PTFE PRODUCT CATALOGUE — UNFILLED VIRGIN GRADE

Data are typical values measured at 23 °C and 50 % RH unless stated otherwise. All products based on virgin PTFE resin. Performance in service depends on pressure, temperature, and chemical environment.

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1. PTFE FILM

Thickness options: 0.025, 0.050, 0.075, 0.100, 0.125, 0.150, 0.200 mm.

Width: 300 mm, 600 mm, 1000 mm.

Standard roll length: 100 m; 200 m available.

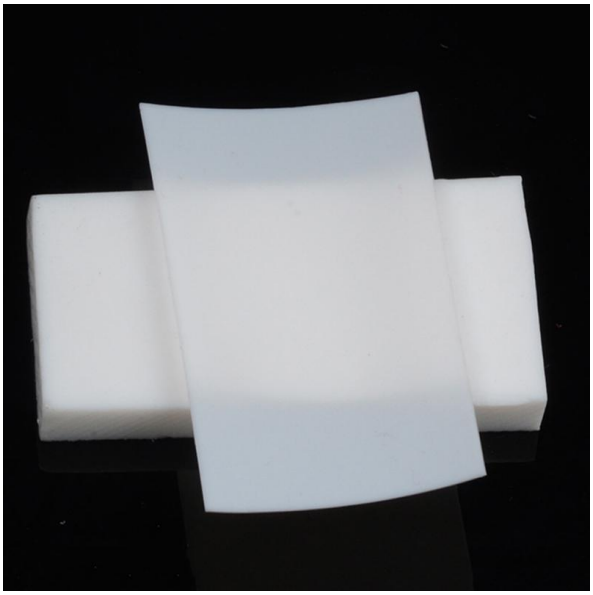
Density: 2.15–2.19 g/cm³ (ASTM D792).

Tensile strength, machine direction: ≥20 MPa (ASTM D882).

Elongation at break, machine direction: ≥200 %.

Dielectric strength (0.050 mm): ≥60 kV/mm (ASTM D149).

Continuous service temperature: -200 °C to +260 °C.



Applications:

Capacitor dielectric in high-frequency and high-voltage circuits.

Release liner for composite curing and adhesive lamination.

Base film for self-adhesive electrical insulation tapes.

Barrier layer in chemical-resistant gaskets and diaphragms.

Wrap for rollers exposed to solvents and acids.

Characteristics:

Dielectric constant 2.1 at 1 MHz; dissipation factor <0.0003.

Surface resistivity $>10^{17}$ Ω per square.

Static friction coefficient against polished steel: 0.08–0.12 dry.

Surface energy <20 mN/m; no substance adheres without surface treatment.

Flame resistance: limiting oxygen index >95 % (ASTM D2863).

No moisture absorption; dimensional change in water <0.01 % after 24 h.

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2. PTFE SHEET & PLATE

Skived Sheet

Thickness: 0.1, 0.2, 0.3, 0.5, 0.8, 1.0, 1.5, 2.0, 3.0, 4.0, 5.0, 6.0 mm.

Standard sheet dimensions: 1000×1000 mm, 1200×1200 mm, 1500×1500 mm.

Roll form available for thickness ≤1.5 mm, width up to 1500 mm.

Tensile strength: ≥15 MPa (ASTM D638).

Elongation at break: ≥200 %.

Moulded Plate

Thickness: 5, 6, 8, 10, 12, 15, 20, 25, 30, 40, 50, 60, 80, 100 mm.

Standard dimensions: 1200×1200 mm, 1500×1500 mm, 1000×2000 mm.

Density: 2.13–2.19 g/cm^3.

Tensile strength: ≥20 MPa.

Hardness Shore D: 55 ±5 (ASTM D2240).

Continuous use temperature: -200 °C to +260 °C.

Applications:

Tank and vessel linings in chemical processing.

Envelope gaskets for glass-lined steel flanges.

Slide bearings, wear pads, and guide strips in machinery.

High-frequency electrical insulation panels.

Cutting boards and work surfaces for cleanrooms.

Characteristics:

Compressive strength at 10 % strain: 10–15 MPa (ASTM D695).

Coefficient of linear thermal expansion: 12×10^{-5} /K (25–100 °C).

Thermal conductivity: 0.25 W/(m·K) (ASTM C518).

Water absorption after 24 h immersion: <0.01 %.

Surface roughness, skived sheet: Ra 0.8–2.0 µm.

Moulded plate withstands 260 °C continuously without softening; melt point 327 °C.

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3. PTFE ROD

Diameter range: 6, 8, 10, 12, 16, 20, 25, 30, 40, 50, 60, 80, 100, 120, 150, 200, 250, 300 mm.

Standard length: 1000 mm, 2000 mm. Custom lengths up to 3000 mm.

Process: extruded (≤120 mm) or moulded (>120 mm).

