

SEMITRON ESd 225 is an acetal based static dissipative material ideal for material handling applications. It avoids discharge problems for parts intended for human contact.

SEMITRON ESd 225 is also an excellent choice for fixturing used for handling in-process silicon wafers or used in the manufacturing of sensitive electronic components including hard disk drives and circuit boards.

## Physical properties (indicative values\*)

PROPERTIES	Test methods ISO/(IEC)	Units	VALUES
Colour	—	—	beige
Density	1183	g/cm <sup>3</sup>	1.33
Water absorption:			
– after 24/96 h immersion in water of 23°C (1)	62	mg	392/705
– at saturation in air of 23°C / 50% RH	62	%	5/9
– at saturation in water of 23°C	—	%	0.8
– at saturation in water of 23°C	—	%	10
<b>Thermal Properties</b>			
Melting temperature	—	°C	165
Coefficient of linear thermal expansion:			
– average value between 23 and 100 °C	—	m/(m·K)	150 · 10 <sup>-6</sup>
Max. allowable service temperature in air:			
– for short periods (2)	—	°C	140
– continuously: min. 20,000 h (3)	—	°C	90
Flammability (4):			
– “Oxygen Index”	4589	%	< 20
– according to UL 94 (3 mm thickness)	—	—	HB
<b>Mechanical Properties at 23°C</b>			
Tension test (5):			
– tensile stress at break (6)	527	MPa	38
– tensile strain at break (6)	527	%	15
– tensile modulus of elasticity (7)	527	MPa	1,500
Compression test (8):			
– compressive stress at 1/2% nominal strain (7)	604	MPa	11/20
Charpy impact strength – Unnotched (9)	179/1eU	kJ/m <sup>2</sup>	no break
Charpy impact strength – Notched	179/1eA	kJ/m <sup>2</sup>	8
Ball indentation hardness (10)	2039-1	N/mm <sup>2</sup>	70
Rockwell hardness (10)	2039-2	—	R 106
<b>Electrical Properties at 23°C</b>			
Volume resistivity	(60093)	Ω·cm	10 <sup>10</sup> - 10 <sup>12</sup>
Surface resistivity	(60093)	Ω	10 <sup>10</sup> - 10 <sup>12</sup>

Note: 1 g/cm<sup>3</sup> = 1,000 kg/m<sup>3</sup>; 1 MPa = 1 N/mm<sup>2</sup>; 1 kV/mm = 1 MV/m

## Availability

**Round Rods:** Ø 4.76-101.60 mm - **Plates:** Thicknesses 8-50 mm

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### Legend

- (1) According to method 1 of ISO 62 and done on discs Ø 50 x 3 mm.
- (2) Only for short time exposure (a few hours) in applications where no or only a very low load is applied to the material.
- (3) 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.
- (4) 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 225 stock shapes.
- (5) Test specimens: Type 1 B.
- (6) Test speed: 5 mm/min.
- (7) Test speed: 1 mm/min.
- (8) Test specimens: cylinders Ø 12 x 30 mm.
- (9) Pendulum used: 4 J.
- (10) 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.**