

What is PEI CM ESD90 black

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PEI, special compound, electrostatically dissipative

PEI CM ESD90 black is an electrostatically dissipative polyetherimide compression moulded (CM) into sheets. It combines the high stiffness, heat deflection temperature and inherent flame retardancy of PEI with a defined surface resistivity of approx. $10^6 \Omega$ – for components in ESD-protected areas of semiconductor and electronics manufacturing.

Properties

PEI CM ESD90 black is an amorphous high-performance thermoplastic with high tensile strength and stiffness that are retained even at high temperatures (continuous service up to 170 °C). Conductive additives discharge electrostatic charges in a controlled manner; compression moulding produces a low-stress, isotropic structure and thus low-distortion machining even of large parts.

Like all PEI grades, the material is inherently flame retardant (UL 94 V0) with very low smoke generation, resistant to hydrolysis and radiation, and absorbs little moisture. The colour is black due to the additives; amorphous materials are sensitive to stress cracking in contact with certain solvents.

Advantages

- Electrostatically dissipative (surface resistivity approx. $10^6 \Omega$)
- High stiffness and strength, even at high temperatures
- Inherently flame retardant (UL 94 V0), low smoke density
- Very low residual stress, high dimensional stability

Disadvantages

- Sensitive to stress cracking with some solvents and cooling lubricants
- Lower toughness than PEEK
- Not generally declared for food contact (see FDA declaration)

Processing

PEI CM ESD90 black can be machined using all conventional cutting methods; sharp carbide tools and good cooling via chip removal avoid heat build-up and stress cracking. Cooling lubricants must be compatible with PEI.

The compression-moulded sheets allow large-area and delicate machining with low distortion; for tight tolerances we recommend intermediate annealing.

Typical Applications

PEI CM ESD90 black is used wherever heat-resistant, dimensionally stable components must safely discharge electrostatic charges – for example in semiconductor manufacturing, electronics and test and handling equipment.

- Wafer handling and test socket components
- Carriers, brackets and covers in ESD areas
- Insulating and functional parts with defined dissipation

Typical Properties

- Electrostatically dissipative (ESD)
- Modified compound with high stiffness
- Inherently flame retardant

Product Examples

- Wafer handling components
- Carriers and brackets
- Functional parts in ESD areas

Typical Industries

- Semiconductor Industry
- Electronics
- Electrical Industry

	Test Method	Unit	Value
General Properties			
Density	DIN EN ISO 1183-1	g / cm ³	1.32
Water absorption	DIN EN ISO 62	%	0.50
Flammability (Thickness 3 mm / 6 mm)	UL 94		V0 / V0
Mechanical Properties			
Yield stress	DIN EN ISO 527	MPa	120
Elongation at break	DIN EN ISO 527	%	7
Tensile modulus of elasticity	DIN EN ISO 527	MPa	4.100
Shore hardness	DIN EN ISO 868	scale D	88
Thermal Properties			
Coefficient of linear thermal expansion	DIN 53752	10 ⁻⁶ / K	40
Service temperature, long term	Average	°C	0 ... 170
Service temperature, short term (max.)	Average	°C	210
Electrical Properties			
Surface resistivity	DIN EN 62631-3-2	Ω	10 ⁶