

What is POM-C ESD90 natural

POM-C ESD90 natural

POM-C, electrostatically dissipative (ESD 90)

POM-C ESD90 natural is a polyoxymethylene copolymer made electrostatically dissipative by carbon-black-free antistatic additives (surface resistivity 10^9 – 10^{12} Ω). The natural-coloured, carbon-black-free formulation is particularly suitable for clean-room and electronics applications where no particles may be released.

Properties

POM-C ESD90 natural dissipates electrostatic charges in a controlled manner, preventing damage to sensitive electronic components and dust attraction. With an elongation at break of 20 % and a notched impact strength of 5 kJ/m², it is tougher than the ESD 60 formulation, at low moisture absorption (0.2 %) and the good machinability typical of POM-C. The material is free of carbon black and clean to process.

The additives reduce stiffness and strength compared to standard POM-C (tensile modulus 1,800 MPa, yield stress 42 MPa); thermal expansion is high at $170 \cdot 10^{-6}$ /K and the continuous service temperature of 85 °C somewhat lower. The material is not declared for food contact.

Advantages

- Electrostatically dissipative (10^9 – 10^{12} Ω), carbon-black-free, natural colour
- Suitable for clean rooms, no particle release
- Good toughness, low moisture absorption
- Very good machinability

Disadvantages

- Lower stiffness and strength than standard POM-C
- High thermal expansion
- Not generally declared for food contact (see FDA declaration)

Processing

POM-C ESD90 natural is one of the easiest engineering plastics to machine: sawing, turning, milling, drilling and thread cutting are straightforward with standard HSS or carbide tools, chips break short and surfaces come out clean. Good cooling via chip removal avoids heat build-up.

For tight tolerances and thick-walled parts, we recommend intermediate annealing to relieve machining stresses; the low moisture absorption makes conditioning unnecessary.

Typical Applications

POM-C ESD90 natural is used wherever electrostatic charges must be dissipated without particle release – for example in the electrical and semiconductor industries, in clean rooms and in mechanical engineering.

- Handling and transport parts for wafers and printed circuit boards
- Sliding and guide elements in clean rooms
- Fixtures and housing parts for test and measurement equipment

Typical Properties

- More strongly electrostatically dissipative than ESD 60 PLUS
- Carbon-black-free, suitable for clean rooms
- Good machinability

Product Examples

- Handling parts for wafers and PCBs
- Sliding elements for clean rooms
- Fixtures for test equipment

Typical Industries

- Electrical Industry
- Semiconductor Industry
- Mechanical Engineering

	Test Method	Unit	Value
General Properties			
Density	DIN EN ISO 1183-1	g / cm ³	1.34
Water absorption	DIN EN ISO 62	%	0.20
Flammability (Thickness 3 mm / 6 mm)	UL 94		HB / HB
Mechanical Properties			
Yield stress	DIN EN ISO 527	MPa	42
Elongation at break	DIN EN ISO 527	%	20
Tensile modulus of elasticity	DIN EN ISO 527	MPa	1.800
Notched impact strength	DIN EN ISO 179	kJ / m ²	5.0
Ball indentation hardness	DIN EN ISO 2039-1	MPa	90
Shore hardness	DIN EN ISO 868	scale D	76
Thermal Properties			
Melting temperature	ISO 11357-3	°C	165
Coefficient of linear thermal expansion	DIN 53752	10 ⁻⁶ / K	170
Service temperature, long term	Average	°C	-50 ... 85
Service temperature, short term (max.)	Average	°C	140
Heat deflection temperature	DIN EN ISO 75, Verf. A, HDT	°C	106
Electrical Properties			
Surface resistivity	DIN EN 62631-3-2	Ω	10 ⁹ – 10 ¹²