin is an unreinforced general purpose grade offering high heat resistance, high strength and modulus and broad chemical resistance up to high temperatures.

| INDUSTRY | SUB INDUSTRY |
|---|---|
| Automotive | Heavy Truck, Automotive Interiors, Bus, Automotive Under the Hood |
| Building and Construction | Outdoor, Lawn and Landscape |
| Consumer | Ophthalmics, Sport/Leisure, Personal Accessory, Home Appliances, Personal Recreation, Commercial Appliance, Recreational Vehicle |
| Electrical and Electronics | Electrical Devices and Displays, Lighting, Electrical Components and Infrastructure |
| Hydrocarbon and Energy | Fossil, Electric Vehicle, Wind Energy, Energy Storage |
| Industrial | Defense, Semiconductors, Textile, Servomotor, Electronic Material Handling, Industrial Material Handling, Composite |
| Mass Transportation | Aircraft Interiors, Specialty Vehicles, Rail |
| Packaging | Rigid Packaging, Consumer Packaging |

## TYPICAL PROPERTY VALUES

Revision 20191031

| PROPERTIES | TYPICAL VALUES | UNITS | TEST METHODS |
|---|---|---|---|
| **MECHANICAL** | | | |
| **Tensile Stress, yld, Type I, 5 mm/min** | 110 | MPa | ASTM D 638 |
| **Tensile Strain, yld, Type I, 5 mm/min** | 7 | % | ASTM D 638 |
| **Tensile Strain, brk, Type I, 5 mm/min** | 60 | % | ASTM D 638 |
| **Tensile Modulus, 5 mm/min** | 3580 | MPa | ASTM D 638 |
| **Flexural Stress, yld, 2.6 mm/min, 100 mm span** | 165 | MPa | ASTM D 790 |
| **Flexural Modulus, 2.6 mm/min, 100 mm span** | 3510 | MPa | ASTM D 790 |
| **Hardness, Rockwell M** | 109 | - | ASTM D 785 |
| **Taber Abrasion, CS-17, 1 kg** | 10 | mg/1000cy | ASTM D 1044 |
| **IMPACT** | | | |
| **Izod Impact, unnotched, 23°C** | 1335 | J/m | ASTM D 4812 |
| **Izod Impact, notched, 23°C** | 32 | J/m | ASTM D 256 |
| **Izod Impact, Reverse Notched, 3.2 mm** | 1174 | J/m | ASTM D 256 |
| **Gardner, 23°C** | 33 | J | ASTM D 3029 |
| **THERMAL** | | | |
| **Vicat Softening Temp, Rate B/50** | 218 | °C | ASTM D 1525 |
| **HDT, 0.45 MPa, 6.4 mm, unannealed** | 207 | °C | ASTM D 648 |
| **HDT, 1.82 MPa, 6.4 mm, unannealed** | 198 | °C | ASTM D 648 |
| **CTE, -20°C to 150°C, flow** | 5.58E-05 | 1/°C | ASTM E 831 |
| **Thermal Conductivity** | 0.22 | W/m·°C | ASTM C177 |
| **Relative Temp Index, Elec** (1) | 170 | °C | UL 746B |
| **Relative Temp Index, Mech w/impact** (1) | 170 | °C | UL 746B |

