AvaSpire® AV-621
polyaryletherketone

AvaSpire® AV-621 is an unreinforced polyaryletherketone (PAEK) that offers improved ductility and impact strength relative to PEEK while retaining most of the key performance attributes of PEEK. The AV-621 grade is the low melt flow (higher molecular weight) analog of the medium flow grade AvaSpire® AV-651 that is tailored primarily for injection molding applications as well as film extrusion. AvaSpire® AV-621 resin is suited for a variety of processing methods including compression molding, stock shape extrusion, as well as injection molding.

AV-621 has been formulated for applications requiring a balance of chemical resistance and mechanical strength along with good part aesthetics, thereby bridging the performance gaps within the ultra polymers space. These and other properties make this resin well-suited for applications in healthcare, transportation, semiconductor, electronics, chemical processing, and other industries.

AvaSpire® AV-621 is easily fabricated using conventional thermoplastic melt processing techniques and standard equipment. The resin has a uniform opaque appearance with a beige color similar to that of PEEK.

- AvaSpire® AV-621 NT

General

Material Status	• Commercial: Active	
Availability	• Africa & Middle East • Asia Pacific • Europe	• Latin America • North America
Features	• Chemical Resistant • Ductile • Fatigue Resistant • Flame Retardant	• Good Dimensional Stability • Good Impact Resistance • High Heat Resistance
Uses	• Bearings • Bushings • Connectors	• Medical/Healthcare Applications • Oil/Gas Applications • Semiconductor Applications
Agency Ratings	• ISO 10993	
RoHS Compliance	• RoHS Compliant	
Appearance	• Beige	
Forms	• Pellets	
Processing Method	• Extrusion Blow Molding • Fiber (Spinning) Extrusion • Film Extrusion • Injection Blow Molding • Injection Molding	• Machining • Profile Extrusion • Thermoforming • Wire & Cable Extrusion

Physical	Typical Value	Unit	Test method
Density / Specific Gravity	1.29		ASTM D792
Melt Mass-Flow Rate (MFR) (400°C/2.16 kg)	5.0	g/10 min	ASTM D1238
Molding Shrinkage [1]			ASTM D955
Flow : 3.18 mm	0.70 to 0.90	%	
Across Flow : 3.18 mm	1.1 to 1.3	%	
Water Absorption (24 hr)	0.20	%	ASTM D570

Mechanical	Typical Value	Unit	Test method
Tensile Modulus			
-- [2]	2900	MPa	ASTM D638
--	3100	MPa	ISO 527-1/1A/1
Tensile Stress			
Yield	87.0	MPa	ISO 527-2/1A/50
-- [2]	84.0	MPa	ASTM D638
Tensile Elongation			
Yield [3]	6.0	%	ASTM D638
Yield	5.7	%	ISO 527-2/50
Break [3]	> 40	%	ASTM D638
Break	> 40	%	ISO 527-2/1A/50
Flexural Modulus			
--	3100	MPa	ASTM D790
--	3000	MPa	ISO 178
Flexural Strength			
--	122	MPa	ASTM D790
--	106	MPa	ISO 178
Compressive Strength	111	MPa	ASTM D695
Shear Strength	81.0	MPa	ASTM D732
Poisson's Ratio	0.39		ASTM E132

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

Hardness	Typical Value	Unit	Test method
Rockwell Hardness (M-Scale)	93		ASTM D785

Thermal	Typical Value	Unit	Test method
Deflection Temperature Under Load [4]			ASTM D648
1.8 MPa, Annealed, 3.20 mm	187	°C	
Glass Transition Temperature	158	°C	ASTM D3418
Peak Melting Temperature	340	°C	ASTM D3418
CLTE - Flow (-50 to 50°C)	4.7E-5	cm/cm/°C	ASTM E831
Specific Heat			DSC
50°C	1450	J/kg/°C	
200°C	2000	J/kg/°C	
Thermal Conductivity	0.20	W/m/K	ASTM E1530

