PTFE Sheet — Technical Data Sheet / Datasheet / TDS

Property (units)	Typical value / range	Notes (grade / measurement context)
Chemical name	Polytetrafluoroethylene (PTFE/Teflon)	CAS 9002-84-0
Appearance / color	Natural white (can be pigmented or filled)	Smooth / skived surfaces; etched/brown on one side for bonding where specified
Density (g/cm³)	2.12 – 2.20	Typical solid PTFE (virgin); filled grades slightly higher.
Melt / softening point	~327 °C (peak melting)	PTFE does not have a conventional Tg — transforms above melt.
Continuous service temperature	-200 °C to +260 °C (typical)	Short-term peaks above 260 °C possible; check grade.
Thermal conductivity (W/m·K)	0.25 – 0.30	Very low thermal conductivity compared with metals.

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Specific heat capacity (J/kg • K)	~1000 - 1200	Varies with temperature.
Coefficient of linear thermal expansion ($\times 10^{-5}$ /° C)	~12 - 20 (varies by direction & grade)	High thermal expansion — design spacing accordingly.
Tensile strength (MPa)	10 - 40 MPa (typical unfilled)	Wide range by processing (molded vs skived) and fillers.
Tensile modulus (GPa)	0.3 - 0.8	Very flexible compared with engineering thermoplastics.
Elongation at break (%)	200 - 400%	Excellent ductility.
Hardness	Shore D ~50 - 55	Depends on manufacturing and fillers.
Compressive strength (MPa)	5 - 30 (grade & thickness dependent)	Typical engineering design values vary.

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Coefficient of friction (static)	0.05 – 0.20	Very low (slippery).
Wear / sliding performance	Excellent — low wear & excellent release	Improves with certain fillers for bearing use.
Water absorption (24 h, %)	~0.01% (negligible)	Very low moisture uptake.
Chemical resistance	Excellent to almost all chemicals (acids, bases, solvents)	Exceptions: molten alkali metals, elemental fluorine, powerful fluorinating agents at high temperature.
Dielectric constant (εr) @ 1 MHz	~2.0 – 2.2	Very low permittivity — good insulator.
Dissipation factor (tan δ) @ 1 MHz	~0.0001 – 0.0007	Excellent insulating stability at frequency.
Dielectric strength (kV/mm)	Typical ranges reported ~18 – 170 kV/mm (test method & thickness dependent)	Actual numbers vary widely with sample thickness and test conditions.

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Volume resistivity (Ω • cm)	~10^{17} - 10^{19} Ω • cm	Very high resistivity.
Flammability / LOI	UL 94: V-0 possible; Limiting oxygen index (LOI) very high (~95%)	Generally self-extinguishing; non-combustible organic residue.
Radiation resistance	Poor to fair (degradation under high dose ionizing radiation)	For radiation exposures consult specific datasheet.
Food / medical compliance	Many PTFE grades available meeting FDA 21 CFR 177.1550 and other food-contact standards	Check supplier certification for specific grade.
Typical manufacturing grades / types	Virgin (molded, skived), expanded PTFE (ePTFE), filled PTFE (glass/graphite/carbon/bronze), sintered PTFE	Select grade by mechanical, thermal, or friction needs.