



**VALOX™ Resin 357**  
**Americas: COMMERCIAL**

PBT+PC, UL94V-0/5VA Rated, Impact Modified, Opaque, Unreinforced. Applications like bobbins, switches and enclosures.

| TYPICAL PROPERTIES <sup>1</sup>              | TYPICAL VALUE | Unit                | Standard    |
|----------------------------------------------|---------------|---------------------|-------------|
| <b>MECHANICAL</b>                            |               |                     |             |
| Tensile Stress, yld, Type I, 50 mm/min       | 480           | kgf/cm <sup>2</sup> | ASTM D 638  |
| Tensile Stress, brk, Type I, 50 mm/min       | 420           | kgf/cm <sup>2</sup> | ASTM D 638  |
| Tensile Strain, yld, Type I, 50 mm/min       | 5             | %                   | ASTM D 638  |
| Tensile Strain, brk, Type I, 50 mm/min       | 54            | %                   | ASTM D 638  |
| Tensile Modulus, 5 mm/min                    | 20600         | kgf/cm <sup>2</sup> | ASTM D 638  |
| Flexural Stress, yld, 1.3 mm/min, 50 mm span | 790           | kgf/cm <sup>2</sup> | ASTM D 790  |
| Flexural Stress, brk, 1.3 mm/min, 50 mm span | 790           | kgf/cm <sup>2</sup> | ASTM D 790  |
| Flexural Modulus, 1.3 mm/min, 50 mm span     | 21400         | kgf/cm <sup>2</sup> | ASTM D 790  |
| Hardness, Rockwell R                         | 117           | -                   | ASTM D 785  |
| 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             | 5             | %                   | ISO 527     |
| Tensile Strain, break, 50 mm/min             | 30            | %                   | ISO 527     |
| Tensile Modulus, 1 mm/min                    | 2200          | MPa                 | ISO 527     |
| Flexural Stress, yield, 2 mm/min             | 73            | MPa                 | ISO 178     |
| Flexural Modulus, 2 mm/min                   | 2000          | MPa                 | ISO 178     |
| <b>IMPACT</b>                                |               |                     |             |
| Izod Impact, unnotched, 23°C                 | NB326         | cm-kgf/cm           | ASTM D 4812 |
| Izod Impact, notched, 23°C                   | 32            | cm-kgf/cm           | ASTM D 256  |
| Izod Impact, notched, -30°C                  | 15            | cm-kgf/cm           | ASTM D 256  |
| Gardner, 23°C                                | 442           | cm-kgf              | ASTM D 3029 |
| Modified Gardner, 23°C                       | 438           | cm-kgf              | ASTM D 3029 |



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| <b>IMPACT</b>                              |               |                    |                |
| Instrumented Impact Total Energy, 23°C     | 365           | cm-kgf             | ASTM D 3763    |
| Izod Impact, notched 80*10*4 +23°C         | 45            | 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 | 45            | kJ/m <sup>2</sup>  | ISO 179/1eA    |
| <b>THERMAL</b>                             |               |                    |                |
| Vicat Softening Temp, Rate B/50            | 134           | °C                 | ASTM D 1525    |
| HDT, 0.45 MPa, 3.2 mm, unannealed          | 135           | °C                 | ASTM D 648     |
| HDT, 1.82 MPa, 3.2mm, unannealed           | 98            | °C                 | ASTM D 648     |
| HDT, 0.45 MPa, 6.4 mm, unannealed          | 138           | °C                 | ASTM D 648     |
| HDT, 1.82 MPa, 6.4 mm, unannealed          | 99            | °C                 | ASTM D 648     |
| CTE, -40°C to 40°C, flow                   | 9.18E-05      | 1/°C               | ASTM E 831     |
| CTE, -40°C to 40°C, xflow                  | 8.4E-05       | 1/°C               | ASTM E 831     |
| CTE, 60°C to 138°C, flow                   | 1.24E-04      | 1/°C               | ASTM E 831     |
| CTE, -40°C to 40°C, flow                   | 7.2E-05       | 1/°C               | ISO 11359-2    |
| CTE, -40°C to 40°C, xflow                  | 8.4E-05       | 1/°C               | ISO 11359-2    |
| Ball Pressure Test, 125°C +/- 2°C, by VDE  | PASSES        | -                  | IEC 60695-10-2 |
| Vicat Softening Temp, Rate B/50            | 145           | °C                 | ISO 306        |
| Vicat Softening Temp, Rate B/120           | 150           | °C                 | ISO 306        |
| HDT/Af, 1.8 MPa Flatw 80*10*4 sp=64mm      | 84            | °C                 | ISO 75/Af      |
| Relative Temp Index, Elec                  | 120           | °C                 | UL 746B        |
| Relative Temp Index, Mech w/impact         | 120           | °C                 | UL 746B        |
| Relative Temp Index, Mech w/o impact       | 140           | °C                 | UL 746B        |
| <b>PHYSICAL</b>                            |               |                    |                |
| Specific Gravity                           | 1.35          | -                  | ASTM D 792     |
| Specific Volume                            | 0.74          | cm <sup>3</sup> /g | ASTM D 792     |



