



## VALOX™ Resin DR48 - CS1049

### Europe-Africa-Middle East: COMMERCIAL

VALOX DR48 is a 15 % glass reinforced, flame retardant injection moulding PBT resin. Applications: lamp sockets, connectors, switches, electrical housings and bases, bobbins, trimmers and electromotor housings.

| TYPICAL PROPERTIES <sup>1</sup>             | TYPICAL VALUE | Unit              | Standard     |
|---------------------------------------------|---------------|-------------------|--------------|
| <b>MECHANICAL</b>                           |               |                   |              |
| Taber Abrasion, CS-17, 1 kg                 | 16            | mg/1000cy         | SABIC Method |
| Tensile Stress, yield, 5 mm/min             | 102           | MPa               | ISO 527      |
| Tensile Stress, break, 5 mm/min             | 102           | MPa               | ISO 527      |
| Tensile Strain, yield, 5 mm/min             | 3             | %                 | ISO 527      |
| Tensile Strain, break, 5 mm/min             | 3             | %                 | ISO 527      |
| Tensile Modulus, 1 mm/min                   | 6300          | MPa               | ISO 527      |
| Flexural Stress, break, 2 mm/min            | 150           | MPa               | ISO 178      |
| Flexural Modulus, 2 mm/min                  | 5200          | MPa               | ISO 178      |
| Hardness, Rockwell R                        | 120           | -                 | ISO 2039-2   |
| <b>IMPACT</b>                               |               |                   |              |
| 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        | 27            | kJ/m <sup>2</sup> | ISO 180/1U   |
| Izod Impact, notched 80*10*4 +23°C          | 5             | kJ/m <sup>2</sup> | ISO 180/1A   |
| Izod Impact, notched 80*10*4 0°C            | 5             | kJ/m <sup>2</sup> | ISO 180/1A   |
| Izod Impact, notched 80*10*4 -30°C          | 5             | kJ/m <sup>2</sup> | ISO 180/1A   |
| Charpy 23°C, V-notch Edgew 80*10*4 sp=62mm  | 5             | kJ/m <sup>2</sup> | ISO 179/1eA  |
| Charpy Impact, notched, 23°C                | 5             | kJ/m <sup>2</sup> | ISO 179/2C   |
| Charpy -30°C, V-notch Edgew 80*10*4 sp=62mm | 4             | kJ/m <sup>2</sup> | ISO 179/1eA  |
| Charpy Impact, notched, -30°C               | 5             | kJ/m <sup>2</sup> | ISO 179/2C   |
| <b>THERMAL</b>                              |               |                   |              |
| Thermal Conductivity                        | 0.19          | W/m-°C            | ISO 8302     |
| CTE, -40°C to 40°C, flow                    | 2.83E-05      | 1/°C              | ISO 11359-2  |
| CTE, -40°C to 40°C, xflow                   | 6.95E-05      | 1/°C              | ISO 11359-2  |



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| <b>THERMAL</b>                               |               |                         |                |
| CTE, 23°C to 80°C, flow                      | 3.5E-05       | 1/°C                    | ISO 11359-2    |
| CTE, 23°C to 80°C, xflow                     | 9.5E-05       | 1/°C                    | ISO 11359-2    |
| CTE, 23°C to 150°C, flow                     | 2.57E-05      | 1/°C                    | ISO 11359-2    |
| CTE, 23°C to 150°C, xflow                    | 1.49E-04      | 1/°C                    | ISO 11359-2    |
| Ball Pressure Test, 125°C +/- 2°C            | PASSES        | -                       | IEC 60695-10-2 |
| Vicat Softening Temp, Rate B/120             | 200           | °C                      | ISO 306        |
| HDT/Af, 1.8 MPa Flatw 80*10*4 sp=64mm        | 170           | °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>                              |               |                         |                |
| Filler Content                               | 15            | %                       | ASTM D 229     |
| Mold Shrinkage on Tensile Bar, flow (2) (5)  | 0.5 - 0.8     | %                       | SABIC Method   |
| Mold Shrinkage on Tensile Bar, xflow (2) (5) | 0.6 - 0.9     | %                       | SABIC Method   |
| Density                                      | 1.5           | g/cm <sup>3</sup>       | ISO 1183       |
| Water Absorption, (23°C/sat)                 | 0.17          | %                       | ISO 62         |
| Moisture Absorption (23°C / 50% RH)          | 0.07          | %                       | ISO 62         |
| Melt Volume Rate, MVR at 250°C/2.16 kg       | 8             | cm <sup>3</sup> /10 min | ISO 1133       |
| Melt Volume Rate, MVR at 250°C/5.0 kg        | 24            | cm <sup>3</sup> /10 min | ISO 1133       |
| <b>ELECTRICAL</b>                            |               |                         |                |
| Volume Resistivity                           | 1.E+15        | Ohm-cm                  | ASTM D 257     |
| Dielectric Strength, in oil, 0.8 mm          | 29            | kV/mm                   | ASTM D 149     |
| Dielectric Strength, in oil, 1.6 mm          | 23            | kV/mm                   | ASTM D 149     |
| Dielectric Strength, in oil, 3.2 mm          | 16            | kV/mm                   | ASTM D 149     |
| Relative Permittivity, 1 MHz                 | 3.1           | -                       | ASTM D 150     |



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|-----------------------------------------------|---------------|----------|----------------|
| <b>ELECTRICAL</b>                             |               |          |                |
| Dissipation Factor, 1 MHz                     | 0.012         | -        | ASTM D 150     |
| Arc Resistance, Tungsten {PLC}                | 6             | PLC Code | ASTM D 495     |
| Hot Wire Ignition {PLC}                       | 3             | PLC Code | UL 746A        |
| High Voltage Arc Track Rate {PLC}             | 4             | 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        |
| Volume Resistivity                            | 1.E+15        | Ohm-cm   | IEC 60093      |
| Surface Resistivity, ROA                      | >1.E+15       | Ohm      | IEC 60093      |
| Dielectric Strength, shorttime, 1.0mm         | 19            | kV/mm    | IEC 60243-1    |
| Dielectric Strength, in oil, 0.8 mm           | 29            | kV/mm    | IEC 60243-1    |
| Dielectric Strength, in oil, 1.6 mm           | 23            | kV/mm    | IEC 60243-1    |
| Dielectric Strength, in oil, 3.2 mm           | 16            | kV/mm    | IEC 60243-1    |
| Relative Permittivity, 1 MHz                  | 3.1           | -        | IEC 60250      |
| Dissipation Factor, 50/60 Hz                  | 0.001         | -        | IEC 60250      |
| Dissipation Factor, 1 MHz                     | 0.012         | -        | IEC 60250      |
| Comparative Tracking Index                    | 175           | V        | IEC 60112      |
| Comparative Tracking Index, M                 | 150           | V        | IEC 60112      |
| Relative Permittivity, 50/60 Hz               | 3.2           | -        | IEC 60250      |
| <b>FLAME CHARACTERISTICS</b>                  |               |          |                |
| UL Recognized, 94V-0 Flame Class Rating (3)   | 0.89          | mm       | UL 94          |
| UL Recognized, 94-5VA Rating (3)              | 3             | mm       | UL 94          |
| Glow Wire Flammability Index 960°C, passes at | 1             | mm       | IEC 60695-2-12 |
| Oxygen Index (LOI)                            | 31            | %        | ISO 4589       |



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| PROCESSING PARAMETERS       | TYPICAL VALUE | Unit |
|-----------------------------|---------------|------|
| <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   |