

# VALOX™ FR RESINS SHF3800UX

REGION EUROPE

## DESCRIPTION

VALOX™ SHF3800UX is an unreinforced, UV stabilized, impact modified flame retardant Polybutylene Terephthalate/Polycarbonate (PBT/PC) injection moldable grade with improved flow characteristics. It has excellent chemical resistance and a UL94V0@0.75mm and 5VA@2.5mm flame rating. This is a good candidate for applications in the electrical industry including bobbins, switches, and enclosures.

## TYPICAL PROPERTY VALUES

Revision 20240118

| PROPERTIES                                   | TYPICAL VALUES | UNITS             | TEST METHODS |
|----------------------------------------------|----------------|-------------------|--------------|
| <b>MECHANICAL</b>                            |                |                   |              |
| Tensile Stress, yield, 50 mm/min             | 50             | MPa               | ISO 527      |
| Tensile Stress, break, 50 mm/min             | 40             | MPa               | ISO 527      |
| Tensile Strain, yield, 50 mm/min             | 4.5            | %                 | ISO 527      |
| Tensile Strain, break, 50 mm/min             | 35             | %                 | ISO 527      |
| Tensile Modulus, 1 mm/min                    | 2100           | MPa               | ISO 527      |
| Flexural Stress, yield, 2 mm/min             | 75             | MPa               | ISO 178      |
| Flexural Stress, break, 2 mm/min             | 70             | MPa               | ISO 178      |
| Flexural Modulus, 2 mm/min                   | 2100           | MPa               | ISO 178      |
| Tensile Stress, yld, Type I, 50 mm/min       | 50             | MPa               | ASTM D638    |
| Tensile Stress, brk, Type I, 50 mm/min       | 40             | MPa               | ASTM D638    |
| Tensile Strain, yld, Type I, 50 mm/min       | 4.5            | %                 | ASTM D638    |
| Tensile Strain, brk, Type I, 50 mm/min       | 40             | %                 | ASTM D638    |
| Tensile Modulus, 50 mm/min                   | 2100           | MPa               | ASTM D638    |
| Flexural Stress, yld, 1.3 mm/min, 50 mm span | 60             | MPa               | ASTM D790    |
| Flexural Stress, brk, 1.3 mm/min, 50 mm span | 50             | MPa               | ASTM D790    |
| Flexural Modulus, 1.3 mm/min, 50 mm span     | 2150           | MPa               | ASTM D790    |
| <b>IMPACT</b>                                |                |                   |              |
| <b>Izod Impact</b>                           |                |                   |              |
| Izod Impact, notched 80*10*4 +23°C           | 40             | kJ/m <sup>2</sup> | ISO 180/1A   |
| Izod Impact, notched 80*10*4 0°C             | 15             | kJ/m <sup>2</sup> | ISO 180/1A   |
| Izod Impact, notched 80*10*4 -30°C           | 15             | kJ/m <sup>2</sup> | ISO 180/1A   |
| Izod Impact, notched 80*10*3 +23°C           | 40             | kJ/m <sup>2</sup> | ISO 180/1A   |
| Izod Impact, notched 80*10*3 0°C             | 20             | kJ/m <sup>2</sup> | ISO 180/1A   |
| Izod Impact, notched 80*10*3 -30°C           | 15             | kJ/m <sup>2</sup> | ISO 180/1A   |
| Izod Impact, unnotched 80*10*4 +23°C         | NB             | kJ/m <sup>2</sup> | ISO 180/1U   |
| Izod Impact, unnotched 80*10*4 0°C           | NB             | kJ/m <sup>2</sup> | ISO 180/1U   |
| Izod Impact, unnotched 80*10*4 -30°C         | NB             | kJ/m <sup>2</sup> | ISO 180/1U   |
| Izod Impact, unnotched 80*10*3 +23°C         | NB             | kJ/m <sup>2</sup> | ISO 180/1U   |
| Izod Impact, unnotched 80*10*3 0°C           | NB             | kJ/m <sup>2</sup> | ISO 180/1U   |
| Izod Impact, unnotched 80*10*3 -30°C         | NB             | kJ/m <sup>2</sup> | ISO 180/1U   |
| Izod Impact, notched, 23°C                   | 500            | J/m               | ASTM D256    |
| Izod Impact, notched, 0°C                    | 160            | J/m               | ASTM D256    |
| Izod Impact, notched, -30°C                  | 140            | J/m               | ASTM D256    |
| Izod Impact, unnotched, 23°C                 | NB             | J/m               | ASTM D4812   |

