

# 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	• Ductile • Fatigue Resistant • Flame Retardant	• Good Chemical Resistance • Good Dimensional Stability • Good Impact Resistance	• High Heat Resistance
Uses	• Bearings • Bushings	• Connectors • Medical/Healthcare Applications	• Oil/Gas Applications • Semiconductor Molding Compounds
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
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 <sup>1</sup>			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			
-- <sup>2</sup>	2900	MPa	ASTM D638
--	3100	MPa	ISO 527-2/1A/1

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polyaryletherketone

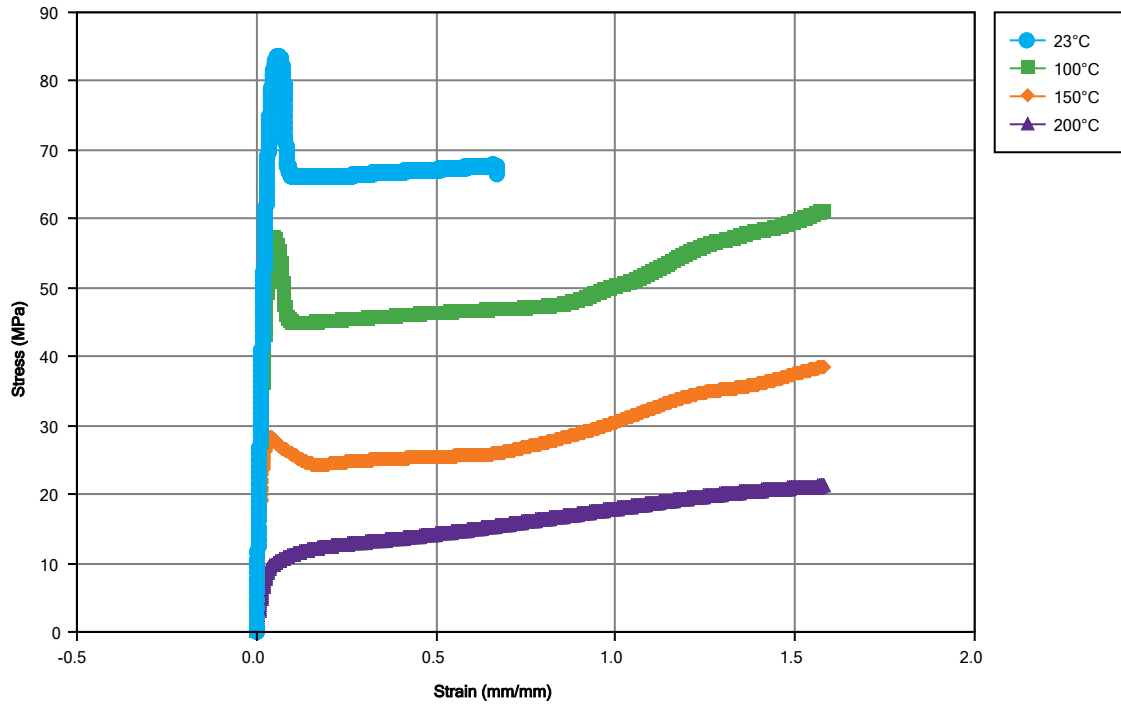
<b>Mechanical</b>	<b>Typical Value</b>	<b>Unit</b>	<b>Test method</b>
Tensile Stress			
Yield	87.0	MPa	ISO 527-2/1A/50
-- <sup>2</sup>	84.0	MPa	ASTM D638
Tensile Elongation			
Yield <sup>3</sup>	6.0	%	ASTM D638
Yield	5.7	%	ISO 527-2/50
Break <sup>3</sup>	> 40	%	ASTM D638
Break	> 40	%	ISO 527-2/1A/50
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
<b>Impact</b>	<b>Typical Value</b>	<b>Unit</b>	<b>Test method</b>
Notched Izod Impact			
--	100	J/m	ASTM D256
--	7.6	kJ/m <sup>2</sup>	ISO 180
Unnotched Izod Impact	No Break		ASTM D4812 ISO 180
<b>Hardness</b>	<b>Typical Value</b>	<b>Unit</b>	<b>Test method</b>
Rockwell Hardness (M-Scale)	93		ASTM D785
<b>Thermal</b>	<b>Typical Value</b>	<b>Unit</b>	<b>Test method</b>
Deflection Temperature Under Load <sup>4</sup>			ASTM D648
1.8 MPa, Annealed, 3.20 mm	187	°C	
Glass Transition Temperature (DSC)	158	°C	ASTM D3418
Peak Melting Temperature	340	°C	ASTM D3418
CLTE - Flow (-50 to 50°C)	0.000047	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
<b>Electrical</b>	<b>Typical Value</b>	<b>Unit</b>	<b>Test method</b>
Surface Resistivity	> 1.9E+17	ohm	ASTM D257
Volume Resistivity	6.2E+17	ohm·cm	ASTM D257
Dielectric Strength			ASTM D149
0.0500 mm, Amorphous Film	190	kV/mm	
3.00 mm	17	kV/mm	

