

SEMITRON® ESd 410C



theplasticshop.co.uk

at gilbert curry industrial plastics

telephone 0800 321 3085

Having an excellent mechanical performance up to 210°C, SEMITRON ESd 410C provides ESd-solutions at higher temperatures.

Additionally, SEMITRON ESd 410C exhibits excellent dimensional stability (low coefficient of linear thermal expansion and small water absorption), ideal for handling equipment in the electrical / electronic or semiconductor industries.

Physical properties (indicative values*)

| PROPERTIES | Test methods ISO/(IEC) | Units | VALUES |
|--|------------------------|-------------------|-----------------------------------|
| Colour | — | — | black |
| Density | 1183 | g/cm ³ | 1.41 |
| Water absorption: | | | |
| – at saturation in air of 23°C / 50% RH | — | % | 0.75 |
| – at saturation in water of 23°C | — | % | 1.35 |
| Thermal Properties | | | |
| Melting temperature | — | °C | NA |
| Glass transition temperature | — | °C | 215 |
| Thermal conductivity at 23 °C | — | W/(K·m) | 0.35 |
| Coefficient of linear thermal expansion: | | | |
| – average value between 23 and 100°C | — | m/(m·K) | 35·10 ⁻⁶ |
| – average value between 23 and 150°C | — | m/(m·K) | 35·10 ⁻⁶ |
| – average value above 150°C | — | m/(m·K) | 35·10 ⁻⁶ |
| Temperature of deflection under load: | | | |
| – method A: 1.8 MPa | 75 | °C | 210 |
| Max. allowable service temperature in air: | | | |
| – for short periods (1) | — | °C | 200 |
| – continuously: for min. 20,000 h (2) | — | °C | 170 |
| Flammability (3): | | | |
| – “Oxygen Index” | 4589 | % | 47 |
| – according to UL 94 (1.5/3 mm thickness) | — | — | V-0/V-0 |
| Mechanical Properties at 23 °C | | | |
| Tension test (4): | | | |
| – tensile stress at break (5) | 527 | MPa | 62 |
| – tensile strain at break (5) | 527 | % | 6 |
| – tensile modulus of elasticity (6) | 527 | MPa | 6,400 |
| Charpy impact strength – Notched | 179/1eA | kJ/m ² | 4 |
| Rockwell hardness (7) | 2039-2 | — | M 115 |
| Electrical Properties at 23 °C | | | |
| Volume resistivity | (60093) | Ω·cm | 10 ⁴ - 10 ⁶ |
| Surface resistivity | (60093) | Ω | 10 ⁴ - 10 ⁶ |

Legend

- (1) Only for short-time exposure (a few hours) in applications where no or only a very low load is applied to the material.
- (2) Temperature resistance over a period of min. 20,000 hours. After this period of time, there is a decrease in tensile strength of about 50% as compared with the original value. The temperature value given here is thus based on the thermal-oxidative degradation which takes place and causes a reduction in properties. Note however, that the maximum allowable service temperature depends in many cases essentially on the duration and the magnitude of the mechanical stresses to which the material is subjected.
- (3) These mostly estimated ratings, derived from raw material supplier data, are not intended to reflect hazards presented by the materials under actual fire conditions. There is no UL-yellow card available for SEMITRON ESd 410C stock shapes.
- (4) Test specimens: Type 1 B.
- (5) Test speed: 5 mm/min.
- (6) Test speed: 1 mm/min.
- (7) 10 mm thick test specimens.

- This table is a valuable help in the choice of a material. The data listed here fall within the normal range of product properties of dry material. **However, they are not guaranteed and they should not be used to establish material specification limits nor used alone as the basis of design.**

Note: 1 g/cm³ = 1,000 kg/m³; 1 MPa = 1 N/mm²; 1 kV/mm = 1 MV/m

NA = Not applicable

Availability

Round Rods: Ø 12.70-247.65 mm - **Plates:** Thicknesses 9.53-50.80 mm - **Tubes:** O.D. 50.80-374.65 mm

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