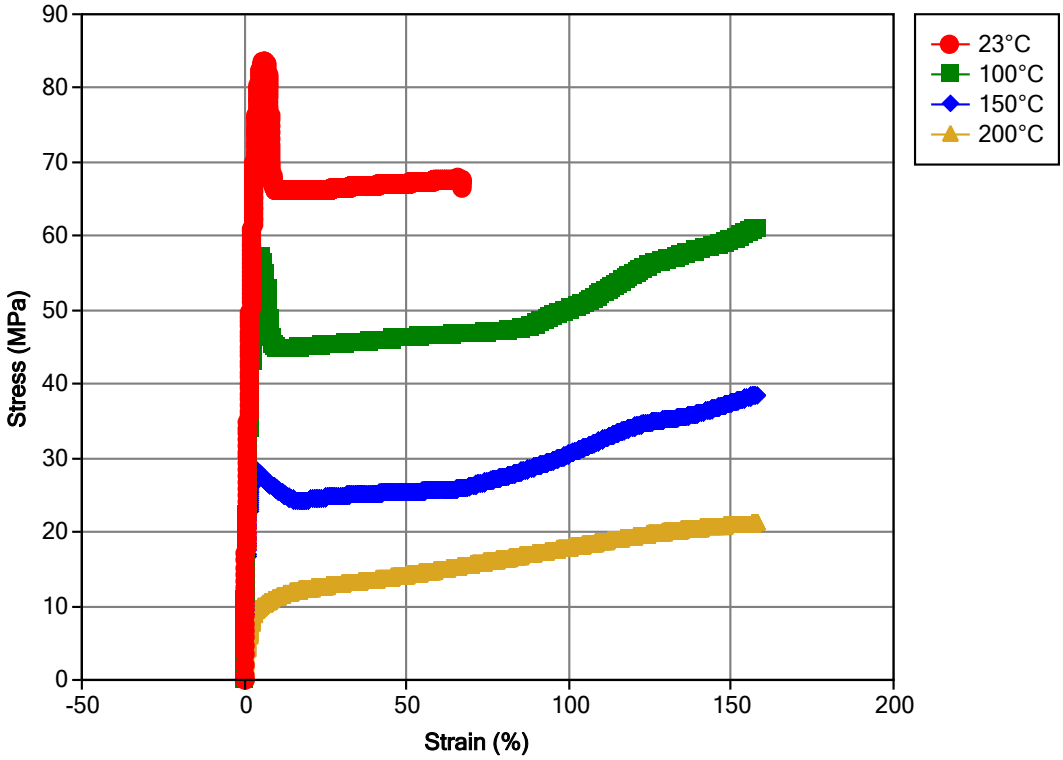
Electrical	Typical Value	Unit	Test method
Surface Resistivity	> 1.9E+17	ohms	ASTM D257
Volume Resistivity	6.2E+17	ohms·cm	ASTM D257
Dielectric Strength			ASTM D149
0.0500 mm, Amorphous Film	190	kV/mm	
3.00 mm	17	kV/mm	
Dielectric Constant			ASTM D150
60 Hz	3.07		
1 kHz	3.12		
1 MHz	3.10		
Dissipation Factor			IEC 60250
60 Hz	1.0E-3		
1 kHz	1.0E-3		
1 MHz	4.0E-3		

Flammability	Typical Value	Unit	Test method
Flame Rating			UL 94
0.8 mm	V-0		
1.6 mm	V-0		
Oxygen Index	34	%	ASTM D2863

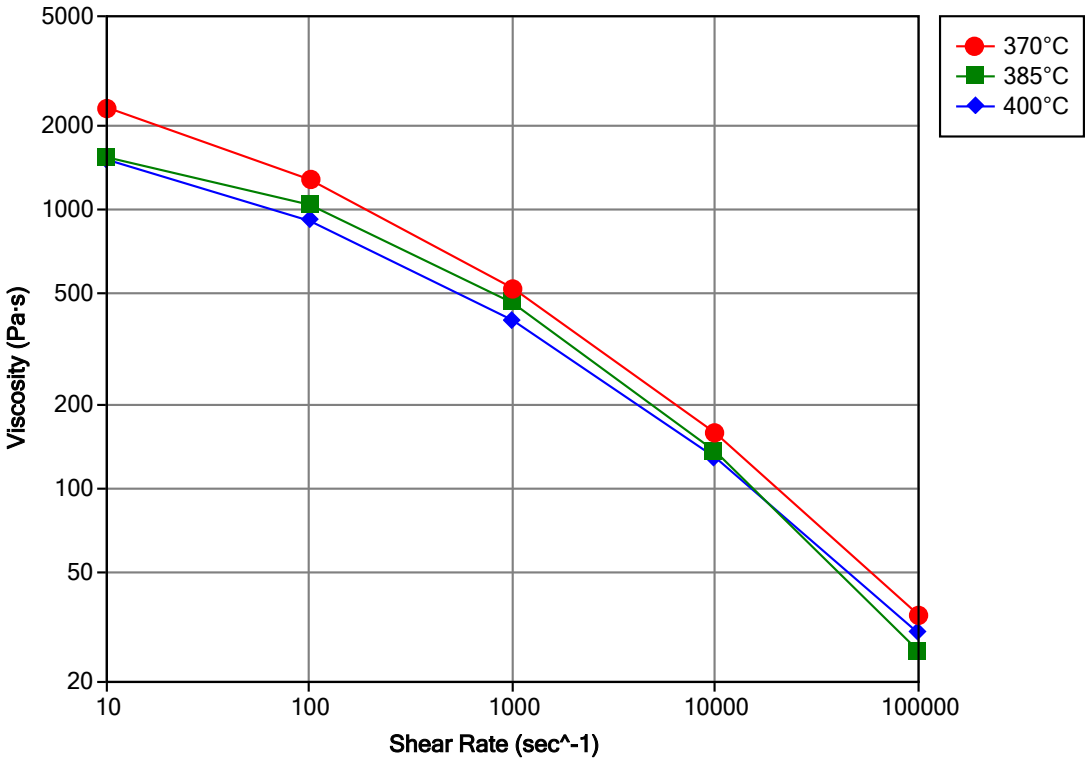
Fill Analysis	Typical Value	Unit	Test method
Melt Viscosity (400°C, 1000 sec^-1)	410	Pa·s	ASTM D3835

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
Processing (Melt) Temp	365 to 390	°C
Mold Temperature	150 to 180	°C
Injection Rate	Fast	
Screw Compression Ratio	2.0:1.0 to 3.0:1.0	

Isothermal Stress vs. Strain (ISO 11403)



Viscosity vs. Shear Rate (ISO 11403)



Notes

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

[1] 5" x 0.5" x 0.125"

[2] 50 mm/min

[3] 51 mm/min

[4] 2 hours at 200°C

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