KetaSpire® XT-920
polyetheretherketone

KetaSpire® XT-920 is an unreinforced, natural color grade of the industry's first true high-temperature PEEK polymer supplied in a lubricated pellet form. The PEEK designation is based on the 2:1 ratio of ether-to-ketone functional groups in the polymer backbone.

The material provides the exceptional chemical resistance of PEEK along with a 20°C (36°F) higher glass transition temperature and a 45°C (81°F) higher melting temperature than standard PEEK. This increase in thermal performance allows engineers to achieve higher mechanical strength for components used in higher temperature and higher pressure operating environments. KetaSpire® XT also provides a significant improvement in electrical properties.

Although other high-temperature polyketones exhibit thermal properties on par with KetaSpire® XT, their chemical resistance is significantly inferior to standard PEEK and KetaSpire® XT. The material's unique combination of properties makes KetaSpire® XT well-suited for applications in oil & gas, transportation, electronics, chemical processing, and other industrial uses. KetaSpire® XT-920 can be easily processed using typical injection molding and extrusion processes. This resin is also available as KetaSpire® XT-920P in a natural-color coarse powder form for compounding.

Pellets of KetaSpire® XT-920 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 is KetaSpire® XT-920 NL.

- Natural: XT-920 NT

General

Material Status	• Commercial: Active	
Availability	• Asia Pacific • Europe	• North America
Additive	• Lubricant	
Features	• Chemical Resistant • Ductile • Fatigue Resistant • Flame Retardant • Good Dimensional Stability	• Good Impact Resistance • High Heat Resistance • Radiotranslucent • Steam Resistant
Uses	• Aircraft Applications • Automotive Applications • Communication Wire Insulation • Connectors • Electrical/Electronic Applications • Film • Gears	• Housings • Industrial Applications • Oil/Gas Applications • Pump Parts • Seals • Tubing
RoHS Compliance	• RoHS Compliant	
Appearance	• Beige	
Forms	• Pellets [1]	• Powder
Processing Method	• Film Extrusion • Injection Molding • Machining	• Profile Extrusion • Wire & Cable Extrusion

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Physical	Typical Value	Unit	Test method
Density / Specific Gravity	1.28		ASTM D792
Melt Mass-Flow Rate (MFR) (420°C/2.16 kg)	9.7	g/10 min	ASTM D1238
Molding Shrinkage [2]			ASTM D955
Flow : 2.00 mm	1.1 to 1.3	%	
Across Flow : 2.00 mm	1.5 to 1.7	%	
Water Absorption (24 hr)	0.090	%	ASTM D570

Mechanical	Typical Value	Unit	Test method
Tensile Modulus			
-- [3]	3400	MPa	ASTM D638
--	3400	MPa	ISO 527-1/1A/1
Tensile Stress			
Yield	93.0	MPa	ISO 527-2/1A/50
-- [3]	93.0	MPa	ASTM D638
Tensile Elongation			
Yield [3]	6.4	%	ASTM D638
Yield	6.1	%	ISO 527-2/1A/50
Break [3]	28	%	ASTM D638
Flexural Modulus			
--	3600	MPa	ASTM D790
--	3300	MPa	ISO 178
Flexural Strength			
--	135	MPa	ASTM D790
--	106	MPa	ISO 178
Compressive Strength	114	MPa	ASTM D695
Shear Strength	89.0	MPa	ASTM D732
Poisson's Ratio	0.41		ASTM E132

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

Hardness	Typical Value	Unit	Test method
Rockwell Hardness (M-Scale)	91		ASTM D785
Durometer Hardness (Shore D, 1 sec)	86		ASTM D2240

Thermal	Typical Value	Unit	Test method
Deflection Temperature Under Load [4]			ASTM D648
1.8 MPa, Annealed, 3.20 mm	175	°C	
Glass Transition Temperature	170	°C	ASTM D3418
Peak Melting Temperature	385	°C	ASTM D3418
CLTE - Flow (-50 to 50°C)	4.4E-5	cm/cm/°C	ASTM E831

Electrical	Typical Value	Unit	Test method
Dielectric Strength (1.60 mm)	23	kV/mm	ASTM D149
Dielectric Constant (1 MHz)	3.10		ASTM D150
Dissipation Factor (1 MHz)	2.6E-3		ASTM D150

Flammability	Typical Value	Unit	Test method
Flame Rating [5]			UL 94
0.8 mm	V-0		
1.6 mm	V-0		

Fill Analysis	Typical Value	Unit	Test method
Melt Viscosity (420°C, 1000 sec^-1)	410	Pa·s	ASTM D3835

Injection	Typical Value	Unit
Drying Temperature	150	°C
Drying Time	4.0	hr
Rear Temperature	395	°C
Middle Temperature	395	°C
Front Temperature	405	°C
Nozzle Temperature	405	°C
Mold Temperature	205 to 230	°C
Injection Rate	Fast	
Screw Compression Ratio	2.5:1.0 to 3.5:1.0	

Injection Notes

Drying

- KetaSpire® XT 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® XT 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 205°C to 230°C (400°F to 450°F) are suggested. Recommended starting point barrel temperatures are shown in the table above.

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 XT-920 NL.

[2] 60mm x 60mm x 2mm

[3] 50 mm/min

[4] 2 hours at 230°C

[5] Based on internal testing. UL certification is pending.

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