

# TECHNICAL DATA SHEET



## fluteck® P4000 BZ PTFE Bronze Compound

### Product Description.

Fluteck™P4000 BZ PTFE Bronze Compound is a filled compound based on Virgin PTFE containing 60% Bronze for Ram Extrusion, Compression and Isostatic moulding.

### Product Properties:

- Improved thermal dimensional stability
- Improved deformation under load
- Reduced cold flow
- Improved compression strength
- Exceptional temperature resistance
- High thermal conductivity
- Good chemical stability
- Reduced friction & wear; Low friction behaviour
- Improved surface hardness
- High resistance to abrasion

	Property	Method	Units	Specification
Physical	Color	-		Brown
	Specific gravity	ASTM D792	g/cm <sup>3</sup>	3,80 – 4,00
	Water absorption	ASTM D570	%	0,03
	Flamability	UL 94		V-0
Mechanical	Tensile strength	ASTM D4745	MPa	≥ 17
	Elongation	ASTM D4745	%	≥ 150
	Hardness	ASTM D2240	Shore D	≥ 65
	Ball Hardness	ASTM D785	MPa	≥ 30
	Deformation under load (140 Kg/cm <sup>2</sup> for 24 hrs. At 23° C)	ASTM D621	%	5,5 - 6,5
	Permanent deformation (after 24 hrs. Relaxation at 23° C)	ASTM D621	%	2,5 - 3,5
	Coefficient of static friction	ASTM D1894		0,18 – 0,20
	Coefficient of dynamic friction	ASTM D1894		0,16– 0,18
	Wear coefficient	-	$\frac{\text{cm}^3 \text{ min}}{\text{Kg m h}} \cdot 10^{-8}$	10 - 15
Thermal	Thermal conductivity	ASTM C177	W/ m·K	0,65
	Coefficient of linear thermal expansion From 25 to 100 °C	ASTM D696	10 <sup>-5</sup> / °C	8,5 - 10
Electrical	Volume resistivity	ASTM D257	Ohm·cm	10 <sup>7</sup>
	Surface resistivity	ASTM D257	Ohm	10 <sup>6</sup>

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## Typical properties.

fluteck™P4000 BZ is a PTFE Bronze Compound preferred for parts and components requiring very good mechanical properties.

fluteck™P4000 BZ offers an excellent combination of properties typical of fluoropolymer resins:

- Service Temperature: fluteck™P4000 BZ offers excellent resistance to continuous service temperatures – working conditions from -100° C (-148°F) up to 250°C (482°F) and, for limited periods, even to higher temperatures; product's low temperature resistance allows satisfactory performance down to -200°C (-328°F).
- Chemical resistance: fluteck™P4000 BZ offers high inertness towards nearly all known chemicals. Only attacked elemental alkali metals, chlorine trifluoride and elemental fluorine at high temperature and pressures might affect properties. Bronze filled PTFE has limited chemical resistance in some acids and alkalis.
- Solvents resistance: fluteck™P4000 BZ offers insoluble properties in all solvents up to temperatures as high as 300° C (572° F). Certain highly fluorinated oils only swell and dissolve PTFE at temperatures close to the crystalline melting point.

Oxidation of the bronze can result in a discolouration of the finished part without affecting on the quality of the product.

## Typical Application.

fluteck™P4000 BZ PTFE Bronze Compound offers excellent properties in the chemical processing, in automotive industries, in sealing application and in mechanical applications in general for bushing, sliding pads, for slide ways for machine tools, piston rings, compressors, pumps, hydraulics presses. High wear, abrasion resistance and good wear compression properties are suitable for the majority of dry bearing applications against hard counter-surfaces.

fluteck™P4000 BZ PTFE Bronze Compound is commonly used filler for dynamic seal applications requiring high wear resistance under strong compression but where high chemical resistance is not required. Large quantities of bronze reduce deformation under load and raise the thermal and electrical conductivity of PTFE compound. These two characteristics are beneficial to applications where a part is subjected to load at extreme temperatures

fluteck™P4000 BZ PTFE Bronze Compound can be easily machined. It's useful in applications which undergo high mechanical loads or high-speed rubbing contacts where the bronze filler supplies the strength and conductivity to carry away excess, unwanted heat.

## Storage and Handling.

fluteck™P4000 BZ PTFE Bronze Compound can be stored for a long period of life and is exceptionally resistant to aging and weather conditions up to 10 years. Specific aging tests carried out on sample exposed to aging and atmospheric conditions, showed no changes in weight and volume. In case of semi-finished products, before processing or before the machining, it is advisable to store the material for 24 hours in the production area, preferable in a clean and dry place at a temperature of less than 25°C (77°F), preferably 21-25°C (70-77°F). This is very important when room temperature is low; in such cases the material should be conditioned up to 72 hours in the production area in the recommended temperature range.

## Safety instruction.

Follow the normal precautions observed with all fluoropolymers.

Please consult the Material Safety Data Sheet and Product Label for information regarding the safe handling of the material. By following all precautions and safety measures, processing, machining, and using these products poses no known health risks. General handling and processing precautions include: 1) Process only in well-ventilated areas. 2) Do not smoke in working areas. 3) Avoid eye contact. 4) Avoid mouth contact. 5) If skin comes into contact with these products during handling, wash with soap and water afterwards. 6) Avoid contact with hot fluoropolymers.

The user must verify that the finished parts, made out of the semi-finished product, are technically suitable for the requested application. The user must also verify that the finished item may not cause any modification to the organoleptic properties of the foodstuff and that the item's technological fitness it is assigned to may be guaranteed.

For each foreign country market, where the articles are introduced into, it is user's responsibility to verify whether both material than articles comply with the applicable laws and regulations.

## Delivery format.

fluteck™P4000 BZ PTFE Bronze Compound is supplied in the following shapes and formats:

Semi-finished products: rods, tubes, sheets, tapes, strips. Shapes and sizes as per our General Size List and/as per customer request. Machined parts: Shapes and sizes as per customer request.

**Note:** The information contained in this technical data sheet have been collected and ranked on technical data coming from reliable statistic series gathered in the field over the years. All information are intended only as general guidelines for use at user discretion. We do not guarantee any specific result and do not assume any liability in connection with the use of the products in the described application. None of the information included in this document is to be taken as a licence to operate under, or recommendations to infringe any existing patents. Before the use, the product has to be sampled and tested in the specific application and in the field of use at working condition in order to be approved by the us

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