

Group of engineered PTFE compounds

1. Structure

- PTFE 1** – pure PTFE without any additions,
PTFE M1 – modified PTFE (2nd generation PTFE)
fillers: glass, graphite, carbon, bronze, molybdenum sulphide, aluminum oxide, pigments and polymers

2. Characteristics

PTFE 1

- resistant to virtually all organic and inorganic chemicals
- temperature resistant from -269°C to +260°C
- excellent electrical insulation properties,
- low coefficient of friction,
- no stick-slip effect,
- marked anti-adhesive behavior,
- physiologically harmless (FDA and BfR conformity),
- outstanding weather resistance,
- no aging,
- no water absorption,
- low thermo-conductivity,
- extremely low flammability (UL 94 at 1,5mm: VO, LOI index: 95%)
- relatively low wear resistance,

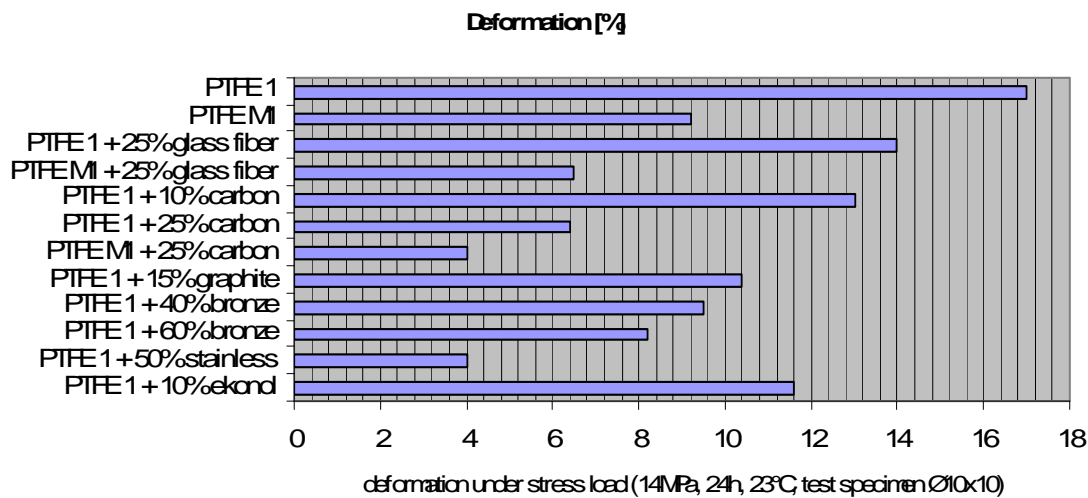
PTFE M1:

- lower deformation under load stress,
- lower tendency to cold flow,
- tighter structure with fewer voids,
- improved compression stress relaxation (recovery),
- improved welding qualities,
- smoother surfaces on machined parts.

3. The influence of fillers on the characteristics compared to pure PTFE

Cecha	Filler			
	glass	carbon	bronze	graphite
Density	+	-	+	-
Tensile strength	-	-	-	-
Hardness	+	+	+	+
Compression strength / deformation under stress load	+	+	+	+
Wear resistance	+	+	+	+
Coefficient of friction	+	+	+	+
Thermal expansion	-	-	-	-
Temperature range	=	=	=	=
Thermo-conductivity	=	+	=	+
Electro-conductivity	=	+	=	+
Dielectric strength	-	-	-	-
Porosity	+	+	+	+
Chemical resistance	-	-	-	-

+ increased, - decreased, = not affected



4. Applications

Filler	Characteristics	Weight addition of filler	Application
glass	good pressure resistance high wear and tear resistance good electrical properties FDA conformity reduced thermal coefficient of expansion	up to 40%	sealing and guide elements, under static and dynamic stress load, insulation elements
graphite	good pressure resistance, improved heat conductivity very good dry-operation characteristics	up to 15%	sliding bearings for smooth counter-faces, static and dynamic sealing elements under load stress
carbon	very good pressure resistance very high resistance to wear and tear great hardness improved electrical conductivity	up to 35%	dynamic stress load withstanding sealing elements and bearings
carbon fiber	very low deformation under load stress very good chemical resistance good resistance to wear and tear also in water	up to 25%	sliding bearings
bronze	very good pressure resistance high wear and tear resistance good emergency running properties	up to 60%	sliding bearings and guide rails, sealing and guide elements
lead pigment	electrical conductivity	up to 4%	anti-static equipment
polymers	good pressure resistance high wear and tear resistance	up to 20%	sliding bearings and expendable parts for smooth counterfaces