© 2019 Copyright by SABIC. All rights reserved

| PROPERTIES | TYPICAL VALUES | UNITS | TEST METHODS |
|---|---|---|---|
| Relative Temp Index, Mech w/o impact [1] | 170 | °C | UL 746B |
| PHYSICAL | | | |
| Specific Gravity | 1.27 | - | ASTM D 792 |
| Water Absorption, 24 hours | 0.25 | % | ASTM D 570 |
| Water Absorption, equilibrium, 23C | 1.25 | % | ASTM D 570 |
| Mold Shrinkage, flow, 3.2 mm | 0.5 – 0.7 | % | SABIC method |
| Melt Flow Rate, 337°C/6.6 kgf | 17.8 | g/10 min | ASTM D 1238 |
| ELECTRICAL | | | |
| Volume Resistivity | 1.E+17 | Ohm-cm | ASTM D 257 |
| Dielectric Strength, in air, 1.6 mm | 32.7 | kV/mm | ASTM D 149 |
| Dielectric Strength, in oil, 1.6 mm | 28.0 | kV/mm | ASTM D 149 |
| Relative Permittivity, 1 kHz | 3.15 | - | ASTM D 150 |
| Dissipation Factor, 1 kHz | 0.0013 | - | ASTM D 150 |
| Dissipation Factor, 2450 MHz | 0.0025 | - | ASTM D 150 |
| Arc Resistance, Tungsten {PLC} | 5 | PLC Code | ASTM D 495 |
| High Voltage Arc Track Rate {PLC} | 2 | PLC Code | UL 746A |
| Comparative Tracking Index (UL) {PLC} | 4 | PLC Code | UL 746A |
| Hot-Wire Ignition (HWI), PLC 1 | ≥3 | mm | UL 746A |
| Hot-Wire Ignition (HWI), PLC 2 | ≥0.75 | mm | UL 746A |
| High Amp Arc Ignition (HAI), PLC 3 | ≥3 | mm | UL 746A |
| High Amp Arc Ignition (HAI), PLC 4 | ≥0.75 | mm | UL 746A |
| FLAME CHARACTERISTICS [1] | | | |
| UL Yellow Card Link | E121562-101048269 | - | - |
| UL Recognized, 94V-2 Flame Class Rating | ≥0.4 | mm | UL 94 |
| Oxygen Index (LOI) | 44 | % | ASTM D 2863 |
| NBS Smoke Density, Flaming, Ds 4 min | 2 | - | ASTM E 662 |
| INJECTION MOLDING | | | |
| Drying Temperature | 150 | °C | |
| Drying Time | 4 – 6 | hrs | |
| Drying Time (Cumulative) | 24 | hrs | |
| Maximum Moisture Content | 0.02 | % | |
| Melt Temperature | 350 – 400 | °C | |
| Nozzle Temperature | 345 – 400 | °C | |
| Front - Zone 3 Temperature | 345 – 400 | °C | |
| Middle - Zone 2 Temperature | 340 – 400 | °C | |
| Rear - Zone 1 Temperature | 330 – 400 | °C | |
| Mold Temperature | 135 – 165 | °C | |
| Back Pressure | 0.3 – 0.7 | MPa | |
| Screw Speed | 40 – 70 | rpm | |
| Shot to Cylinder Size | 40 – 60 | % | |
| Vent Depth | 0.025 – 0.076 | mm | |

(1) UL Ratings shown on the technical datasheet might not cover the full range of thicknesses and colors. For details, please see the UL Yellow Card.

© 2019 Copyright by SABIC. All rights reserved

## DISCLAIMER

Any sale by SABIC, its subsidiaries and affiliates (each a "seller"), is made exclusively under seller's standard conditions of sale (available upon request) unless agreed otherwise in writing and signed on behalf of the seller. While the information contained herein is given in good faith, SELLER MAKES NO WARRANTY, EXPRESS OR IMPLIED, INCLUDING MERCHANTABILITY AND NONINFRINGEMENT OF INTELLECTUAL PROPERTY, NOR ASSUMES ANY LIABILITY, DIRECT OR INDIRECT, WITH RESPECT TO THE PERFORMANCE, SUITABILITY OR FITNESS FOR INTENDED USE OR PURPOSE OF THESE PRODUCTS IN ANY APPLICATION. Each customer must determine the suitability of seller materials for the customer's particular use through appropriate testing and analysis. No statement by seller concerning a possible use of any product, service or design is intended, or should be construed, to grant any license under any patent or other intellectual property right.

© 2019 Copyright by SABIC. All rights reserved