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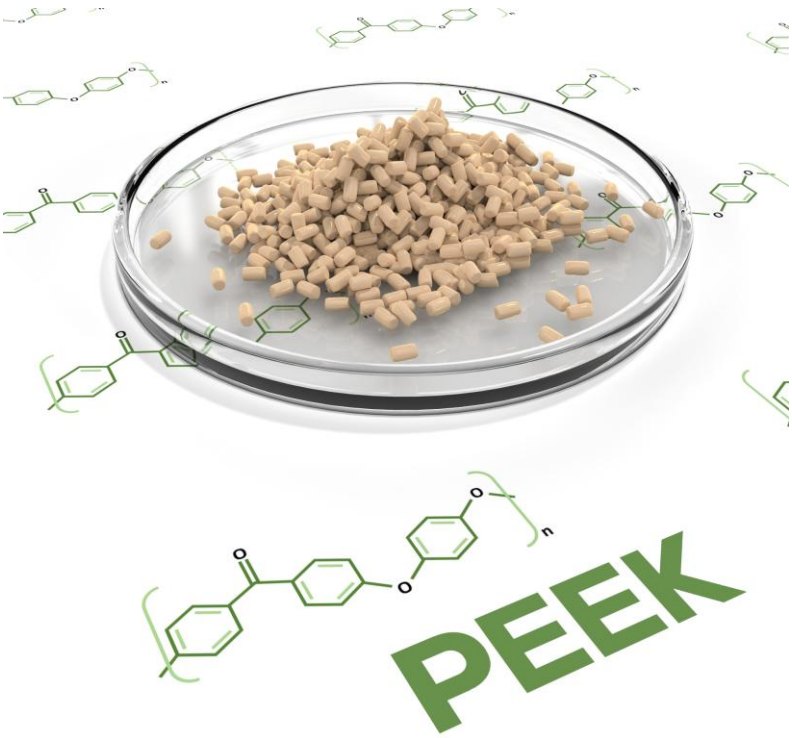
Material Datasheet — PEEK (Polyether ether ketone)



High-performance semi-crystalline thermoplastic with outstanding heat, wear and chemical resistance; excellent hydrolysis resistance and electrical insulation.

This datasheet is suitable for designers of threaded components and hinge assemblies made from this material.

Key specifications

Item	Value
Continuous Use Temperature	260 °C / 500 °F
UL 94 Flame Rating	V-0
Density	≈ 1.30 g/cm^3

Mechanical properties (typical)

Property	Test method	Typical value	Unit
Tensile strength (23 °C)	ISO 527	90–100	MPa
Tensile modulus (23 °C)	ISO 527	3.6–4.0	GPa
Elongation at break	ISO 527	20–40	%
Flexural strength	ISO 178	140–170	MPa
Flexural modulus	ISO 178	3.5–4.2	GPa
Notched impact (Charpy)	ISO 179	4–8	kJ/m^2

Thermal properties

Property	Test method	Typical value	Unit
Melting temperature	ISO 11357	343	°C
HDT (1.8 MPa)	ISO 75	152–160	°C
Thermal conductivity	—	0.25–0.29	W/(m·K)
CTE (linear)	—	45–50	µm/(m·°C)

Electrical properties

Property	Test method	Typical value	Unit
Dielectric strength	IEC 60243	18–25	kV/mm
Relative permittivity (1 MHz)	IEC 60250	3.2–3.4	—
Dissipation factor (1 MHz)	IEC 60250	0.002–0.01	—
Volume resistivity (dry)	IEC 60093	≥ 1×10^{15}	Ω·cm

Tribology

Property	Test method	Typical value	Unit
Coefficient of friction	—	0.2–0.3	—

Moisture & environment

Property	Test method	Typical value	Unit
Water absorption (24 h)	ISO 62	0.1–0.2	%
Equilibrium water absorption	ISO 62	0.5–0.8	%

Chemical compatibility — high-level guidance

Resists most organic and aqueous chemicals; avoid concentrated sulfuric acid.

Assembly guidance — threaded parts & hinges

• Use a torque wrench and target application-validated torque; account for material creep/relaxation over time.

• Distribute bearing stresses with appropriate washers or flange features.

• For low-friction materials, consider prevailing-torque nuts, thread-locking, or mechanical locking features.

• Avoid sharp stress concentrators near thread run-outs and hinge knuckles; use generous fillets and radii.

• Observe service temperature, environment (chemicals/UV/steam), and moisture conditioning effects before final torque/preload selection.

• Match mating material where galvanic/corrosion or differential expansion could be a factor.