

# 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

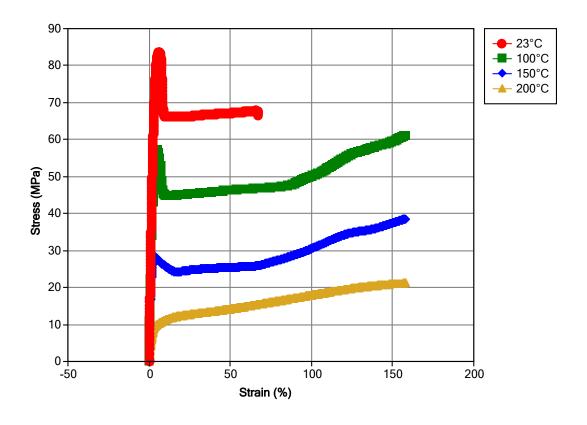
### General

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

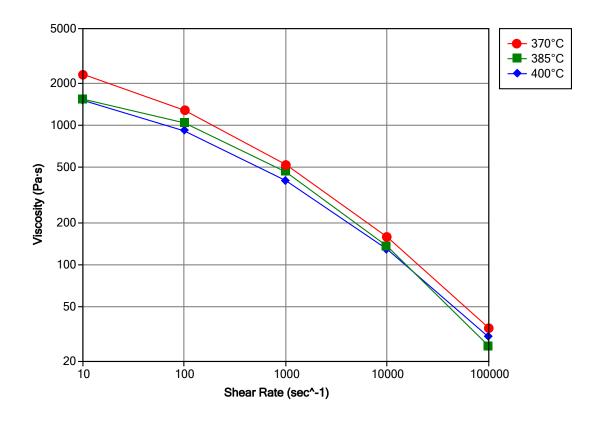
Density / Specific Gravity         1.29         ASTM D792           Melt Moss-Flow Rate (MRR) (400°C/2.16 kg)         5.0 g/10 min         ASTM D1238           Molding Shrinkage¹         0.70 to 0.90 %         ASTM D955           Flow: 3.18 mm         0.70 to 0.90 %         ASTM D570           Across Flow: 3.18 mm         1.1 to 1.3 %         ASTM D570           Mechanical         Typical Value Unit         Test method           Tensile Modulus         2900 MPa         ASTM D638          2         2900 MPa         ASTM D638          3         3100 MPa         ISO 527-2/1a/50          2         84.0 MPa         ISO 527-2/1a/50          2         84.0 MPa         ASTM D638           Yield         87.0 MPa         ISO 527-2/1a/50           Tensile Elongation         Yield         5.7 %         ISO 527-2/1a/50           Break³         9.40 %         ASTM D638         ASTM D638           Break         9.40 %         ASTM D638         ASTM D790         ASTM D790           Flexural Modulus	Physical	Typical Value	Unit	Test method
Molding Shrinkage¹         ASTM D955           Flow: 3.18 mm         0.70 to 0.90 %         Across Flow: 3.18 mm           Water Absorption (24 hr)         0.20 %         ASTM D570           Mechanical         Typical Value Unit         Test method           Tensile Modulus         Tensile Modulus         Tensile Modulus          2         2900 MPa         ASTM D638            3100 MPa         ISO 527-1/IA/1           Tensile Stress         Yield         87.0 MPa         ISO 527-2/IA/50          2         84.0 MPa         ASTM D638           Tensile Elongation         Yield³         6.0 %         ASTM D638           Yield³         6.0 %         ASTM D638           Break³         340 %         ASTM D790            3000 MPa         ASTM D790            3000 MPa         ASTM D790            106 MPa         ISO 178           Flexural Strength         810 MPa         ASTM D695	Density / Specific Gravity	1.29		ASTM D792
Flow: 3.18 mm	Melt Mass-Flow Rate (MFR) (400°C/2.16 kg)	5.0	g/10 min	ASTM D1238
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         2900 MPa         ASTM D638          2         2900 MPa         ASTM D638            3100 MPa         ISO 527-1/IA/I           Tensile Stress         Yield         87.0 MPa         ISO 527-2/IA/50          2         84.0 MPa         ASTM D638           Tensile Elongation         Yield 3         6.0 %         ASTM D638           Yield 3         6.0 %         ASTM D638           Yield 3         5.7 %         ISO 527-2/Ia/50           Break 3         40 %         ASTM D638           Break 3         40 %         ASTM D638           Break 4         30 %         ASTM D638           Break 3         40 %         ASTM D638           Break 4         30 %         ASTM D790            3100 MPa         ASTM D790            3000 MPa         ISO 187           Flexural Strength 4         111 MPa         ASTM D695           Shear Strength 5         81.0 MPa         ASTM D732           Poiss	Molding Shrinkage <sup>1</sup>			ASTM D955
Water Absorption (24 hr)         0.20 %         ASTM D570           Mechanical         Typical Value Unit         Test method           Tensile Modulus         2900 MPa         ASTM D638            3100 MPa         ISO 527-1/IA/I           Tensile Stress         Yield         87.0 MPa         ISO 527-2/IA/50          2         84.0 MPa         ASTM D638           Tensile Elongation         Yield³         6.0 %         ASTM D638           Yield         5.7 %         ISO 527-2/50           Break³         3 40 %         ASTM D638           Break 3         40 %         ISO 527-2/IA/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 D792           Poisson's Ratio         0.39         ASTM E132           Impact         Typical Value Unit         Test method           Notched Izod Impact         7.6 kJ/m²         ISO 180           Unnotched Izo	Flow : 3.18 mm	0.70 to 0.90	%	
Mechanical         Typical Value Unit         Test method           Tensile Modulus         2900 MPa         ASTM D638            3100 MPa         ISO 527-1/IA/I           Tensile Stress         1SO 527-2/IA/50           Yield         87.0 MPa         ISO 527-2/IA/50          2         84.0 MPa         ASTM D638           Tensile Elongation         Yield³         6.0 %         ASTM D638           Yield 3         6.0 %         ASTM D638           Yield 5.7 %         ISO 527-2/IA/50           Break 2         3 40 %         ASTM D638           Break 3         40 %         ISO 527-2/IA/50           Flexural Modulus         -         3100 MPa         ASTM D790            3100 MPa         ASTM D790            100 MPa         ASTM D790            106 MPa         ISO 178           Flexural Strength         111 MPa         ASTM D695           Shear Strength         81.0 MPa         ASTM D792           Poisson's Ratio         0.39         ASTM E132           Impact         Typical Value Unit         Test method           Notched Izod Impact         7.6 kJ/m²         ISO 180           Unnotched	Across Flow : 3.18 mm	1.1 to 1.3	%	