Density: 2.13–2.19 g/cm³.

Tensile strength (extruded): ≥20 MPa.

Elongation at break (extruded): ≥250 %.

Continuous service temperature: -200 °C to +260 °C.

Applications:

Machined valve seats, seals, and poppets in chemical valves.

Pump shaft sleeves and bearing bushes.

Spacers, standoffs, and insulators in corrosive environments.

Rollers and guide elements for etching and plating lines.

Characteristics:

Diameter tolerance: ±0.15 mm (≤20 mm), ±0.30 mm (20–60 mm), +0.5/-0.2 mm (60–150 mm).

Out-of-roundness <0.10 mm for extruded rod.

No embrittlement after 500 h in boiling 37 % HCl.

Specific gravity variation within a rod length <0.02 g/cm³.

Machinability comparable to free-cutting brass; no coolant required.

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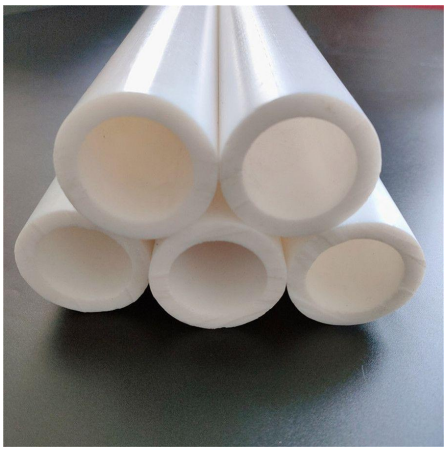
4. PTFE TUBE

Outer diameter (OD): from 3 mm to 300 mm.

Wall thickness (WT): 0.5, 0.75, 1.0, 1.5, 2.0, 2.5, 3.0, 4.0, 5.0, 6.0, 8.0, 10.0 mm.

Process: extruded thin-wall (WT ≤2.0 mm) or moulded thick-wall.

Density: 2.13–2.18 g/cm³.



Tensile strength: ≥20 MPa (ASTM D638, ring specimen).

Elongation at break: ≥250 %.

Continuous service temperature: -200 °C to +260 °C.

Applications:

Chemical transfer lines for acids, alkalis, and solvents up to 260 °C.

Protective sleeves over thermocouples, RTD sensors, and heater elements.

Low-friction bearing sleeves and bushings.

Medical device tubing (non-implant) requiring chemical inertness.

Characteristics:

Wall thickness tolerance: ±0.10 mm for extruded tube (OD ≤25 mm, WT ≤1.5 mm).

Minimum bend radius without kink: 3× OD for thin-wall tube.

Burst pressure for 6 mm OD × 1 mm WT at 23 °C: >5 MPa.

Transparency of thin-wall tube: light transmission >50 % through 0.5 mm wall.

Volume resistivity $>10^{18}$ Ω·cm.

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5. PTFE TAPE (THREAD SEAL)

Unsintered PTFE tape for sealing tapered pipe threads. White, non-adhesive.

Thickness: 0.075, 0.100, 0.125, 0.150 mm.

Width: 12 mm, 19 mm, 25 mm.

Roll length: 10 m, 12 m, 15 m.

Density: 0.40–1.60 g/cm³ (compacted during winding).

Tensile strength: ≥8 MPa (ASTM D882).

Elongation at break: ≥50 %.

Temperature range in service: -190 °C to +260 °C.

Applications:

Sealing NPT, BSPT, and other tapered threads in water, steam, compressed air, fuel, and chemical lines.

Thread lubrication during assembly to prevent galling of stainless steel fittings.

Wrapping of O-rings and gaskets for added chemical protection.

Characteristics:

Pressure hold on 1/2″ NPT joint: ≥0.5 MPa gas, ≥15 MPa liquid at 25 °C.

Resistant to pH 0–14 media except molten alkali metals and elemental fluorine.

Weight change <0.5 % after 24 h in 98 % H_2SO_4 at 23 °C.

Removes cleanly from threads; no hardening or residue.

Complies with gas approval standards: DVGW, BAM (specific grades on request).

PTFE FABRICATED COMPONENTS

Custom-machined and direct-moulded parts from PTFE stock or granular resin.

STOCK MATERIALS

Virgin PTFE (unfilled).

Filled PTFE compounds:

PTFE + 15% glass fibre.

PTFE + 25% carbon / graphite.

PTFE + 60% bronze.

PTFE + 5% MoS_2.

PTFE + 15% glass + 5% MoS_2.

PTFE + PPL (polyphenylene sulfide, 20–25%).

Data given at 23 °C on virgin PTFE unless filler grade is specified.

TECHNICAL PARAMETERS — VIRGIN PTFE

Density: 2.15–2.18 g/cm³ (ISO 1183).

Tensile strength: ≥25 MPa (ISO 527).

