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 • North America	• South America
Additive	• Lubricant		
Features	• Autoclave Sterilizable • Ductile • E-beam Sterilizable • Ethylene Oxide Sterilizable • Fatigue Resistant • Flame Retardant	• Good Chemical Resistance • 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 Appliances • Medical/Healthcare Applications	• Oil/Gas Applications • Pump Parts • Seals • Surgical Instruments • Tubing
Agency Ratings	• ISO 10993	• ISO 10993-Part 1	
RoHS Compliance	• RoHS Compliant		
Appearance	• Black	• Natural Color	
Forms	• Pellets [1]		
Processing Method	• Extrusion Blow Molding • Film Extrusion • Injection Molding	• Machining • Profile Extrusion • Thermoforming	• Wire & Cable Extrusion

Physical	Typical Value	Unit	Test Method
Specific Gravity	1.30	g/cm³	ASTM D792
Melt Mass-Flow Rate (MFR) (400°C/2.16 kg)	3.0	g/10 min	ASTM D1238
Molding Shrinkage [2]			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			
--[3]	3500	MPa	ASTM D638
--	3830	MPa	ISO 527-2/1A/1
Tensile Stress			
Yield	96.0	MPa	ISO 527-2/1A/50
--[3]	95.0	MPa	ASTM D638
Tensile Elongation			
Yield[3]	5.2	%	ASTM D638
Yield	4.9	%	ISO 527-2/1A/50
Break[3]	20 to 30	%	ASTM D638
Break	20 to 30	%	ISO 527-2/1A/50
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
Thermal	**Typical Value**	**Unit**	**Test Method**
Deflection Temperature Under Load[4]			ASTM D648
1.8 MPa, Annealed, 3.20 mm	157	°C	
Glass Transition Temperature (DSC)	150	°C	ASTM D3418
Peak Melting Temperature	340	°C	ASTM D3418
CLTE - Flow (-50 to 50°C)	0.000043	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	ohm	ASTM D257
Volume Resistivity	1.6E+17	ohm·cm	ASTM D257
Dielectric Strength			ASTM D149
0.0508 mm, Amorphous Film	200	kV/mm	
3.00 mm	15	kV/mm	
Dielectric Constant			ASTM D150
60 Hz	3.06		
1 kHz	3.10		
1 MHz	3.05		

Electrical	Typical Value	Unit	Test Method
Dissipation Factor			ASTM D150
60 Hz	0.0010		
1 kHz	0.0010		
1 MHz	0.0030		
Flammability	**Typical Value**	**Unit**	**Test Method**
Flame Rating			UL 94
0.800 mm	V-1		
1.60 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
Mold Temperature	175 to 205	°C
Injection Rate	Fast	
Screw Compression Ratio	2.5:1.0 to 3.5:1.0	

