

# ULTEM™ RESIN 2200R

REGION ASIA

## DESCRIPTION

20% Glass fiber filled, standard flow Polyetherimide (Tg 217C) with internal mold release. ECO Conforming, UL94 V0 and 5VA listing.

| INDUSTRY                   | SUB INDUSTRY  |
|----------------------------|---|
| Automotive                 | Heavy Truck, Automotive Under the Hood, Aerospace, Motorcycle, Recreational/Specialty Vehicles  |
| Building and Construction  | Building Component, Water Management  |
| Consumer                   | Consumer Goods, Sport/Leisure, Personal Accessory, Home Appliances, Commercial Appliance, Furniture   |
| Electrical and Electronics | Energy Management, Drone Solutions, Mobile Phone - Computer - Tablets, Circuit Boards/Additives, Lighting, Printer Copier, Speaker - Earphone, Wireless Communication |
| Hygiene and Healthcare     | Personal and Professional Hygiene, Pharmaceutical Packaging and Drug Delivery, Surgical devices, General Healthcare, Patient Testing                                  |
| Industrial                 | Electrical, Material Handling, Textile, Eyewear   |
| Mass Transportation        | Rail  |
| Packaging                  | Industrial Packaging  |

## TYPICAL PROPERTY VALUES

Revision 20231109

| PROPERTIES  | TYPICAL VALUES | UNITS | TEST METHODS |
|---|----------------|-------|--------------|
| <b>MECHANICAL</b>                                   |                |       |              |
| Tensile Stress, brk, Type I, 5 mm/min               | 131            | MPa   | ASTM D638    |
| Tensile Strain, brk, Type I, 5 mm/min               | 4              | %     | ASTM D638    |
| Tensile Modulus, 5 mm/min                           | 6890           | MPa   | ASTM D638    |
| Flexural Stress, brk, 2.6 mm/min, 100 mm span       | 227            | MPa   | ASTM D790    |
| Flexural Modulus, 2.6 mm/min, 100 mm span           | 6890           | MPa   | ASTM D790    |
| Hardness, Rockwell M                                | 114            | -     | ASTM D785    |
| <b>IMPACT</b>                                       |                |       |              |
| Izod Impact, unnotched, 23°C                        | 480            | J/m   | ASTM D4812   |
| Izod Impact, notched, 23°C                          | 90             | J/m   | ASTM D256    |
| Izod Impact, Reverse Notched, 3.2 mm                | 512            | J/m   | ASTM D256    |
| <b>THERMAL</b>                                      |                |       |              |
| Vicat Softening Temp, Rate B/50                     | 220            | °C    | ASTM D1525   |
| HDT, 0.45 MPa, 6.4 mm, unannealed                   | 210            | °C    | ASTM D648    |
| HDT, 1.82 MPa, 6.4 mm, unannealed                   | 210            | °C    | ASTM D648    |
| CTE, -20°C to 150°C, flow                           | 2.1E-05        | 1/°C  | ASTM E831    |
| Relative Temp Index, Elec <sup>(1)</sup>            | 170            | °C    | UL 746B      |
| Relative Temp Index, Mech w/impact <sup>(1)</sup>   | 170            | °C    | UL 746B      |
| Relative Temp Index, Mech w/o impact <sup>(1)</sup> | 170            | °C    | UL 746B      |
| <b>PHYSICAL</b>                                     |                |       |              |
| Specific Gravity                                    | 1.42           | -     | ASTM D792    |
| Water Absorption, (23°C/24hrs)                      | 0.19           | %     | ASTM D570    |
| Water Absorption, (23°C/Saturated)                  | 1.1            | %     | ASTM D570    |
| Mold Shrinkage, flow, 3.2 mm                        | 0.3 – 0.5      | %     | SABIC method |

| PROPERTIES                                  | TYPICAL VALUES                | UNITS    | TEST METHODS |
|---|-------------------------------|----------|--------------|
| Melt Flow Rate, 337°C/6.6 kgf               | 6.5                           | g/10 min | ASTM D1238   |
| <b>ELECTRICAL</b>                           |                               |          |              |
| Volume Resistivity                          | 7.E+16                        | Ω.cm     | ASTM D257    |
| Dielectric Strength, in oil, 1.6 mm         | 26.3                          | kV/mm    | ASTM D149    |
| Relative Permittivity, 1 kHz                | 3.5                           | -        | ASTM D150    |
| Dissipation Factor, 1 kHz                   | 0.0015                        | -        | ASTM D150    |
| Dissipation Factor, 2450 MHz                | 0.0049                        | -        | ASTM D150    |
| 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              | ≥1.5                          | mm       | UL 746A      |
| High Amp Arc Ignition (HAI), PLC 3          | ≥1.5                          | mm       | UL 746A      |
| High Amp Arc Ignition (HAI), PLC 4          | ≥3                            | mm       | UL 746A      |
| High Voltage Arc Track Rate {PLC}           | 2                             | PLC Code | UL 746A      |
| Arc Resistance, Tungsten {PLC}              | 6                             | PLC Code | ASTM D495    |
| <b>FLAME CHARACTERISTICS <sup>(1)</sup></b> |                               |          |              |
| UL Yellow Card Link                         | <a href="#">E45587-236983</a> | -        | -            |
| UL Recognized, 94V-0 Flame Class Rating     | ≥0.38                         | mm       | UL 94        |
| UV-light, water exposure/immersion          | F1                            | -        | UL 746C      |
| Oxygen Index (LOI)                          | 50                            | %        | ASTM D2863   |
| NBS Smoke Density, Flaming, Ds 4 min        | 1.3                           | -        | ASTM E662    |
| <b>INJECTION MOLDING</b>                    |                               |          |              |
| 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.

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