

# VALOX™ 310 resin

Polybutylene Terephthalate

SABIC Innovative Plastics

## Message:

Unreinforced, general purpose. Typical viscosity 5000-7000.

| General Information |                                                              |
|---------------------|--------------------------------------------------------------|
| UL YellowCard       | E121562-220783                                               |
| Features            | General Purpose                                              |
| Uses                | General Purpose                                              |
| Processing Method   | Injection Molding                                            |
| Multi-Point Data    | Coefficient of Thermal Expansion vs. Temperature (ASTM E831) |
|                     | Elastic Modulus vs Temperature (ASTM D4065)                  |
|                     | Flexural DMA (ASTM D4065)                                    |
|                     | Pressure-Volume-Temperature (PVT - Zoller Method)            |
|                     | Shear DMA (ASTM D4065)                                       |
|                     | Specific Heat vs. Temperature (ASTM D3417)                   |
|                     | Tensile Creep (ASTM D2990)                                   |
|                     | Tensile Fatigue                                              |
|                     | Tensile Stress vs. Strain (ASTM D638)                        |
|                     | Thermal Conductivity vs. Temperature (ASTM E1530)            |
|                     | Viscosity vs. Shear Rate (ASTM D3835)                        |

| Physical                                     | Nominal Value | Unit               | Test Method     |
|----------------------------------------------|---------------|--------------------|-----------------|
| Specific Gravity                             | 1.31          | g/cm <sup>3</sup>  | ASTM D792       |
| Specific Volume                              | 0.770         | cm <sup>3</sup> /g | ASTM D792       |
| Molding Shrinkage                            |               |                    | Internal Method |
| Flow <sup>1</sup>                            | 0.90 to 1.6   | %                  |                 |
| Flow <sup>2</sup>                            | 1.5 to 2.3    | %                  |                 |
| Across Flow <sup>3</sup>                     | 1.0 to 1.7    | %                  |                 |
| Across Flow <sup>4</sup>                     | 1.6 to 2.4    | %                  |                 |
| Water Absorption (24 hr)                     | 0.080         | %                  | ASTM D570       |
| Hardness                                     | Nominal Value | Unit               | Test Method     |
| Rockwell Hardness (R-Scale)                  | 117           |                    | ASTM D785       |
| Mechanical                                   | Nominal Value | Unit               | Test Method     |
| Tensile Strength <sup>5</sup>                |               |                    | ASTM D638       |
| Yield                                        | 51.7          | MPa                |                 |
| Break                                        | 51.7          | MPa                |                 |
| Tensile Elongation <sup>6</sup> (Break)      | 300           | %                  | ASTM D638       |
| Flexural Modulus <sup>7</sup> (50.0 mm Span) | 2340          | MPa                | ASTM D790       |

|                                       |               |           |                 |
|---------------------------------------|---------------|-----------|-----------------|
| Flexural Strength <sup>8</sup>        |               |           | ASTM D790       |
| Yield, 50.0 mm Span                   | 82.7          | MPa       |                 |
| Break, 50.0 mm Span                   | 82.7          | MPa       |                 |
| Impact                                | Nominal Value | Unit      | Test Method     |
| Notched Izod Impact (23°C)            | 53            | J/m       | ASTM D256       |
| Unnotched Izod Impact (23°C)          | 1600          | J/m       | ASTM D4812      |
| Gardner Impact                        |               |           | ASTM D3029      |
| 23°C                                  | 40.7          | J         |                 |
| 23°C <sup>9</sup>                     | 40.7          | J         |                 |
| Thermal                               | Nominal Value | Unit      | Test Method     |
| Deflection Temperature Under Load     |               |           | ASTM D648       |
| 0.45 MPa, Unannealed, 6.40 mm         | 154           | °C        |                 |
| 1.8 MPa, Unannealed, 6.40 mm          | 54.4          | °C        |                 |
| CLTE - Flow                           |               |           | ASTM E831       |
| -40 to 40°C                           | 8.1E-5        | cm/cm/°C  |                 |
| 60 to 138°C                           | 1.4E-4        | cm/cm/°C  |                 |
| RTI Elec                              | 120           | °C        | UL 746          |
| RTI Imp                               | 120           | °C        | UL 746          |
| RTI Str                               | 140           | °C        | UL 746          |
| Electrical                            | Nominal Value | Unit      | Test Method     |
| Volume Resistivity                    | > 4.0E+16     | ohms · cm | ASTM D257       |
| Dielectric Strength                   |               |           | ASTM D149       |
| 1.60 mm, in Air                       | 23            | kV/mm     |                 |
| 1.60 mm, in Oil                       | 23            | kV/mm     |                 |
| 3.20 mm, in Air                       | 16            | kV/mm     |                 |
| 3.20 mm, in Oil                       | 16            | kV/mm     |                 |
| Dielectric Constant                   |               |           | ASTM D150       |
| 100 Hz                                | 3.30          |           |                 |
| 1 MHz                                 | 3.10          |           |                 |
| Dissipation Factor                    |               |           | ASTM D150       |
| 100 Hz                                | 2.0E-3        |           |                 |
| 1 MHz                                 | 0.020         |           |                 |
| Arc Resistance <sup>10</sup>          | PLC 5         |           | ASTM D495       |
| Comparative Tracking Index (CTI)      | PLC 0         |           | UL 746          |
| High Voltage Arc Tracking Rate (HVTR) | PLC 1         |           | UL 746          |
| Flammability                          | Nominal Value | Unit      | Test Method     |
| Flame Rating (1.47 mm)                | HB            |           | UL 94           |
| Fill Analysis                         | Nominal Value | Unit      | Test Method     |
| Melt Viscosity                        | 600           | Pa · s    | Internal Method |
| Injection                             | Nominal Value | Unit      |                 |
| Drying Temperature                    | 121           | °C        |                 |
| Drying Time                           | 3.0 to 4.0    | hr        |                 |

|                        |                |     |
|------------------------|----------------|-----|
| Drying Time, Maximum   | 12             | hr  |
| Suggested Max Moisture | 0.020          | %   |
| Suggested Shot Size    | 40 to 80       | %   |
| Rear Temperature       | 232 to 249     | °C  |
| Middle Temperature     | 238 to 254     | °C  |
| Front Temperature      | 243 to 260     | °C  |
| Nozzle Temperature     | 238 to 254     | °C  |
| Processing (Melt) Temp | 243 to 260     | °C  |
| Mold Temperature       | 48.9 to 76.7   | °C  |
| Back Pressure          | 0.345 to 0.689 | MPa |
| Screw Speed            | 50 to 100      | rpm |
| Vent Depth             | 0.013 to 0.025 | mm  |

#### NOTE

- |     |                    |
|-----|--------------------|
| 1.  | 0.75 to 2.3 mm     |
| 2.  | 2.3 to 4.6 mm      |
| 3.  | 0.75 to 2.3 mm     |
| 4.  | 2.3 to 4.6 mm      |
| 5.  | Type I, 50 mm/min  |
| 6.  | Type I, 50 mm/min  |
| 7.  | 1.3 mm/min         |
| 8.  | 1.3 mm/min         |
| 9.  | Modified           |
| 10. | Tungsten Electrode |

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