

TEFLON® O-RING

MATERIAL: Polytetrafluoroethylene (PTFE)

MATERIAL DESCRIPTION

Polytetrafluoroethylene (PTFE) is a high molecular weight polymer, one of the most versatile plastic materials known and useful for a large range of products for applications excluded to other materials.

PTFE is generally considered a thermoplastic polymer; at 327°C (620.6°F) it retains a very high viscosity, thus requiring particular transformation techniques for manufacturing of finished and semi finished goods. PTFE can be used in a temperature range from 200°C (328°F) to +260°C (500°F).

OUTSTANDING CHARACTERISTICS

- High heat resistance
- High resistance to chemical agents and solvents • High anti adhesiveness
- High dielectric properties
- Low friction coefficient
- Non toxicity

THERMAL PROPERTIES

PTFE is one of the most thermally stable plastic materials. There is no appreciable decomposition at 260°C (500°F), so that PTFE, at this temperature, still possesses the greater part of its properties. Appreciable decomposition begins at over 400°C (932°F). The coefficient of the thermal conductivity of PTFE does not vary with the temperature. It is relatively high, so that PTFE can be considered to be a good insulating material. The mixing of suitable fillers improves the thermal conductivity.

BEHAVIOR IN PRESENCE OF FOREIGN AGENTS

PTFE is practically inert against known elements and compounds. It is attacked only by the alkaline metals in the elementary state, by Chlorine trifluoride and by elementary Fluorine at high temperatures and pressures. PTFE is insoluble in almost all solvents at temperatures up to about 300°C (572°F). Fluorinated hydrocarbons cause a certain swelling which is however reversible; some highly fluorinated oils, at temperatures over 300°C (572°F), exercise a certain dissolving effect upon PTFE. High energy radiation tends to cause the breaking of the PTFE molecule, so that the resistance of the product to radiation is rather poor. The gas permeability of PTFE is similar to other plastic materials. The permeability does not depend only on the thickness and pressure, but also on the working techniques.

PHYSICAL MECHANICAL PROPERTIES

The tensile and compressive properties are to a large degree influenced by the working processes and the polymer used. PTFE, however, can be used continuously at temperatures up to 260°C (500°F), while possessing still a certain compressive plasticity at temperatures near to the absolute Zero.

The hardness Shore D, measured according to the method ASTM D 2240, has values comprised between D50 and D60. According DIN 53456 (load 13.5 Kg for 30 sec.) results in an hardness range between 27 and 32 N/mm².

* RAGCO supports the autonomy of its locations to select the best products to service their markets. Subtle variations of these specification may exist. Contact your RAGCO affiliate for confirmation.

TEST REPORT FOR COMPOUND TEF

DUROMETER: 50 - 60 SHORE D

COLOR: WHITE

PROPERTIES	RESULTS	ASTM* TEST METHOD
Density	2.14 - 2.18 g/cm ³	D792
Tensile Strength	≥ 20 N/mm ²	D4894
Elongation at Break	≥ 200%	D4894
Compressive Strength at 1% Deformation	4 -5 N/mm ²	D695
Coefficient of Friction (dynamic)	0.06	D1894
Service Temperature (min max)	-200°C (-328°F) min +260°C (500°F) max	
Dielectric Strength in Air	1.33 g/cm ³	D149

*American Society for Testing and Materials