KetaSpire® KT-820
polyetheretherketone

KetaSpire® KT-820 is a low flow grade of unreinforced polyetheretherketone (PEEK) supplied in a lubricated pellet form. KetaSpire® PEEK is produced to the highest industry standards and is characterized by a distinct combination of properties, which include excellent wear resistance, best-in-class fatigue resistance, ease of melt processing, high purity, and excellent chemical resistance to organics, acids, and bases.

These properties make it well-suited for applications in healthcare, transportation, electronics, chemical processing, and other industrial uses. KetaSpire® KT-820 can be easily processed using typical injection molding and extrusion processes. This resin is also available as KetaSpire® KT-820P in a natural-color coarse powder form for compounding.

Pellets of KT-820 are supplied lightly dusted with the lubricant calcium stearate (0.01% level) to aid with pellet conveyance in plastication screws. The equivalent non-lubricated natural color grade of low flow KetaSpire® is available as KT-820 NL.

- Black: KT-820 BK 95
- Natural: KT-820 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
Agency Ratings	• FAA FAR 25.853a [1] • ISO 10993	• MIL P-46183 Type I • USP Class VI [2]
RoHS Compliance	• RoHS Compliant	
Appearance	• Black	• Natural Color
Forms	• Pellets [3]	

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General

Processing Method	• Extrusion Blow Molding • Film Extrusion • Injection Molding • Machining	• Profile Extrusion • Thermoforming • Wire & Cable Extrusion

Physical	Typical Value	Unit	Test method
Density / Specific Gravity	1.30		ASTM D792
Melt Mass-Flow Rate (MFR) (400°C/2.16 kg)	3.0	g/10 min	ASTM D1238
Molding Shrinkage [4]			ASTM D955
Flow	1.1 to 1.3	%	
Across Flow	1.3 to 1.5	%	
Water Absorption (24 hr)	0.10	%	ASTM D570

Mechanical	Typical Value	Unit	Test method
Tensile Modulus			
-- [5]	3500	MPa	ASTM D638
--	3830	MPa	ISO 527-1/1A/1
Tensile Stress			
Yield	96.0	MPa	ISO 527-2/1A/50
-- [5]	95.0	MPa	ASTM D638
Tensile Elongation			
Yield [5]	5.2	%	ASTM D638
Yield	4.9	%	ISO 527-2/1A/50
Break [6]	78	%	ASTM D638
Flexural Modulus	3700	MPa	ASTM D790 ISO 178
Flexural Strength			
--	146	MPa	ASTM D790
--	121	MPa	ISO 178
Compressive Strength	118	MPa	ASTM D695
Shear Strength	84.1	MPa	ASTM D732
Poisson's Ratio	0.33		ASTM E132

Impact	Typical Value	Unit	Test method
Notched Izod Impact			
--	91	J/m	ASTM D256
--	9.2	kJ/m²	ISO 180
Unnotched Izod Impact	No Break		ASTM D4812 ISO 180

Hardness	Typical Value	Unit	Test method
Rockwell Hardness (M-Scale)	97		ASTM D785
Durometer Hardness (Shore D, 1 sec)	88		ASTM D2240

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Thermal	Typical Value	Unit	Test method
Deflection Temperature Under Load [7]			ASTM D648
1.8 MPa, Annealed, 3.20 mm	157	°C	
Glass Transition Temperature	150	°C	ASTM D3418
Peak Melting Temperature	340	°C	ASTM D3418
CLTE - Flow (-50 to 50°C)	4.3E-5	cm/cm/°C	ASTM E831
Specific Heat			DSC
50°C	1560	J/kg/°C	
200°C	2150	J/kg/°C	
Thermal Conductivity	0.24	W/m/K	ASTM E1530

Electrical	Typical Value	Unit	Test method
Surface Resistivity	> 1.9E+17	ohms	ASTM D257
Volume Resistivity	1.6E+17	ohms·cm	ASTM D257
Dielectric Strength (2.50 mm)	17	kV/mm	ASTM D149
Dielectric Constant			ASTM D150
60 Hz	3.06		
1 kHz	3.10		
1 MHz	3.05		
Dissipation Factor			ASTM D150
60 Hz	1.0E-3		
1 kHz	1.0E-3		
1 MHz	3.0E-3		
Comparative Tracking Index [8] (3.00 mm)	175	V	IEC 60112

Flammability	Typical Value	Unit	Test method
Flame Rating			UL 94
0.8 mm	V-1		
1.6 mm	V-0		
Oxygen Index	37	%	ASTM D2863

Fill Analysis	Typical Value	Unit	Test method
Melt Viscosity (400°C, 1000 sec^-1)	440	Pa·s	ASTM D3835

Additional Information

Standard Packaging and Labeling

- KetaSpire 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
Nozzle Temperature	375	°C

