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Material Datasheet — PP (Polypropylene)

Lightweight semi-crystalline polyolefin with good chemical resistance and electrical insulation; lower heat and impact than engineering plastics.

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

Key specifications

Item	Value
Continuous Use Temperature	≈ 90 °C / 194 °F
UL 94 Flame Rating	HB
Density	0.90–0.91 g/cm^3

Mechanical properties (typical)

Property	Test method	Typical value	Unit
Tensile strength (23 °C)	ISO 527	25–35	MPa
Tensile modulus (23 °C)	ISO 527	1.2–1.7	GPa
Elongation at break	ISO 527	100–600	%

Thermal properties

Property	Test method	Typical value	Unit
Melting temperature	ISO 11357	160–165	°C
HDT (0.455 MPa)	ASTM D648	60–80	°C
Thermal conductivity	—	0.20–0.22	W/(m·K)

Electrical properties

Property	Test method	Typical value	Unit
Dielectric strength	IEC 60243	25–35	kV/mm
Relative permittivity (1 MHz)	IEC 60250	2.2–2.4	—
Dissipation factor (1 MHz)	IEC 60250	0.0005–0.005	—

Tribology

Property	Test method	Typical value	Unit
Coefficient of friction	—	0.30–0.45	—

Moisture & environment

Property	Test method	Typical value	Unit
Water absorption (24 h)	ISO 62	≤ 0.02	%

Chemical compatibility — high-level guidance

Excellent resistance to aqueous solutions, many acids/bases; avoid strong oxidizing acids and chlorinated solvents.

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.