

Material Datasheet — PTFE (Polytetrafluoroethylene)

Overview

PTFE is a high-performance fluoropolymer with exceptional chemical resistance, excellent dielectric properties, wide operating temperature range (-200°C to +260°C), and the lowest coefficient of friction among all plastics. It is widely used in chemical processing, semiconductor, and electrical insulation applications.

Key Features

- Outstanding chemical resistance to nearly all acids, alkalis and solvents
- Wide temperature range: -200°C to +260°C continuous
- Excellent electrical insulation and low dielectric constant
- Lowest coefficient of friction of any solid material
- Non-stick, non-toxic, FDA compliant grades available

Technical Properties

Property	Value	Unit	Test Standard
Density	2.15 - 2.20	g/cm³	ASTM D792
Tensile Strength	20 - 35	MPa	ASTM D638
Elongation at Break	200 - 400	%	ASTM D638
Flexural Modulus	400 - 600	MPa	ASTM D790
Hardness (Shore D)	50 - 60	Shore D	ASTM D2240
Continuous Use Temp	260	°C	—
Melting Point	327	°C	—
Dielectric Strength	19 - 23	kV/mm	ASTM D149
Dielectric Constant (1MHz)	2.1	—	ASTM D150
Water Absorption (24h)	< 0.01	%	ASTM D570
Chemical Resistance	Excellent	—	—
UV Resistance	Excellent	—	—

Typical Applications

- Chemical processing: pump impellers, valve seats, gaskets, linings
- Semiconductor: wafer carriers, fluid tubing, insulating spacers
- Electrical: high-voltage insulation, wire insulation
- Food & beverage: non-stick components, seal rings
- Sealing: O-rings, backup rings, packing

Available Forms

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