KetaSpire® KT-810
polyetheretherketone

PRELIMINARY DATA SHEET

KetaSpire® KT-810 is an ultra-high molecular weight natural PEEK resin having a melt viscosity ranging from 0.51-0.65 kPa-s as compared to 0.38-0.50 kPa-s for standard high-viscosity PEEK grades such as KT-820. KetaSpire PEEK is produced to the highest industry standards and is characterized by a distinct combination of properties, which include excellent chemical resistance to organics, acids and bases; exceptional retention of mechanical properties up to 240°C (464°F); best-in-class fatigue resistance; excellent wear resistance; ease of melt processing; and high purity. The KT-810 grade achieves a greater level of mechanical toughness than previously possible with PEEK, yet it is still processable by conventional methods including extrusion, injection molding, and compression molding.

KetaSpire® KT-810 is particularly suited for compression molding applications such as machined parts and stock shapes wherein the inherent slow cooling rates of the process limit PEEK's toughness and often result in brittleness due to the higher crystallinity levels.

The grade is available in two forms: fine powder with average particle size of approximately 50 micrometers (µm) for compression molding, and pellet form for extrusion and injection molding. The fine powder grade is designated KT-810FP while the pelletized product is available as KT-810 NT.

- Fine Powder: KT-810 FP
- Natural Pellet: KT-810 NT

General

Material Status	• Commercial: Active	
Availability	• Africa & Middle East • Asia Pacific • Europe	• Latin America • North America
Additive	• Lubricant	
Features	• Autoclave Sterilizable • Chemical Resistant • Ductile • E-beam Sterilizable • Ethylene Oxide Sterilizable • Fatigue Resistant • Flame Retardant • Good Dimensional Stability • Good Impact Resistance	• Good Sterilizability • Heat Sterilizable • High Heat Resistance • Radiation (Gamma) Resistant • Radiation Sterilizable • Radiotranslucent • Steam Resistant • Steam Sterilizable
Uses	• Aircraft Applications • Automotive Applications • Connectors • Dental Applications • Electrical/Electronic Applications • Film • Gears • Hospital Goods • Housings	• Industrial Applications • Medical Devices • Medical/Healthcare Applications • Oil/Gas Applications • Pump Parts • Seals • Surgical Instruments • Tubing

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General		
Agency Ratings	• ISO 10993 • ISO 10993-1	• MIL P-46183 Type I
RoHS Compliance	• RoHS Compliant	
Appearance	• Natural Color	
Forms	• Pellets [1]	• Powder
Processing Method	• Compression Molding • Extrusion Blow Molding • Film Extrusion • Injection Molding	• Machining • Profile Extrusion • Thermoforming • Wire & Cable Extrusion

Physical	Typical Value	Unit	Test method
Density / Specific Gravity	1.29		ASTM D792
Water Absorption (24 hr)	0.10	%	ASTM D570

Mechanical	Typical Value	Unit	Test method
Tensile Modulus [2]	3500	MPa	ASTM D638
Tensile Strength [2] (Yield)	94.5	MPa	ASTM D638
Tensile Elongation			ASTM D638
Yield [2]	5.2	%	
Break [3]	85	%	
Break [2]	25 to 50	%	
Flexural Modulus	3700	MPa	ASTM D790
Flexural Strength	145	MPa	ASTM D790

Impact	Typical Value	Unit	Test method
Notched Izod Impact	100	J/m	ASTM D256
Unnotched Izod Impact	No Break		ASTM D4812

Thermal	Typical Value	Unit	Test method
Deflection Temperature Under Load			ASTM D648
1.8 MPa, Annealed, 3.20 mm	157	°C	

Fill Analysis	Typical Value	Unit	Test method
Melt Viscosity (400°C, 1000 sec^-1)	510 to 650	Pa·s	ASTM D3835

Additional Information

Standard Packaging and Labeling

- KetaSpire® PEEK resins are packaged in polyethylene buckets or cardboard boxes depending upon the order size. Individual packages will be plainly marked with the product, color, lot number, and net weight.

Injection	Typical Value	Unit
Drying Temperature	150	°C
Drying Time	4.0	hr
Rear Temperature	355	°C
Middle Temperature	365	°C
Front Temperature	370	°C

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Injection	Typical Value	Unit
Nozzle Temperature	375	°C
Mold Temperature	175 to 205	°C
Injection Rate	Fast	
Screw Compression Ratio	2.5:1.0 to 3.5:1.0	

Injection Notes

Drying

- KetaSpire® PEEK resins must be dried completely prior to melt processing. Incomplete drying will result in defects in the formed part ranging from surface streaks to severe bubbling. Pellets can be dried on trays in a circulating air oven or in desiccating hopper dryer. Drying conditions recommended are 4 hours at 150°C (300°F) .

Injection Molding

- KetaSpire® PEEK resins can be readily injection molded in most screw injection machines. A general purpose screw with a compression ratio in the range of 2.5 - 3.5 : 1 is recommended, as is minimum back pressure. Injection speeds should be as fast as possible, consistent with part appearance requirements. Mold temperatures in the range of 175°C to 205°C (350°F to 400°F) are suggested. Recommended starting point barrel temperatures are shown in the following table.

Notes

Typical properties: these are not to be construed as specifications.

[1] Pellets are supplied lightly dusted with the lubricant calcium stearate (0.01% level). For non-lubricated, natural color grade order KT-820 NL.

[2] 50 mm/min

[3] 5.0 mm/min

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Safety Data Sheets (SDS) are available by emailing us or contacting your sales representative. Always consult the appropriate SDS before using any of our products.

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