Tensile Modulus	Water Absorption (24 hr)	0.20	%	ASTM D570
Part	Mechanical	Typical Value	Unit	Test method
3100 MPa ISO 527-1/1A/1 Tensile Stress Yield 87.0 MPa ISO 527-2/1A/502 84.0 MPa ASTM D638 Tensile Elongation Yield 5.7 % ISO 527-2/50 Break³ 6.0 % ASTM D638 Break 5.40 % ISO 527-2/1A/50 Break³ 3.40 % ISO 527-2/1A/50 Flexural Modulus 3100 MPa ASTM D638 Flexural Strength 122 MPa ASTM D790 106 MPa ISO 178 Flexural Strength 111 MPa ASTM D790 106 MPa ISO 178 Compressive Strength 111 MPa ASTM D695 Shear Strength 81.0 MPa ASTM D792 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 Typical Value Unit Test method Notched Izod Impact No Break Typical Value Unit Test method	Tensile Modulus			
Tensile Stress         Yield         87.0 MPa         ISO 527-2/IA/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 9         40 %         ISO 527-2/IA/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 D792           Poisson's Ratio         0.39         ASTM E132           Impact         Typical Value Unit         Test method           Notched Izod Impact         7.6 kJ/m²         ISO 180           Unnotched Izod Impact         No Break         ASTM D4812           Iso 180         ISO 180	2	2900	МРа	ASTM D638
Yield −-²         87.0 MPa         ISO 527-2/1a/50           −-²         84.0 MPa         ASTM D638           Tensile Elongation         Yield³         6.0 %         ASTM D638           Yield         5.7 %         ISO 527-2/50           Break³         > 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         7.6 kJ/m²         ISO 180           Unnotched Izod Impact         No Break         ASTM D4812           Unnotched Izod Impact         No Break         ASTM D4812           Hardness         Typical Value Unit         Test method		3100	МРа	ISO 527-1/1A/1
Tensile Elongation	Tensile Stress			
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         7.6 kJ/m²         ISO 180           Unnotched Izod Impact         No Break         ASTM D4812           Unnotched Izod Impact         No Break         ASTM D4812           Hardness         Typical Value Unit         Test method	Yield	87.0	МРа	ISO 527-2/1A/50
Yield 3         6.0 %         ASTM D638           Yield 5.7 %         ISO 527-2/50           Break 3         3 40 %         ASTM D638           Break 4         3 40 %         ISO 527-2/IA/50           Flexural Modulus	2	84.0	МРа	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         7.6 kJ/m²         ISO 180           Unnotched Izod Impact         No Break         ASTM D4812 ISO 180           Hardness         Typical Value Unit         Test method	Tensile Elongation			
Break ³         3 40 %         ASTM D638 Break         3 40 %         ISO 527-2/1A/50           Flexural Modulus         3100 MPa         ASTM D790 and ASTM D695 and ASTM D790 and ASTM D79	Yield <sup>3</sup>	6.0	%	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         7.6 kJ/m²         ISO 180           Unnotched Izod Impact         No Break         ASTM D4812 ISO 180           Hardness         Typical Value Unit         Test method	Yield	5.7	%	ISO 527-2/50
Flexural Modulus	Break <sup>3</sup>	> 40	%	ASTM D638
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	Break	> 40	%	ISO 527-2/1A/50
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	Flexural Modulus			
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		3100	МРа	ASTM D790
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		3000	MPa	ISO 178
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	Flexural Strength			
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		122	MPa	ASTM D790
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            100 J/m²         ISO 180           Unnotched Izod Impact         No Break         ASTM D4812 ISO 180           Hardness         Typical Value Unit         Test method		106	MPa	ISO 178
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         ISO 180           Hardness         Typical Value Unit         Test method	Compressive Strength	111	MPa	ASTM D695
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         ISO 180           Hardness         Typical Value Unit         Test method	Shear Strength	81.0	MPa	ASTM D732
Notched Izod Impact            100 J/m         ASTM D256            7.6 kJ/m²         ISO 180           Unnotched Izod Impact         No Break         ASTM D4812           ISO 180         ISO 180           Hardness         Typical Value Unit         Test method	Poisson's Ratio	0.39		ASTM E132
Notched Izod Impact            100 J/m         ASTM D256            7.6 kJ/m²         ISO 180           Unnotched Izod Impact         No Break         ASTM D4812           ISO 180         ISO 180	Impact	Typical Value	Unit	Test method
7.6 kJ/m²ISO 180Unnotched Izod ImpactNo BreakASTM D4812 ISO 180HardnessTypical Value UnitTest method	Notched Izod Impact	, ·		
Unnotched Izod Impact  No Break  ASTM D4812 ISO 180  Hardness  Typical Value Unit  Test method		100	J/m	ASTM D256
Unnotched Izod Impact No Break ISO 180  Hardness Typical Value Unit Test method		7.6	kJ/m²	ISO 180
	Unnotched Izod Impact	No Break		
Rockwell Hardness (M-Scale) 93 ASTM D785	Hardness	Typical Value	Unit	Test method
	Rockwell Hardness (M-Scale)	93		ASTM D785

