



## VALOX™ Resin V3504

### Asia Pacific: COMMERCIAL

VALOX V3504 is an unreinforced, flame retardant PBT injection moulding resin. Applications: electrical industry, bobbins, keyboard, switches and switch components and appliance housings.

| TYPICAL PROPERTIES <sup>1</sup>              | TYPICAL VALUE | Unit                    | Standard             |
|----------------------------------------------|---------------|-------------------------|----------------------|
| <b>MECHANICAL</b>                            |               |                         |                      |
| Tensile Stress, yield                        | 580           | kgf/cm <sup>2</sup>     | SABIC - Japan Method |
| Tensile Stress, yld, Type I, 50 mm/min       | 590           | kgf/cm <sup>2</sup>     | ASTM D 638           |
| Tensile Strain, break                        | 16            | %                       | SABIC - Japan Method |
| Tensile Strain, yld, Type I, 50 mm/min       | 7             | %                       | ASTM D 638           |
| Tensile Strain, brk, Type I, 50 mm/min       | 9             | %                       | ASTM D 638           |
| Flexural Stress, yld, 1.3 mm/min, 50 mm span | 910           | kgf/cm <sup>2</sup>     | ASTM D 790           |
| Flexural Modulus, 1.3 mm/min, 50 mm span     | 26700         | kgf/cm <sup>2</sup>     | ASTM D 790           |
| Tensile Stress, yield, 50 mm/min             | 58            | MPa                     | ISO 527              |
| Tensile Strain, break, 50 mm/min             | 8             | %                       | ISO 527              |
| Flexural Stress, yield, 2 mm/min             | 88            | MPa                     | ISO 178              |
| Flexural Modulus, 2 mm/min                   | 2600          | MPa                     | ISO 178              |
| <b>IMPACT</b>                                |               |                         |                      |
| Izod Impact, notched, 23°C                   | 5             | cm-kgf/cm               | ASTM D 256           |
| Charpy 23°C, V-notch Edgew 80*10*4 sp=62mm   | 4             | kJ/m <sup>2</sup>       | ISO 179/1eA          |
| <b>THERMAL</b>                               |               |                         |                      |
| HDT, 1.82 MPa, 6.4 mm, unannealed            | 106           | °C                      | ASTM D 648           |
| HDT/Af, 1.8 MPa Flatw 80*10*4 sp=64mm        | 80            | °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                             | 1.4           | -                       | ASTM D 792           |
| Melt Flow Rate, 250°C/2.16 kgf               | 11            | g/10 min                | ASTM D 1238          |
| Melt Volume Rate, MVR at 250°C/2.16 kg       | 8             | cm <sup>3</sup> /10 min | ISO 1133             |



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|-----------------------------------------------|---------------|----------|----------------|
| <b>ELECTRICAL</b>                             |               |          |                |
| Arc Resistance, Tungsten {PLC}                | 6             | PLC Code | ASTM D 495     |
| Hot Wire Ignition {PLC}                       | 4             | PLC Code | UL 746A        |
| High Voltage Arc Track Rate {PLC}             | 4             | PLC Code | UL 746A        |
| High Voltage Arc Resistance {PLC}             | 6             | 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      |
| <b>FLAME CHARACTERISTICS</b>                  |               |          |                |
| UL Recognized, 94V-0 Flame Class Rating (3)   | 0.38          | mm       | UL 94          |
| UL Recognized, 94-5VA Rating (3)              | 3             | mm       | UL 94          |
| Glow Wire Flammability Index 960°C, passes at | 0.38          | mm       | IEC 60695-2-12 |
| Glow Wire Ignitability Temperature, 0.4 mm    | 825           | °C       | IEC 60695-2-13 |
| Glow Wire Ignitability Temperature, 1.0 mm    | 825           | °C       | IEC 60695-2-13 |



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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            | 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   |