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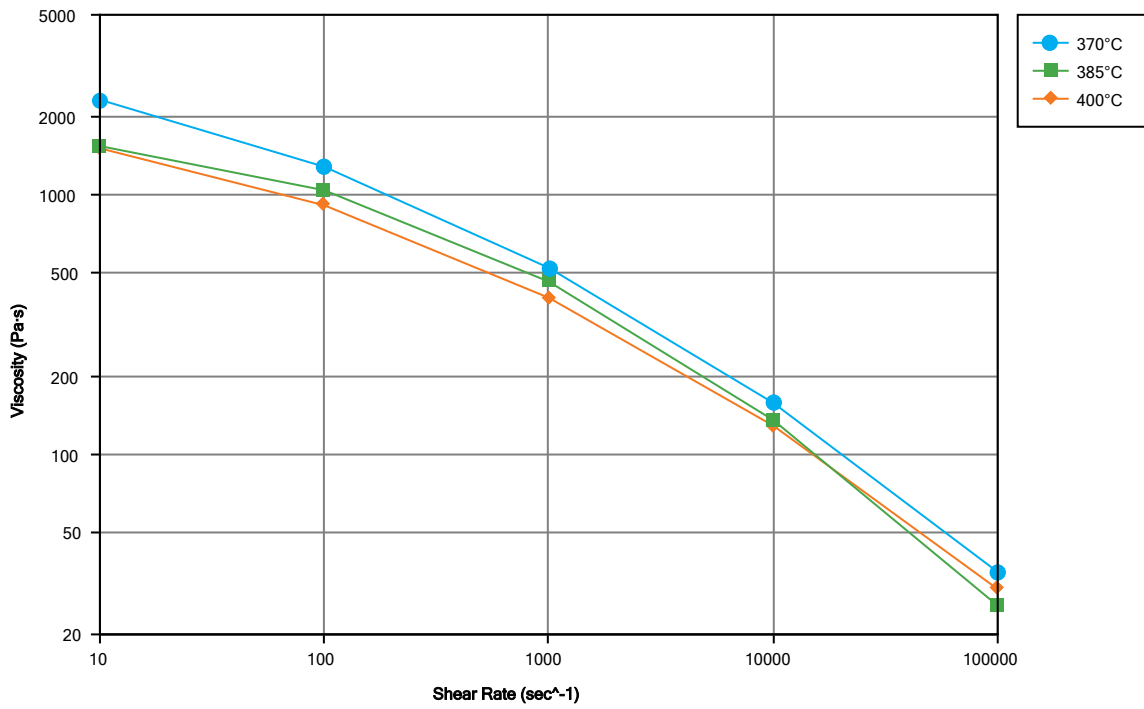
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<b>Electrical</b>	<b>Typical Value</b>	<b>Unit</b>	<b>Test method</b>
Dielectric Constant			ASTM D150
60 Hz	3.07		
1 kHz	3.12		
1 MHz	3.10		
Dissipation Factor			IEC 60250
60 Hz	0.0010		
1 kHz	0.0010		
1 MHz	0.0040		
<b>Flammability</b>	<b>Typical Value</b>	<b>Unit</b>	<b>Test method</b>
Flame Rating			UL 94
0.800 mm	V-0		
1.60 mm	V-0		
Oxygen Index	34 %		ASTM D2863
<b>Fill Analysis</b>	<b>Typical Value</b>	<b>Unit</b>	<b>Test method</b>
Melt Viscosity (400°C, 1000 sec <sup>-1</sup> )	410	Pa·s	ASTM D3835
<b>Injection</b>	<b>Typical Value</b>	<b>Unit</b>	
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 11403-1)**



**Viscosity vs. Shear Rate (ISO 11403-2)**



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## Notes

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

<sup>1</sup> 5" x 0.5" x 0.125"

<sup>2</sup> 50 mm/min

<sup>3</sup> 51 mm/min

<sup>4</sup> 2 hours at 200°C

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