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PEI

Polyetherimide (PEI)

Amorphous high-performance PEI for transparent and dimensionally stable parts.

Polyetherimide is an amorphous high-performance thermoplastic offering high strength and stiffness, excellent dimensional stability, and continuous service to 340°F (170°C). The amorphous structure delivers very low and uniform mold shrinkage with inherent flame resistance and low smoke generation, making PEI a workhorse for aerospace interiors, electrical insulators, medical devices requiring repeated sterilization, and structural components where tight tolerances must hold across temperature.

ASTM D5205 / ISO 10350 — PEI MOLDING AND EXTRUSION MATERIALS

UL 94 V-0

FAR 25.853 FLAMMABILITY (AEROSPACE)

FDA 21 CFR 177.1595 (NATURAL GRADE)

ROHS / REACH COMPLIANT

APPLICATIONS

- Aerospace interior components and ducting
- Electrical insulators, connectors, and circuit hardware
- Medical and surgical devices requiring repeated sterilization
- Semiconductor wafer handling and test fixturing
- Structural components requiring tight dimensional control

STANDARD COLORS

Amber / Natural, Black

GENERAL

Density ASTM D792	0.046 lb/in³ 1.2 g/cm³
Water absorption 24 / 96 h immersion @ 73°F · ASTM D570	20/41 / 0.26/0.54 mg / %
Water absorption Saturation in air @ 73°F, 50% RH · ASTM D570	0.75 %
Water absorption Saturation in water @ 73°F · ASTM D570	1.35 %
Flammability rating UL 94, 3 / 6 mm thickness · UL 94	V-0/V-0

MECHANICAL

Tensile strength At yield / break · ASTM D638	15,250 psi 105 MPa
Tensile strain at break ASTM D638	10 %
Tensile modulus ASTM D638	493,000 psi 3,300 MPa

OPERATING ENVIRONMENT

Thermal conductivity @ 73°F · ASTM C177	1.5 Btu·in/ft²·h·°F 0.21 W/m·K
Coefficient of thermal expansion Avg. 73 – 140°F · ASTM D696	25 µin/in/°F 45 µm/m/°C
Coefficient of thermal expansion Avg. 73 – 212°F · ASTM D696	25 µin/in/°F 45 µm/m/°C
Heat deflection temperature 264 psi (Method A) · ASTM D648	375 °F 190 °C
Max service temperature Short-term	390 °F 195 °C
Max service temperature Continuous (5,000 / 20,000 h)	340 °F 170 °C

ELECTRICAL

Dielectric strength ASTM D149	685 V/mil 26 kV/mm
Volume resistivity ASTM D257	>10¹⁴ Ω·cm

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PEI — CONTINUED

Polyetherimide (PEI)

MECHANICAL

Compressive stress At 10% nominal strain · ASTM D695	22,000 psi 150 MPa
Rockwell hardness ASTM D785	R126

ELECTRICAL

Surface resistivity ASTM D257	$>10^{13}$ Ω