Thermal	Typical Value Unit	Test method
Deflection Temperature Under Load <sup>4</sup>	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	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)



# AvaSpire® AV-621 polyaryletherketone

## **Notes**

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

- 15" 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

## www.syensqo.com

Safety Data Sheets (SDS) are available by emailing us or contacting your sales representative. Always consult the appropriate SDS before using any of our products.

Neither Syensqo nor any of its affiliates makes any warranty, express or implied, including merchantability or fitness for use, or accepts any liability in connection with this product, related information or its use. Some applications of which Syensqo's products may be proposed to be used are regulated or restricted by applicable laws and regulations or by national or international standards and in some cases by Syensqo's recommendation, including applications of food/feed, water treatment, medical, pharmaceuticals, and personal care. Only products designated as part of the Solviva® family of biomaterials may be considered as candidates for use in implantable medical devices. The user alone must finally determine suitability of any information or products for any contemplated use in compliance with applicable law, the manner of use and whether any patents are infringed. The information and the products are for use by technically skilled persons at their own discretion and risk and does not relate to the use of this product in combination with any other substance or any other process. This is not a license under any patent or other proprietary right.

All trademarks and registered trademarks are property of the companies that comprise the Syensqo or their respective owners.

© 2025 2023 Syensqo. All rights reserved.