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

Injection Notes

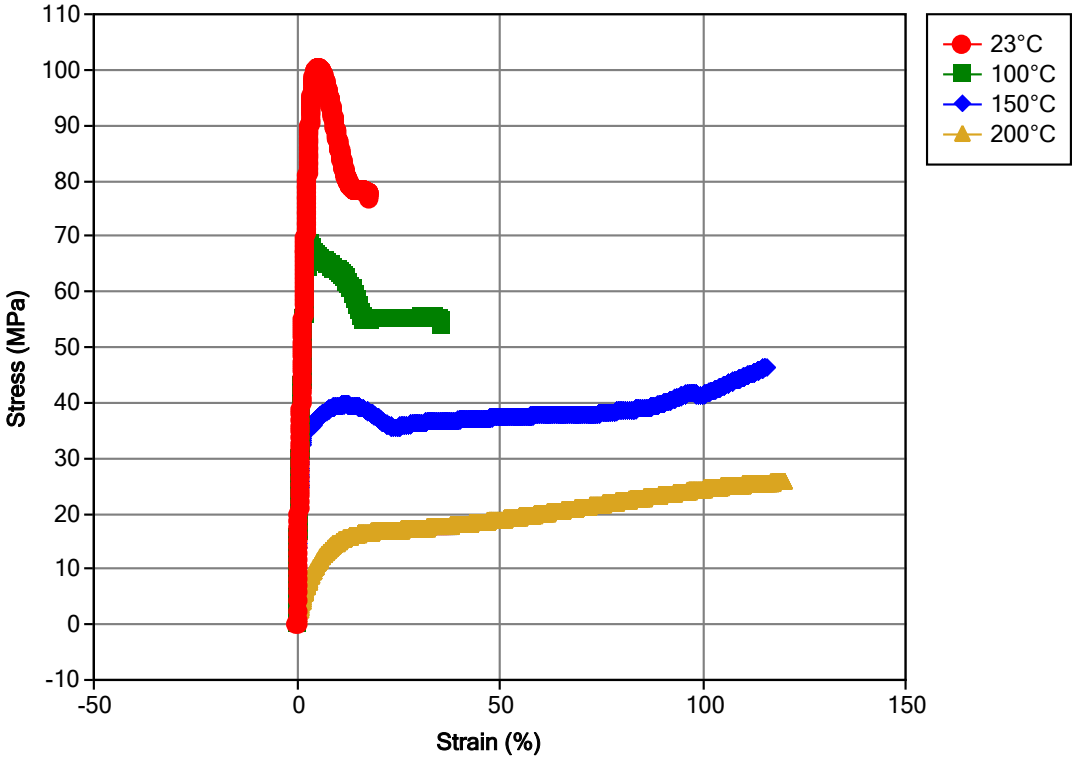
Drying

- KetaSpire 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) .

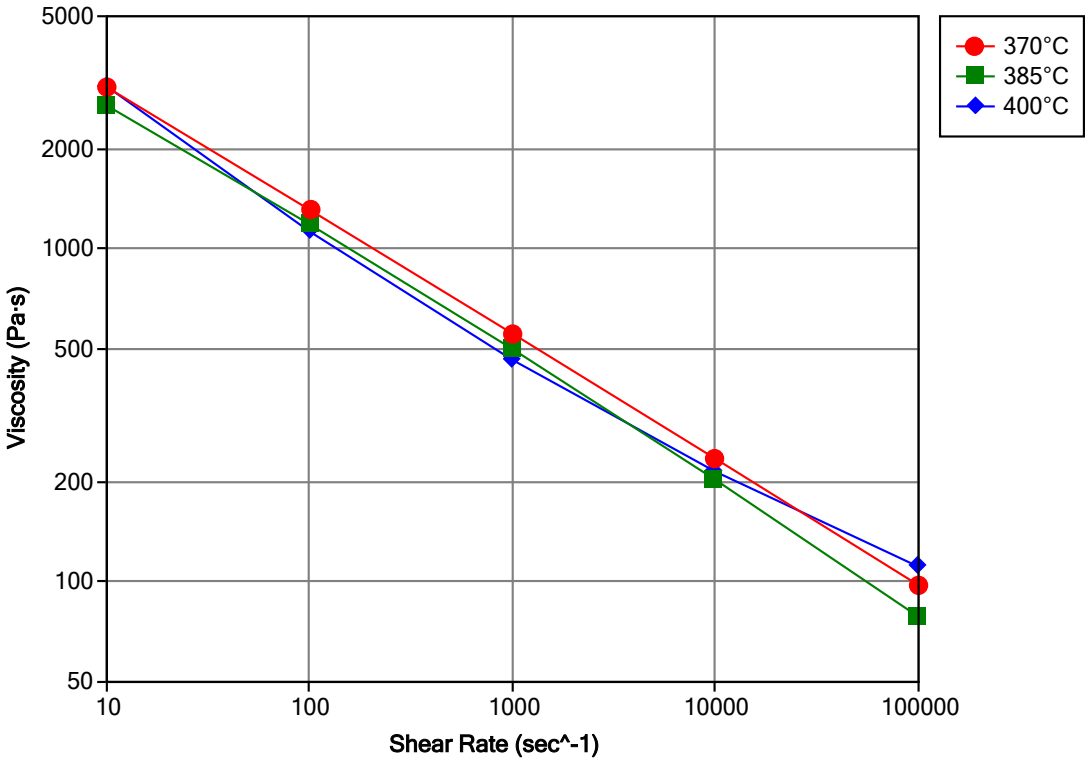
Injection Molding

- KetaSpire 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.

Isothermal Stress vs. Strain (ISO 11403)



Viscosity vs. Shear Rate (ISO 11403)



Notes

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

[1] Passes 60s VB flame, smoke & toxicity requirements.

[2] KT-820 NT only

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

[4] 0.125"x0.5"x5" bar

[5] 50 mm/min

[6] 5.0 mm/min

[7] 2 hours at 200°C

[8] Depth of Erosion: < 1.00 mm