

TECHNICAL DATA SHEET

fluteck[®] K300 PEEK

Product Description.

fluorseals™ fluteck™ K300 PEEK is a high performance thermoplastics polymers based on unreinforced Polyetheretherketone (PEEK).

Product Properties:

- FDA food contact compliant
- Excellent wear & friction behaviour
- Low permeability
- Low abrasion at the counterpart surface of soft metals
- Good dimensional stability at high temperature;
- Good electrical strength
- 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 | 1,30-1.32 |
| | Water absorption, 24 hours | ASTM D 570 | % | 0,10 |
| | Mold shrinkage, along flow | ASTM D 955 | % | 1-1.3 |
| Mechanical | Elongation, at break | ASTM D 638 | % | ≥10 |
| | Tensile strength, at Yield (23°C) | ASTM D 638 | MPa | ≥ 95 |
| | Tensile modulus | ASTM D 638 | GPa | 3.3 – 4 |
| | Izod impact strength, notched | ASTM D 256 | J/m | ≥ 85 |
| | Hardness Shore | ASTM D 2240 | Shore D | ≥ 80 |
| | Hardness Rockwell, M scale | ASTM D 785 | Rockwell | ≥ 90 |
| | Poisson 's Ratio | ASTM E132 | - | 0.33 |
| Thermal | Peak Melting Temperature | ASTM D3418 | °C | 340-343 |
| | Specific heat capacity, at 23°C | DSC | kJ kg ⁻¹ °C ⁻¹ | 2.2 |
| | Thermal conductivity, at 23°C | ASTM E1530 | W/mK | 0.25 |
| | Deflection Temperature, 1.8MPa unannealed | ASTM D648 | °C | 157 |
| | Relative Thermal Index - electrical | UL746B | °C | 260 |
| | Relative Thermal Index - mechanical w/o impact | UL746B | °C | 240 |
| | Relative Thermal Index - mechanical w/ impact | UL746B | °C | 180 |
| | Flammability | UL94 | - | V-0 |
| Electrical | Dielectric Strength , 2mm thk | ASTM D149 | kV/mm | 22 |
| | Surface Resistivity | ASTM D257 | Ohm | 10 ¹⁷ |
| | Volume Resistivity | ASTM D257 | Ohm*cm | 10 ¹⁷ |

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Typical properties.

fluteck™K300 offers an excellent combination of properties typical of the polyaryletherketone family:

- Service Temperature: fluteck™K300 offers excellent high temperature performance, with glass transition temperatures ranging between 143°C (289°F) - 162°C (323°F), melting temperatures between 343°C (650°F) - 353°C (667°F) and a continuous-use temperature of 240 °C (464 °F).
- Chemical Resistance: fluteck™K300 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 properties: fluteck™K300 has excellent strength, stiffness, long-term creep and fatigue properties. High abrasion and cut through resistance combined with a low coefficient of friction
- Electrical Performance: fluteck™K300 electrical properties are maintained over a wide frequency and temperature range

Typical Application.

fluteck™K300 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™K300 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™K300 application in several fields such as Chemical, Electrical and Electronic, Petrochemical, Automotive, Mechanical, Medical, Aeronautics, Semiconductor and Food industry.

Statement on suitability for contact with foodstuff.

FDA Approved US Regulation

- Code of Federal Regulations 21 CFR Ch. 1; USA regulations sections 177.2415 – Polyaryletherketone

EU Regulation

- 2002/72/CE, 2007/19/CE, 2008/39CE on plastic materials and articles to come in contact with food.

Storage and Handling.

fluteck™K300 PEEK 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™K300 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.

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