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Material Datasheet — PA66 (Nylon 66)

Strong, tough polyamide with low friction and excellent wear resistance; moisture-sensitive with property shifts when conditioned.

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

Key specifications

Item	Value
Continuous Use Temperature	≈ 95 °C / 203 °F
UL 94 Flame Rating	V-2
Density	1.13–1.15 g/cm^3

Mechanical properties (typical)

Property	Test method	Typical value	Unit
Tensile strength (23 °C, dry)	ISO 527	70–85	MPa
Tensile modulus (23 °C, dry)	ISO 527	2.4–3.0	GPa
Elongation at break (dry)	ISO 527	10–50	%

Thermal properties

Property	Test method	Typical value	Unit
Melting temperature	ISO 11357	255–265	°C
HDT (1.8 MPa)	ISO 75	70–90	°C

Electrical properties

Property	Test method	Typical value	Unit
Dielectric strength	IEC 60243	15–25	kV/mm
Relative permittivity (1 MHz)	IEC 60250	3.5–4.0	—
Dissipation factor (1 MHz)	IEC 60250	0.01–0.03	—

Tribology

Property	Test method	Typical value	Unit
Coefficient of friction	—	0.25–0.35	—

Moisture & environment

Property	Test method	Typical value	Unit
Water absorption (24 h)	ISO 62	1.0–1.5	%
Equilibrium water absorption	ISO 62	3–8	%

Chemical compatibility — high-level guidance

Good resistance to oils and hydrocarbons; avoid strong acids and some oxidizing agents.

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.