| PROPERTIES                                    | TYPICAL VALUES | UNITS                   | TEST METHODS   |
|-----------------------------------------------|----------------|-------------------------|----------------|
| Izod Impact, unnotched, 0°C                   | NB             | J/m                     | ASTM D4812     |
| Izod Impact, unnotched, -30°C                 | NB             | J/m                     | ASTM D4812     |
| <b>Charpy</b>                                 |                |                         |                |
| Charpy 23°C, V-notch Edgew 80*10*4 sp=62mm    | 35             | kJ/m <sup>2</sup>       | ISO 179/1eA    |
| Charpy 0°C, V-notch Edgew 80*10*4 sp=62mm     | 15             | kJ/m <sup>2</sup>       | ISO 179/1eA    |
| Charpy -30°C, V-notch Edgew 80*10*4 sp=62mm   | 15             | kJ/m <sup>2</sup>       | ISO 179/1eA    |
| Charpy 23°C, V-notch Edgew 80*10*3 sp=62mm    | 40             | kJ/m <sup>2</sup>       | ISO 179/1eA    |
| Charpy 0°C, V-notch Edgew 80*10*3 sp=62mm     | 15             | kJ/m <sup>2</sup>       | ISO 179/1eA    |
| Charpy -30°C, V-notch Edgew 80*10*3 sp=62mm   | 10             | kJ/m <sup>2</sup>       | ISO 179/1eA    |
| Charpy 23°C, Unnotched Edgew 80*10*4 sp=62mm  | NB             | kJ/m <sup>2</sup>       | ISO 179/1eU    |
| Charpy 0°C, Unnotched Edgew 80*10*4 sp=62mm   | NB             | kJ/m <sup>2</sup>       | ISO 179/1eU    |
| Charpy -30°C, Unnotched Edgew 80*10*4 sp=62mm | NB             | kJ/m <sup>2</sup>       | ISO 179/1eU    |
| Charpy 23°C, Unnotched Edgew 80*10*3 sp=62mm  | NB             | kJ/m <sup>2</sup>       | ISO 179/1eU    |
| Charpy 0°C, Unnotched Edgew 80*10*3 sp=62mm   | NB             | kJ/m <sup>2</sup>       | ISO 179/1eU    |
| Charpy -30°C, Unnotched Edgew 80*10*3 sp=62mm | NB             | kJ/m <sup>2</sup>       | ISO 179/1eU    |
| <b>THERMAL</b>                                |                |                         |                |
| Vicat Softening Temp, Rate A/50               | 170            | °C                      | ISO 306        |
| Vicat Softening Temp, Rate B/50               | 130            | °C                      | ISO 306        |
| Vicat Softening Temp, Rate B/120              | 130            | °C                      | ISO 306        |
| HDT/Af, 1.8 MPa Flatw 80*10*4 sp=64mm         | 85             | °C                      | ISO 75/Af      |
| HDT/Bf, 0.45 MPa Flatw 80*10*4 sp=64mm        | 120            | °C                      | ISO 75/Bf      |
| CTE, 23°C to 150°C, flow                      | 1.13E-04       | 1/°C                    | ISO 11359-2    |
| CTE, 23°C to 150°C, xflow                     | 1.46E-04       | 1/°C                    | ISO 11359-2    |
| CTE, 23°C to 80°C, flow                       | 1.09E-04       | 1/°C                    | ISO 11359-2    |
| CTE, 23°C to 80°C, xflow                      | 1.23E-04       | 1/°C                    | ISO 11359-2    |
| Ball Pressure Test, 125°C +/- 2°C             | PASSES         | -                       | IEC 60695-10-2 |
| Vicat Softening Temp, Rate B/50               | 130            | °C                      | ASTM D1525     |
| HDT, 1.82 MPa, 3.2mm, unannealed              | 85             | °C                      | ASTM D648      |
| HDT, 0.45 MPa, 3.2 mm, unannealed             | 120            | °C                      | ASTM D648      |
| Relative Temp Index, Elec                     | 140            | °C                      | UL 746B        |
| Relative Temp Index, Mech w/impact            | 120            | °C                      | UL 746B        |
| Relative Temp Index, Mech w/o impact          | 120            | °C                      | UL 746B        |
| <b>PHYSICAL</b>                               |                |                         |                |
| Density                                       | 1.33           | g/cm <sup>3</sup>       | ISO 1183       |
| Moisture Absorption (23°C / 50% RH)           | 0.08           | %                       | ISO 62         |
| Water Absorption, (23°C/saturated)            | 0.30           | %                       | ISO 62-1       |
| Mold Shrinkage, flow, 24 hrs                  | 0.80           | %                       | ISO 294        |
| Mold Shrinkage, xflow, 24 hrs                 | 0.95           | %                       | ISO 294        |
| Moisture Absorption, (23°C/50% RH/24 hrs)     | 0.03           | %                       | ASTM D570      |
| Water Absorption, (23°C/24hrs)                | 0.13           | %                       | ASTM D570      |
| <b>Melt Volume Rate</b>                       |                |                         |                |
| Melt Volume Rate, MVR at 250°C/5.0 kg         | 11             | cm <sup>3</sup> /10 min | ISO 1133       |
| Melt Volume Rate, MVR at 265°C/5.0 kg         | 20             | cm <sup>3</sup> /10 min | ISO 1133       |
| Melt Volume Rate, MVR at 250°C/5.0 kg         | 10             | cm <sup>3</sup> /10 min | ASTM D1238     |
| Melt Volume Rate, MVR at 265°C/5.0 kg         | 19             | cm <sup>3</sup> /10 min | ASTM D1238     |
| <b>Melt Flow Rate</b>                         |                |                         |                |