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| <b>PHYSICAL</b>                             |               |                         |              |
| Water Absorption, 24 hours                  | 0.08          | %                       | ASTM D 570   |
| Mold Shrinkage, flow, 3.2 mm (5)            | 1 - 1.4       | %                       | SABIC Method |
| Mold Shrinkage, flow, 0.75-2.3 mm (5)       | 0.8 - 1.1     | %                       | SABIC Method |
| Mold Shrinkage, flow, 2.3-4.6 mm (5)        | 1 - 1.4       | %                       | SABIC Method |
| Mold Shrinkage, xflow, 0.75-2.3 mm (5)      | 0.9 - 1.3     | %                       | SABIC Method |
| Mold Shrinkage, xflow, 2.3-4.6 mm (5)       | 1.2 - 1.6     | %                       | SABIC Method |
| Melt Flow Rate, 250°C/5.0 kgf               | 9.6           | g/10 min                | ASTM D 1238  |
| Density                                     | 1.34          | g/cm <sup>3</sup>       | ISO 1183     |
| Water Absorption, (23°C/sat)                | 0.5           | %                       | ISO 62       |
| Moisture Absorption (23°C / 50% RH)         | 0.15          | %                       | ISO 62       |
| Melt Volume Rate, MVR at 250°C/5.0 kg       | 8             | cm <sup>3</sup> /10 min | ISO 1133     |
| <b>ELECTRICAL</b>                           |               |                         |              |
| Volume Resistivity                          | >1.2E+16      | Ohm-cm                  | ASTM D 257   |
| Dielectric Strength, in air, 3.2 mm         | 18.5          | kV/mm                   | ASTM D 149   |
| Dielectric Strength, in oil, 1.6 mm         | 25.2          | kV/mm                   | ASTM D 149   |
| Dielectric Strength, in oil, 3.2 mm         | 18.5          | kV/mm                   | ASTM D 149   |
| Relative Permittivity, 100 Hz               | 3.2           | -                       | ASTM D 150   |
| Relative Permittivity, 1 MHz                | 3.2           | -                       | ASTM D 150   |
| Dissipation Factor, 100 Hz                  | 0.003         | -                       | ASTM D 150   |
| Dissipation Factor, 1 MHz                   | 0.03          | -                       | ASTM D 150   |
| Arc Resistance, Tungsten {PLC}              | 6             | PLC Code                | ASTM D 495   |
| Hot Wire Ignition {PLC}                     | 2             | PLC Code                | UL 746A      |
| High Voltage Arc Track Rate {PLC}           | 3             | PLC Code                | UL 746A      |
| High Ampere Arc Ign, surface {PLC}          | 3             | PLC Code                | UL 746A      |
| Comparative Tracking Index (UL) {PLC}       | 2             | PLC Code                | UL 746A      |
| <b>FLAME CHARACTERISTICS</b>                |               |                         |              |
| UL Recognized, 94HB Flame Class Rating (3)  | 0.46          | mm                      | UL 94        |
| UL Recognized, 94V-0 Flame Class Rating (3) | 0.63          | mm                      | UL 94        |



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| <b>FLAME CHARACTERISTICS</b>                  |               |      |                |
| UL Recognized, 94-5VA Rating (3)              | 3             | mm   | UL 94          |
| Oxygen Index (LOI)                            | 30            | %    | ASTM D 2863    |
| Glow Wire Flammability Index 960°C, passes at | 1             | mm   | IEC 60695-2-12 |
| Glow Wire Ignitability Temperature, 1.0 mm    | 775           | °C   | IEC 60695-2-13 |
| Glow Wire Ignitability Temperature, 2.0 mm    | 750           | °C   | IEC 60695-2-13 |
| Glow Wire Ignitability Temperature, 3.0 mm    | 725           | °C   | IEC 60695-2-13 |
| UV-light, water exposure/immersion            | F2            | -    | UL 746C        |



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| PROCESSING PARAMETERS       | TYPICAL VALUE | Unit |
|-----------------------------|---------------|------|
| <b>Injection Molding</b>    |               |      |
| Drying Temperature          | 120           | °C   |
| Drying Time                 | 3 - 4         | hrs  |
| Drying Time (Cumulative)    | 12            | hrs  |
| Maximum Moisture Content    | 0.02          | %    |
| Melt Temperature            | 250 - 265     | °C   |
| Nozzle Temperature          | 245 - 260     | °C   |
| Front - Zone 3 Temperature  | 250 - 265     | °C   |
| Middle - Zone 2 Temperature | 245 - 260     | °C   |
| Rear - Zone 1 Temperature   | 240 - 255     | °C   |
| Mold Temperature            | 50 - 75       | °C   |
| Back Pressure               | 0.3 - 0.7     | MPa  |
| Screw Speed                 | 50 - 100      | rpm  |
| Shot to Cylinder Size       | 40 - 80       | %    |
| Vent Depth                  | 0.025 - 0.038 | mm   |