

CNC MACHINING

PTFE | FR & UV

Flame retardant UL 94 V-0 / UV resistant

PRODUCT DESCRIPTION

Polytetrafluoroethylene (PTFE) belongs to the group of highly chemically resistant fluorothermoplastics. Due to its high molecular weight, highly chemically resistant PTFE cannot be processed by melting, but only by pressing and sintering. Being relatively soft PTFE is easy to machine and cut.

APPLICATIONS

Famous as Teflon® PTFE's non-stick properties make it highly suitable for low friction applications.

Chemical plants, food and pharmaceutical.

Sliding applications with exposure to extreme chemicals.

Valves, filter plates, fittings, pipelines, water treatment.



KEY PRODUCT BENEFITS

- Very good sliding properties, non stick
- Extremely high resistance to chemicals, and oxidizing acids
- Very low moisture absorption.
- High thermal stability, but low dimensional stability
- Very good electrical insulation properties

ALTERNATIVES

Can not be bonded glued or welded. POM, PA6 and PEEK also offer low friction sliding, but PTFE has an extremely low coefficient of friction.

Combustion gases are fluoric, highly toxic - Use alternative Flame retardant plastics in high risk areas.

Low dimensional and thermal stability, due to a glass transition temperature under 0 °C and high CTE.

TRADE NAME(S) SUPPLIED*

TECAFLON® or AI-Plastics.

<https://www.ensingerplastics.com/en/shapes/products/tecaflon-ptfe-natural>

<https://www.aiplastics.com/knowledge-hub-ptfe>

COMMONLY USED TRADE NAMES

Fluorosint®, Interplast, Rulon®, Semitron®, TECAFLON®, Teflon®.

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PROPERTIES

MECHANICAL PROPERTIES*	VALUE	UNITS
Colour		White
Density	2.18	g/cm ³ (Specific)
Ultimate Tensile Strength (at break)	25	MPa
Tensile yield strength	Not applicable	MPa
Modulus of elasticity in tension (Young's Modulus)	700	MPa
Hardness	30	MPa
Elongation at yield	Not applicable	%
Elongation at break	230	%
Unnotched impact strength (Charpy)	No break	kJ/m ²
Notched impact strength ASTM D256 (Charpy)	Not applicable	kJ/m ²
Water absorption (plastic) / corrosion (metal)	0	%

THERMAL PROPERTIES*	VALUE	UNITS
Melting temperature	327	°C
Heat deflection (plastic) or service temp (metal)	260	°C
Thermal conductivity	0.25	W/(K*m)
Coefficient of thermal expansion	120	×10 ⁻⁶ /K (µm/m/°C)
Flammability (UL 94)	V-0	UL 94 classification

ELECTRICAL PROPERTIES*	VALUE	UNITS
Specific surface resistivity	>10 ¹⁶	Ω
Specific volume resistivity	>10 ¹⁶	Ω*cm
Dielectric strength	48	kV/mm

MACHINING PROPERTIES*	VALUE	UNITS
Machinability rating	18 - Preferred	Metal AISI Plastic 1-20
Protolabs general tolerance	± 0.1	mm
Relative material cost	£££	Per unit weight
Recyclability	7	EU RIC codes
Basic safety information #	Avoid fumes	Refer to SDS

A limited summary, refer to the Safety Data Sheet (SDS) for comprehensive instruction. Available on request.

PROPERTIES CODES

ESD Electrostatic dissipative	FDA Food and drug administration / food safe
FR Flame retardant (UL 94 V-0)	GF Glass filled (% by weight)
TR Transparent (only when polished)	UV Ultraviolet (sun) light and weather resistant

* All materials are purchased from audited major suppliers, to ensure consistent properties and quality. More than one supplier may be used, for identical grades, in which case we can not offer a specific choice. All properties are average/approximate, for specific ranges refer to the following suppliers data sheets. Protolabs makes no warranties regarding the content, and excludes liability for any inaccuracies in this document.