| PROPERTIES                               | TYPICAL VALUES                   | UNITS    | TEST METHODS |
|------------------------------------------|----------------------------------|----------|--------------|
| Melt Flow Rate, 250°C/5.0 kg             | 13                               | g/10 min | ISO 1133     |
| Melt Flow Rate, 265°C/5.0 kg             | 23                               | g/10 min | ISO 1133     |
| Melt Flow Rate, 250°C/5.0 kgf            | 12                               | g/10 min | ASTM D1238   |
| Melt Flow Rate, 265°C/5.0 kgf            | 22                               | g/10 min | ASTM D1238   |
| <b>Melt Viscosity</b>                    |                                  |          |              |
| Melt Viscosity, 260°C, 1500 sec-1        | 255                              | Pa-s     | ISO 11443    |
| Melt Viscosity, 270°C, 1500 sec-1        | 195                              | Pa-s     | ISO 11443    |
| Melt Viscosity, 280°C, 1500 sec-1        | 130                              | Pa-s     | ISO 11443    |
| <b>ELECTRICAL</b>                        |                                  |          |              |
| Hot Wire Ignition {PLC}                  | 3                                | PLC Code | UL 746A      |
| High Ampere Arc Ign, surface {PLC}       | 0                                | PLC Code | UL 746A      |
| Comparative Tracking Index (UL) {PLC}    | 3                                | PLC Code | UL 746A      |
| Comparative Tracking Index               | 200                              | V        | IEC 60112    |
| <b>FLAME CHARACTERISTICS</b>             |                                  |          |              |
| UL Yellow Card Link                      | <a href="#">E45329-101284012</a> | -        | -            |
| UL Recognized, 94V-0 Flame Class Rating  | 1.5                              | mm       | UL 94        |
| UL Recognized, 94-5VA Flame Class Rating | 2.5                              | mm       | UL 94        |
| UV-light, water exposure/immersion       | F1                               | -        | UL 746C      |
| <b>INJECTION MOLDING</b>                 |                                  |          |              |
| Drying Temperature                       | 110 – 120                        | °C       |              |
| Drying Time                              | 2 – 4                            | Hrs      |              |
| Maximum Moisture Content                 | 0.02                             | %        |              |
| Melt Temperature                         | 250 – 270                        | °C       |              |
| Nozzle Temperature                       | 240 – 260                        | °C       |              |
| Front - Zone 3 Temperature               | 245 – 265                        | °C       |              |
| Middle - Zone 2 Temperature              | 240 – 255                        | °C       |              |
| Rear - Zone 1 Temperature                | 230 – 245                        | °C       |              |
| Hopper Temperature                       | 40 – 60                          | °C       |              |
| Mold Temperature                         | 40 – 100                         | °C       |              |

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