

# ULTEM™ RESIN 2410EPR

REGION ASIA

## DESCRIPTION

40% Glass fiber filled, high flow Polyetherimide (Tg 217C) with internal mold release for enhanced electroplatability. ECO Conforming, UL94 V0 listing.

## TYPICAL PROPERTY VALUES

Revision 20180905

| PROPERTIES                                   | TYPICAL VALUES | UNITS             | TEST METHODS |
|--|----------------|-------------------|--------------|
| <b>MECHANICAL</b>                            |                |                   |              |
| Tensile Stress, yld, Type I, 5 mm/min        | 165            | MPa               | ASTM D 638   |
| Tensile Stress, brk, Type I, 5 mm/min        | 165            | MPa               | ASTM D 638   |
| Tensile Strain, yld, Type I, 5 mm/min        | 1.8            | %                 | ASTM D 638   |
| Tensile Strain, brk, Type I, 5 mm/min        | 1.8            | %                 | ASTM D 638   |
| Tensile Modulus, 5 mm/min                    | 11100          | MPa               | ASTM D 638   |
| Flexural Stress, yld, 1.3 mm/min, 50 mm span | 240            | MPa               | ASTM D 790   |
| Flexural Modulus, 1.3 mm/min, 50 mm span     | 10650          | MPa               | ASTM D 790   |
| Tensile Stress, yield, 5 mm/min              | 170            | MPa               | ISO 527      |
| Tensile Stress, break, 5 mm/min              | 170            | MPa               | ISO 527      |
| Tensile Strain, yield, 5 mm/min              | 2              | %                 | ISO 527      |
| Tensile Strain, break, 5 mm/min              | 2              | %                 | ISO 527      |
| Tensile Modulus, 1 mm/min                    | 11000          | MPa               | ISO 527      |
| Flexural Stress, yield, 2 mm/min             | 220            | MPa               | ISO 178      |
| Flexural Modulus, 2 mm/min                   | 9500           | MPa               | ISO 178      |
| Hardness, H358/30                            | 165            | MPa               | ISO 2039-1   |
| <b>IMPACT</b>                                |                |                   |              |
| Izod Impact, unnotched, 23°C                 | 410            | J/m               | ASTM D 4812  |
| Izod Impact, notched, 23°C                   | 82             | J/m               | ASTM D 256   |
| Instrumented Impact Total Energy, 23°C       | 18             | J                 | ASTM D 3763  |
| Izod Impact, unnotched 80°10°4 +23°C         | 30             | kJ/m <sup>2</sup> | ISO 180/1U   |
| Izod Impact, unnotched 80°10°4 -30°C         | 30             | kJ/m <sup>2</sup> | ISO 180/1U   |
| Izod Impact, notched 80°10°4 +23°C           | 10             | kJ/m <sup>2</sup> | ISO 180/1A   |
| Izod Impact, notched 80°10°4 -30°C           | 10             | kJ/m <sup>2</sup> | ISO 180/1A   |
| Charpy 23°C, V-notch Edgew 80°10°4 sp=62mm   | 10             | kJ/m <sup>2</sup> | ISO 179/1eA  |
| Charpy -30°C, V-notch Edgew 80°10°4 sp=62mm  | 10             | kJ/m <sup>2</sup> | ISO 179/1eA  |
| Charpy 23°C, Unnotch Edgew 80°10°4 sp=62mm   | 30             | kJ/m <sup>2</sup> | ISO 179/1eU  |
| Charpy -30°C, Unnotch Edgew 80°10°4 sp=62mm  | 35             | kJ/m <sup>2</sup> | ISO 179/1eU  |
| <b>THERMAL</b>                               |                |                   |              |
| Vicat Softening Temp, Rate B/50              | 223            | °C                | ASTM D 1525  |
| HDT, 0.45 MPa, 3.2 mm, unannealed            | 212            | °C                | ASTM D 648   |
| HDT, 1.82 MPa, 3.2mm, unannealed             | 204            | °C                | ASTM D 648   |
| HDT, 0.45 MPa, 6.4 mm, unannealed            | 215            | °C                | ASTM D 648   |
| HDT, 1.82 MPa, 6.4 mm, unannealed            | 208            | °C                | ASTM D 648   |
| CTE, -40°C to 150°C, flow                    | 1.5E-05        | 1/°C              | ASTM E 831   |
| CTE, -40°C to 150°C, xflow                   | 4.5E-05        | 1/°C              | ASTM E 831   |

| PROPERTIES                              | TYPICAL VALUES | UNITS                   | TEST METHODS   |
|---|----------------|-------------------------|----------------|
| Thermal Conductivity                    | 0.3            | W/m·°C                  | ISO 8302       |
| CTE, 23°C to 150°C, flow                | 1.5E-05        | 1/°C                    | ISO 11359-2    |
| CTE, 23°C to 150°C, xflow               | 4.5E-05        | 1/°C                    | ISO 11359-2    |
| Ball Pressure Test, 125°C +/- 2°C       | Passes         | -                       | IEC 60695-10-2 |
| Vicat Softening Temp, Rate B/50         | 214            | °C                      | ISO 306        |
| Vicat Softening Temp, Rate B/120        | 215            | °C                      | ISO 306        |
| HDT/Be, 0.45MPa Edgew 120*10*4 sp=100mm | 208            | °C                      | ISO 75/Be      |
| HDT/Ae, 1.8 MPa Edgew 120*10*4 sp=100mm | 205            | °C                      | ISO 75/Ae      |
| HDT/Bf, 0.45 MPa Flatw 80*10*4 sp=64mm  | 206            | °C                      | ISO 75/Bf      |
| HDT/Af, 1.8 MPa Flatw 80*10*4 sp=64mm   | 197            | °C                      | ISO 75/Af      |
| <b>PHYSICAL</b>                         |                |                         |                |
| Specific Gravity                        | 1.56           | -                       | ASTM D 792     |
| Mold Shrinkage on Tensile Bar, flow     | 0.2 – 0.4      | %                       | SABIC method   |
| Mold Shrinkage, flow, 3.2 mm            | 0.2 – 0.4      | %                       | SABIC method   |
| Mold Shrinkage, xflow, 3.2 mm           | 0.3 – 0.5      | %                       | SABIC method   |
| Melt Flow Rate, 337°C/6.6 kgf           | 8.9            | g/10 min                | ASTM D 1238    |
| Density                                 | 1.56           | g/cm <sup>3</sup>       | ISO 1183       |
| Water Absorption, (23°C/sat)            | 0.8            | %                       | ISO 62         |
| Moisture Absorption (23°C / 50% RH)     | 0.4            | %                       | ISO 62         |
| Melt Volume Rate, MVR at 360°C/5.0 kg   | 11             | cm <sup>3</sup> /10 min | ISO 1133       |
| <b>ELECTRICAL</b>                       |                |                         |                |
| Arc Resistance, Tungsten {PLC}          | 5              | PLC Code                | ASTM D 495     |
| Hot Wire Ignition {PLC}                 | 4              | PLC Code                | UL 746A        |
| High Voltage Arc Track Rate {PLC}       | 4              | PLC Code                | UL 746A        |
| High Ampere Arc Ign, surface {PLC}      | 4              | PLC Code                | UL 746A        |
| Comparative Tracking Index (UL) {PLC}   | 4              | PLC Code                | UL 746A        |
| <b>FLAME CHARACTERISTICS</b>            |                |                         |                |
| UL Recognized, 94V-0 Flame Class Rating | 0.4            | mm                      | UL 94          |
| <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                      |                |



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