

# Material Datasheet — PMMA (Acrylic)



Transparent thermoplastic with excellent optical clarity and good electrical insulation; lower impact and heat resistance than PC.

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

## Key specifications

Item	Value
Continuous Use Temperature	75 °C / 167 °F
UL 94 Flame Rating	HB
Density	1.17–1.20 g/cm <sup>3</sup>

## Mechanical properties (typical)

Property	Test method	Typical value	Unit
Tensile strength (23 °C)	ISO 527	60–75	MPa
Tensile modulus (23 °C)	ISO 527	2.4–3.3	GPa
Elongation at break	ISO 527	2–7	%

## Thermal properties

Property	Test method	Typical value	Unit
Glass transition temperature (T <sub>g</sub> )	ISO 11357	105	°C
HDT (1.8 MPa)	ISO 75	90–100	°C
Thermal conductivity	—	0.18	W/(m·K)

## Electrical properties

Property	Test method	Typical value	Unit
Dielectric strength	IEC 60243	10–20	kV/mm
Relative permittivity (1 MHz)	IEC 60250	2.6–3.4	—
Dissipation factor (1 MHz)	IEC 60250	0.02–0.06	—

## Tribology

Property	Test method	Typical value	Unit
Coefficient of friction	—	0.40–0.50	—

## Moisture & environment

Property	Test method	Typical value	Unit
Water absorption (24 h)	ISO 62	0.20–0.40	%

## Chemical compatibility — high-level guidance

Resistant to dilute acids and detergents; avoid many solvents and stress-cracking 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.