

TECHNICAL DATA SHEET

fluteck[®] K301 PEEK Carbon fiber compound

Product Description.

fluorseals[™] fluteck[™] K301 PEEK Carbon fiber compound is a high performance thermoplastics polymer based on 30% Carbon fiber reinforced Polyetheretherketone (PEEK).

Product Properties:

- Excellent heat resistance
- Low coefficient of friction
- Very low coefficient of thermal expansion
- Very high dimensional stability
- High mechanical strength, stiffness and creep resistance
- Fatigue resistant
- Flame retardant
- Excellent chemical resistance
- High energy radiation resistant
- Radiation and heat sterilizable

Property	Method	Units	Specification	
Physical	Specific gravity	ASTM D 792	g/cm ³	1,40
	Water absorption, 24 hours	ASTM D 570	%	0,1
	Mold shrinkage, along flow	ASTM D 955	%	0,0-0,2
Mechanical	Elongation, at break	ASTM D 638	%	≥1,8
	Tensile strength, at break (23°C)	ASTM D 638	MPa	≥ 200
	Tensile modulus	ASTM D 638	GPa	≥ 20
	Izod impact strength, notched	ASTM D 256	J/m	≥ 60
	Hardness Shore	ASTM D 2240	Shore D	≥ 80
	Hardness Rockwell, M scale	ASTM D 785	Rockwell	≥ 100
	Coefficient of friction (dry conditions)	ASTM D 3702	-	0,16 – 0,18
	Coefficient of friction (lubricated conditions)	ASTM D 3702	-	0,14 – 0,17
Thermal	Peak Melting Temperature	ASTM D3418	°C	342-344
	Specific heat capacity, at 23°C	DSC	kJ kg ⁻¹ °C ⁻¹	1,8
	Thermal conductivity, at 23°C	ASTM E1530	W/mK	0.95
	Deflection Temperature, 1.8MPa unannealed	ASTM D648	°C	315
	CLTE-Flow direction, -50 to 50°C	ASTM E831	10 ⁻⁶ /°C	6,5
	Flammability	UL94	-	V-0
Electrical	Dielectric Strength, 2mm thk	ASTM D149	kV/mm	≥20
	Surface Resistivity	ASTM D257	Ohm	10 ¹¹
	Volume Resistivity	ASTM D257	Ohm*cm	10 ⁵

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Typical properties.

fluteck™K301 PEEK Carbon fiber compound offers an excellent combination of properties typical of the polyaryletherketone family:

- Service Temperature: fluteck™K301 offers excellent high temperature performance, with glass transition temperatures ranging between 143°C (289°F) - 152°C (305°F), melting temperatures between 343°C (650°F) - 353°C (667°F) and a continuous-use temperature of 270°C (518 °F).
- Chemical Resistance: fluteck™K301 resists corrosion even at elevated temperatures thanks to its ability to withstand a wide range of acids, bases, hydrocarbons and organic solvents. It has low moisture absorption and is resistant to steam, water and sea water, with low permeability.
- Mechanical & Wear: fluteck™K301 has excellent strength, stiffness, long-term creep and fatigue properties combined with an excellent abrasion and wear resistance.

Typical Application.

fluteck™K301 PEEK Carbon fiber compound provides exceptional performance over a wide range of temperatures and extreme conditions. This semi-crystalline advanced material is widely regarded as one of the highest performing thermoplastics in the world. It provides a unique combination and range of high performance properties that enables it to replace metal in some of the most severe end-use environments.

Its thermal performance offer longer life, reliability and increased safety margins in harsh environments. The mechanical performance of fluteck™K301 allows parts to be designed with reduced weight, greater durability or strength, and finally the wear and chemical resistance can help maintain part life and integrity.

This properties allow fluteck™K301 application in several fields such as Chemical, Electrical and Electronic, Petrochemical, Automotive, Mechanical, Medical, Aeronautics and Semiconductor.

Storage and Handling.

fluteck™K301 PEEK Carbon fiber 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. The products shall be stored indoors in a normal environment (air at 10-30°C /50-86° F and 30-70 % RH) and kept away from any source of degradation such as sunlight, UV lamps, chemicals, ionising radiation, flames, etc. Dimensional change (camber, warpage, shrinkage) of the products as well as slight colour shifts of the external surface can occur with time. The letter does generally not pose a problem in case of semi-finished products since the surface-layer is mostly removed anyway upon machining them into finished parts.

During machining of the semi-finished products, evacuate swarf to prevent slipping or tripping hazard and observe the maximum allowable concentration of dust levels on the workplace which apply in your county. Wear safety goggles during machining.

Safety instruction.

Standard industrial safety recommendations shall be observed. Temperature above the melting point shall be avoided.

In case of overheating and combustion, the main products formed are carbon monoxide and carbon dioxide. Formation of further hazardous decomposition products depends upon the fire conditions and cannot be excluded. Suitable extinguishing media are water, foam, dry chemical, CO₂. Firemen should wear self-contained breathing apparatus and protective clothing to prevent contact with skin and/or eyes. If exposed to combustion fumes in a high concentration, bring the victim into fresh air. If molten material contacts skin, cool rapidly with cold water and obtain medical attention for removal of adhering material and treatment of the burn,

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™K301 is supplied in the following shapes and formats:

Semi-finished products: rod and tubes through extrusion, compression and spin-casting moulding. Shapes and sizes as per fluorseals™ 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. Fluorseals 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.

Rev: 03/2015



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Company Quality System UNI EN ISO 9001:2008 cert. CISQ/IIP N°061 First issue 1994
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