Injection Notes

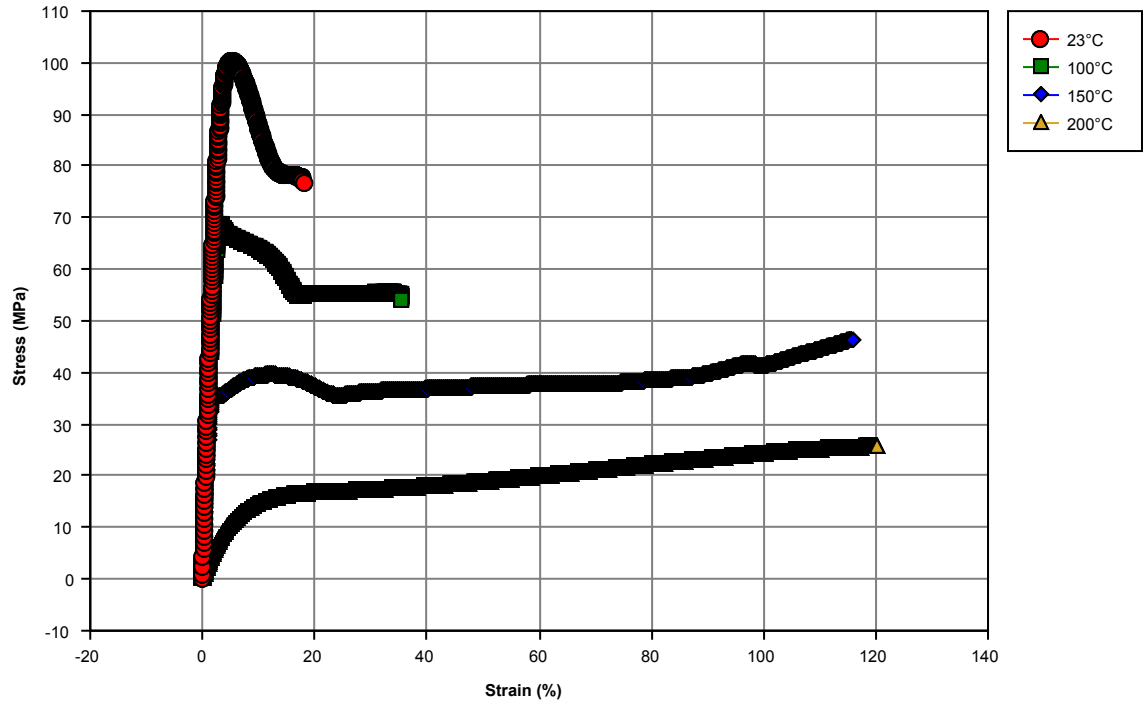
Drying

- 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) .

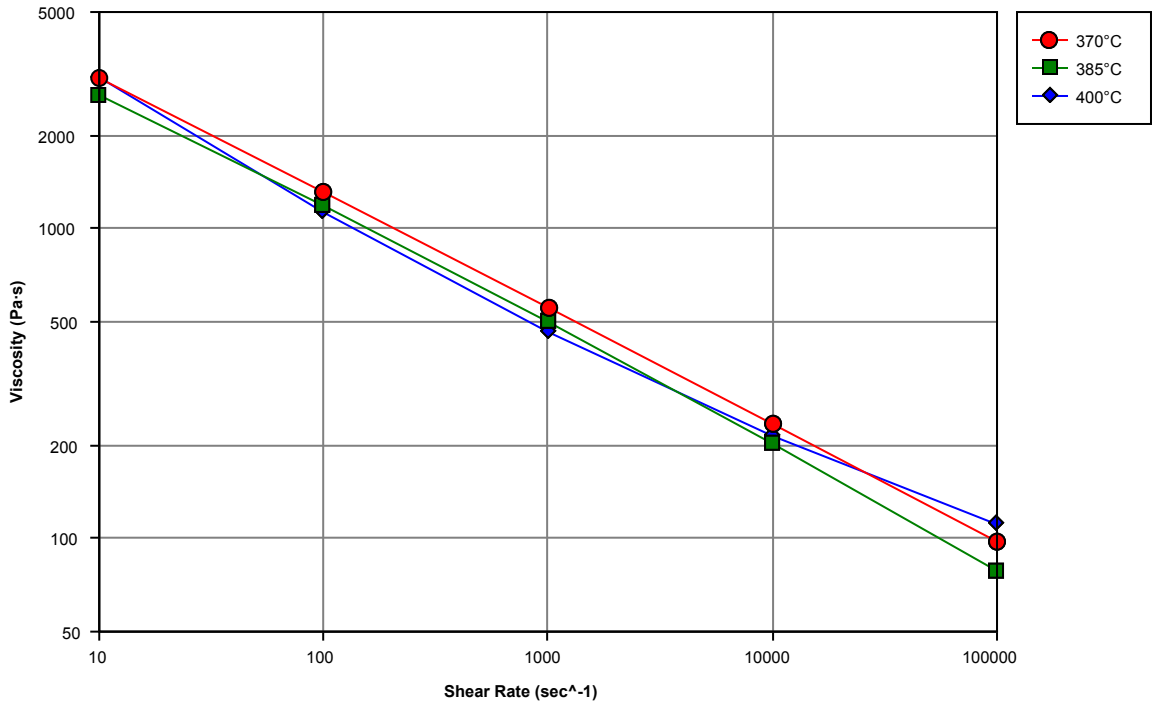
Injection Molding

- 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 11403-1)



Viscosity vs. Shear Rate (ISO 11403-2)



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] 0.125"x0.5"x5" bar

[3] 50 mm/min

[4] 2 hours at 200°C

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