

Material Datasheet — PEEK (Polyether Ether Ketone)

Overview

PEEK is a high-performance thermoplastic with excellent mechanical strength, thermal stability, and chemical resistance. It maintains its properties at elevated temperatures and is widely used in aerospace, medical, semiconductor, and oil & gas applications. ESD and carbon-filled grades are available.

Key Features

- Exceptional high-temperature performance up to 250°C
- Excellent mechanical strength and stiffness
- Outstanding chemical resistance to acids, bases and organics
- UL94 V-0 flammability rating with low smoke emission
- ESD / carbon-filled / glass-filled grades available
- Sterilizable (autoclave, gamma, EtO)

Technical Properties

Property	Value	Unit	Test Standard
Density	1.30 - 1.32	g/cm³	ASTM D792
Tensile Strength	90 - 100	MPa	ASTM D638
Elongation at Break	15 - 50	%	ASTM D638
Flexural Modulus	3600 - 4000	MPa	ASTM D790
Hardness (Rockwell R)	120 - 126	Rockwell R	ASTM D785
HDT (1.8MPa)	150 - 160	°C	ASTM D648
Melting Point	343	°C	—
Continuous Use Temp	250	°C	—
Water Absorption (24h)	0.1 - 0.5	%	ASTM D570
Dielectric Strength	19	kV/mm	ASTM D149
Flammability	V-0	UL94	UL94
Chemical Resistance	Excellent	—	—

Typical Applications

- Semiconductor: wafer handling, ESD-safe fixtures, test sockets
- Medical: surgical instruments, sterilizable components
- Aerospace: structural components, insulation parts
- Oil & gas: downhole components, seals, bearings
- Industrial: high-temperature gears, bushings, valves

Available Forms

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