Elongation at break: ≥300 %.

Hardness Shore D: 55 ±5 (ISO 868).

Compressive stress at 10% strain: 12 MPa.

Coefficient of linear thermal expansion: 12×10^{-5} /K (25–100 °C).

Thermal conductivity: 0.25 W/(m·K).

Continuous service temperature: -200 °C to +260 °C.

Melt point: 327 °C.

Dielectric strength (1 mm): 20 kV/mm (IEC 60243).

Surface resistivity: $>10^{17}$ Ω.

Water absorption (24 h immersion): <0.01 %.

TYPICAL FILLED GRADE IMPROVEMENTS (vs. virgin PTFE)

15% glass fibre: compressive strength +20%, wear factor K (ASTM D3702) reduced from 5000 to 800.

25% carbon/graphite: thermal conductivity 0.65 W/(m·K), surface resistivity 10^3–10^6 Ω, static dissipation.

60% bronze: thermal conductivity 0.85 W/(m·K), hardness Shore D 68, compressive strength 18 MPa at 10% strain.

5% MoS_2: dynamic friction coefficient lowered by 15%, wear rate halved in dry condition.

PTFE + PPL: cold flow reduced by 70%, compressive strength at 10% strain 18 MPa.

MANUFACTURING RANGE

Machined from skived sheet, moulded plate, extruded rod, moulded tube.

Direct compression moulding for simple geometry in medium-to-large volume.

Isostatic moulding for thick-walled tubes and complex blanks.

Size capability (machined)

Maximum diameter: 2000 mm (gaskets, rings).

Maximum length: 3000 mm (rod-based parts).

Minimum wall thickness after machining: 2.0 mm (virgin), 2.5 mm (filled grades).

Minimum bore: 2.0 mm.

Size capability (direct moulded)

Maximum diameter: 1500 mm.

Maximum height: 800 mm.

Minimum wall thickness: 3.0 mm (virgin), 4.0 mm (filled).

Machining tolerances

Turned diameter: ±0.05 mm (≤100 mm), ±0.10 mm (>100–500 mm).

Linear dimension: ±0.10 mm (≤150 mm), ±0.20 mm (>150 mm).

Flatness (milled surface): 0.05 mm per 100 mm.

Surface finish Ra: 0.4–0.8 µm on sealed surface, 0.8–1.6 µm on general faces.

TYPICAL FABRICATED PARTS

Valve seats (ball, butterfly, plug) – virgin and 15% glass filled.

Gaskets and flange seals – envelope type, full-face, tongue-and-groove.

V-ring and chevron packing sets – machined from solid rings.

Pump diaphragms – 2.0–5.0 mm thickness, operating to 2×10^{6} cycles (virgin PTFE).

Insulating bushings, standoffs, coil formers for HV equipment.

Bearing pads and slide bearings – 25% carbon or 60% bronze filled.

Nozzles and fluid-handling tips – acids, solvents, ultrapure water.

Cryogenic seal rings – -196 °C LNG and liquid nitrogen service.

Labyrinth and lip seals – fractional-millimetre clearance, non-contact.

Laboratory lab-ware – beakers, crucibles, stirrer shafts (virgin only).

APPLICATIONS

Chemical process equipment: seals, seats, packings in contact with HCl, H_2SO_4, HF, NaOH at temperatures from -50 °C to 200 °C.

Semiconductor wet benches: wafer-handling components, insulators, etching-bath parts; no ion extraction, resistivity >10^{18} Ω·cm.

Food and pharmaceutical machinery: FDA-compliant virgin PTFE for dough guides, sealing washers, fluid-contact parts (21 CFR 177.1550).

Power generation: transformer lead-out insulators, generator brush-holder sleeves.

Oil & gas: cryogenic seal rings for LNG, sour-gas valve seats (carbon-filled PTFE for anti-static).

CHARACTERISTICS

Zero moisture absorption; dimensional change <0.01 % after 24 h in 23 °C water.

No embrittlement or hardening in continuous 260 °C air for 10 000 h.

Static friction coefficient vs. polished steel: 0.08 (virgin).

Filled grades eliminate cold-flow under bolt load; 15% GF shows <2% creep after 100 h at 14 MPa, 23 °C.

Carbon-filled grades bleed static charge; surface resistivity 10^3–10^6 Ω meets ATEX and IEC 60079-0 for non-conductive parts.

60% bronze filled grade withstands 15 MPa compressive load at 100 °C with <5% permanent set.

All grades pass UL94 V-0; limiting oxygen index of virgin PTFE >95 %.

Non-stick surface; PTFE parts release caked product without cleaning chemicals.

Virgin PTFE permits welding; seam tensile strength >70% of parent sheet (PFA or FEP welding rod).

Chemical resistance: attacked only by molten alkali metals, elemental fluorine at elevated pressure, and chlorine trifluoride.