

Material Datasheet — ESD POM (Anti-static Acetal)

Overview

ESD POM is a carbon-fiber or carbon-nanotube filled acetal compound with controlled surface resistivity ($10^6 - 10^9 \Omega/\text{sq}$). It combines POM's excellent dimensional stability and wear resistance with permanent electrostatic discharge protection, ideal for electronics manufacturing and cleanroom environments.

Key Features

- Permanent ESD protection (not humidity-dependent)
- Surface resistivity: $10^6 - 10^9 \Omega/\text{sq}$ (static dissipative)
- Retains POM's excellent dimensional stability and wear resistance
- No blooming or migration of anti-static additives
- Precision machinable to tight tolerances
- Available in black (carbon-filled) and other colors

Technical Properties

Property	Value	Unit	Test Standard
Density	1.45 - 1.55	g/cm ³	ASTM D792
Tensile Strength	50 - 65	MPa	ASTM D638
Elongation at Break	5 - 15	%	ASTM D638
Flexural Modulus	3000 - 4000	MPa	ASTM D790
Hardness (Rockwell M)	75 - 85	Rockwell M	ASTM D785
HDT (1.8MPa)	100 - 115	°C	ASTM D648
Surface Resistivity	$10^6 - 10^9$	Ω/sq	ASTM D257
Volume Resistivity	$10^3 - 10^6$	$\Omega\cdot\text{cm}$	ASTM D257
Static Decay Time	< 0.5	s	—
Water Absorption (24h)	0.2 - 0.3	%	ASTM D570
Coefficient of Friction	0.18 - 0.40	—	—
ESD Performance	Permanent	—	—

Typical Applications

- Semiconductor: wafer carriers, IC trays, ESD-safe fixtures
- Electronics manufacturing: conveyor components, guide rails
- Cleanroom equipment: jigs, holders, positioning parts
- Explosive environments: handling fixtures and tools
- Hard disk drive manufacturing: assembly tooling

Available Forms

- Sheets (extruded / molded): thickness 0.5mm - 200mm
- Rods: diameter 3mm - 300mm
- Tubes / hollow bars
- Custom CNC machined parts per CAD drawings