Compound TEF

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/mm^2.

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MAIN PROPERTIES FOR COMPOUND TEF

MATERIAL: Virgin PTFE (Teflon®)
DUROMETER: 50-60 Shore D
COLOR: White

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

*American Society for Testing and Materials

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