

Physical Properties of PTFE and PTFE Tubing

Properties	Methods	Units	Typical values
Density	ASTM D 792	g/cm ³	2,18
Tensile strength	ASTM D 4895	N/mm ²	25
Elongation at break	ASTM D 4895	%	300
Dielectric strength (0,5 mm thickness) (50 . 109 Hz)	ASTM D 149	kV/mm	50
Dielectric Constant	ASTM D 150	-	2,1
Dissipation Factor	ASTM D 150	-	<0,0002
Volume Resistivity	ASTM D 257	Ω . cm	1017
Surface Resistivity	ASTM D 257	Ω	1015

Applications of PTFE

Paste extruded PTFE tubing can be used in a temperature range from -200°C (-392°F) up to 250°C (482°F) in static conditions.

It is used in an extremely wide range of applications: Biomedical, Aerospace, Electrical, Electronics, Household Appliances, CPI and Automotive.

Market demand of superior quality PTFE tubing is increasing more and more.

Our production systems and control can ensure the highest quality and consistency in terms of properties and performance.

PTFE Thin Wall Tubing can be supplied in different colours and fillings.

Special dimensions and tolerances can be produced on request.

Assembly prescription

Sharp bending to prevent collapse of the tubing wall has to be avoided during assembly.

Sharp bends result in a limitation of the flow and sometimes the tubing may crack

Certifications

PTFE tubing normally complies with UL Standards for electric insulation and flammability.

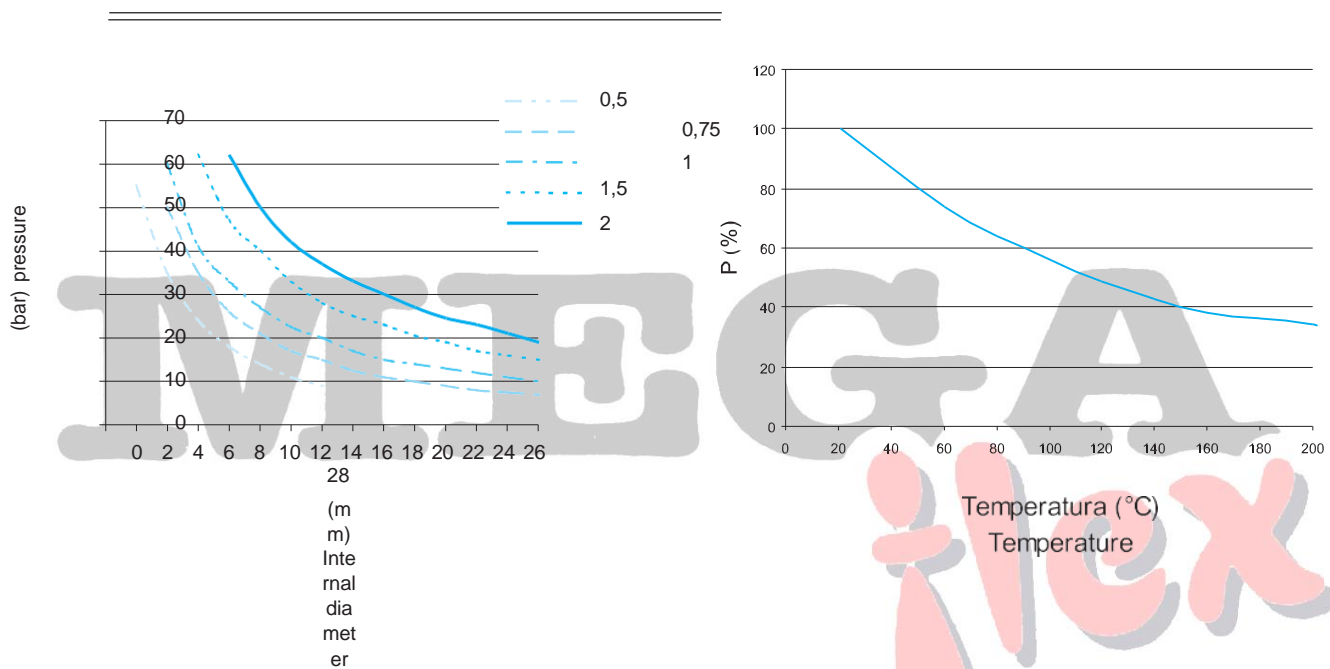
Working conditions

In static conditions the upper working temperature limit is 250°C (482°F). Under dynamic conditions the limit has to be reduced to 200°C (392°F).

Working pressure is a function of the burst pressure, and it is related to tubing sizes and to temperatures involved.

The following diagram reports burst pressure values related to tubing sizes at room temperature.

Working pressure of PTFE tubing is also function of the temperature. When temperature increases, pressure has to be lowered by a given percentage, as per following diagram.



Minimum bending radius

Minimum bending radius of PTFE Thin Wall Tubing depends on many factors; most important are: dimension, working temperature, applied pressure and pressure fluctuations; of lesser importance the nature of fluid conveyed.

Roughly the minimum bending radius (at 20°C-68°F) depends on OD and wall thickness.

If wall thickness is 1 mm it can be considered:

$R_{min} \text{ mm} = 9 \text{ to } 11 \text{ times OD mm (value to be increased at the decreasing of wall thickness).}$

When special configurations are required it is possible to heat the tubing first, followed by bending and cooling it in the required shape.

A metallic malleable insert to avoid the collapse of the walls can be put into the tubing during bending.

Quality

The manufacturing process of PTFE Thin Wall Tubing has 100% automatic control system, capable of a dimensional fail-free output.

Main physical and dimensional characteristics are according to the specific Standards.

Standards

Dimensions and characteristics of PTFE Thin Wall Tubing are dictated by various Standards for the different application fields.

The most important and widespread Standards are AMS, ASTM, BS, MIL. and ISO 13000-1.

In the following pages you will find tables of dimensions and tolerances of some of the quoted Standards, together with weight per unit length. PTFE Thin Wall Tubing is available in coils of different winding diameters according to their dimensions. Spaghetti tubing is on spools of various dimensions.

PTFE Thin Wall Tubing tolerances are in accordance with ISO

13000-1, para. 4.2.4:

Inner Diameter ID tolerance

< 5 mm \pm 0.25 mm

> = 5 < 25 mm \pm 5 %

Wall Thickness w tolerance

< 1 mm \pm 0.1 mm

> = 1 mm \pm 10 %

Standard length of supply are 25, 50 and 100 meters (82, 164 and 328 ft.).

Tubing can be supplied in special continuous long lengths or cut on specific lengths on demand.