



# VALOX™ RESIN 311

REGION AMERICAS

## DESCRIPTION

Unreinforced, improved resistance to UV. Medium viscosity.

## TYPICAL PROPERTY VALUES

| PROPERTIES                                   | TYPICAL VALUES | UNITS | TEST METHODS |
|----------------------------------------------|----------------|-------|--------------|
| <b>MECHANICAL</b>                            |                |       |              |
| Tensile Stress, yld, Type I, 50 mm/min       | 51             | MPa   | ASTM D638    |
| Tensile Strain, brk, Type I, 50 mm/min       | 300            | %     | ASTM D638    |
| Flexural Stress, yld, 1.3 mm/min, 50 mm span | 82             | MPa   | ASTM D790    |
| Flexural Modulus, 1.3 mm/min, 50 mm span     | 2340           | MPa   | ASTM D790    |
| Hardness, Rockwell R                         | 117            | -     | ASTM D785    |
| <b>IMPACT</b>                                |                |       |              |
| Izod Impact, unnotched, 23°C                 | 1602           | J/m   | ASTM D4812   |
| Izod Impact, notched, 23°C                   | 53             | J/m   | ASTM D256    |
| Modified Gardner, 23°C                       | 40             | J     | ASTM D3029   |
| <b>THERMAL</b>                               |                |       |              |
| HDT, 0.45 MPa, 6.4 mm, unannealed            | 154            | °C    | ASTM D648    |
| HDT, 1.82 MPa, 6.4 mm, unannealed            | 54             | °C    | ASTM D648    |
| CTE, -40°C to 40°C, flow                     | 8.1E-05        | 1/°C  | ASTM E831    |
| CTE, 60°C to 138°C, flow                     | 1.39E-04       | 1/°C  | ASTM E831    |
| <b>PHYSICAL</b>                              |                |       |              |
| Specific Gravity                             | 1.31           | -     | ASTM D792    |
| Specific Volume                              | 0.76           | cm³/g | ASTM D792    |
| Water Absorption, (23°C/24hrs)               | 0.08           | %     | ASTM D570    |
| Mold Shrinkage, flow, 0.75-2.3 mm            | 0.9 – 1.6      | %     | SABIC method |
| Mold Shrinkage, flow, 2.3-4.6 mm             | 1.5 – 2.3      | %     | SABIC method |
| Mold Shrinkage, xflow, 0.75-2.3 mm           | 1 – 1.7        | %     | SABIC method |
| Mold Shrinkage, xflow, 2.3-4.6 mm            | 1.6 – 2.4      | %     | SABIC method |
| <b>ELECTRICAL</b>                            |                |       |              |
| Volume Resistivity                           | >4.E+16        | Ω.cm  | ASTM D257    |
| Dielectric Strength, in air, 3.2 mm          | 15.7           | kV/mm | ASTM D149    |
| Dielectric Strength, in oil, 1.6 mm          | 23.2           | kV/mm | ASTM D149    |
| Relative Permittivity, 100 Hz                | 3.3            | -     | ASTM D150    |
| Relative Permittivity, 1 MHz                 | 3.1            | -     | ASTM D150    |
| Dissipation Factor, 100 Hz                   | 0.002          | -     | ASTM D150    |
| Dissipation Factor, 1 MHz                    | 0.02           | -     | ASTM D150    |
| <b>INJECTION MOLDING</b>                     |                |       |              |
| Drying Temperature                           | 120            | °C    |              |
| Drying Time                                  | 3 – 4          | Hrs   |              |
| Drying Time (Cumulative)                     | 12             | Hrs   |              |
| Maximum Moisture Content                     | 0.02           | %     |              |

| PROPERTIES                  | TYPICAL VALUES | UNITS | TEST METHODS |
|-----------------------------|----------------|-------|--------------|
| Melt Temperature            | 245 – 260      | °C    |              |
| Nozzle Temperature          | 240 – 255      | °C    |              |
| Front - Zone 3 Temperature  | 245 – 260      | °C    |              |
| Middle - Zone 2 Temperature | 240 – 255      | °C    |              |
| Rear - Zone 1 Temperature   | 230 – 250      | °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                  | 0.013 – 0.025  | mm    |              |