

AvaSpire® AV-621 CF30

polyaryletherketone

AvaSpire® AV-621 CF30 is a 30% carbon fiber reinforced version of AvaSpire® AV-621. It offers better dimensional stability and warp resistance than 30% carbon fiber reinforced PEEK. The AV-621 CF30 grade offers the highest strength, stiffness, and fatigue resistance of any AV-621 based grade. Furthermore, this resin generally retains most of the desirable ultra-performance attributes of carbon fiber reinforced PEEK including chemical resistance, fatigue resistance, and long term thermal oxidative stability.

The excellent balance of properties of AV-621 CF30 makes this grade well suited for a broad range of

applications across a number of industries, including healthcare, transportation, electronics, and chemical processing.

This resin can be easily melt processed by injection molding using standard equipment. The melt processing behavior of AV-621 CF30 is very similar to that of 30% CF reinforced PEEK. The lower melt flow of AV-621 CF30 is well suited for extrusion applications while offering a similar property profile to AV-651 CF30.

General

General				
Material Status	 Commercial: Active 			
Availability	 Africa & Middle East Asia Pacific Europe	Latin AmericaNorth America		
Filler / Reinforcement	 Carbon Fiber, 30% Filler by \ 	Weight		
Features	Chemical ResistantFatigue ResistantFlame RetardantGood Dimensional Stability	High Heat ResistanceHigh StiffnessHigh Strength	Э	
Uses	Medical/Healthcare ApplicationPump Parts	ations • Seals		
Agency Ratings	• ISO 10993			
RoHS Compliance	 Contact Manufacturer 			
Appearance	• Black			
Forms	Pellets			
Processing Method	Injection MoldingMachining	Profile Extrusion		
Physical	Ту	pical Value Unit	Test method	
Density / Specific Gravity		1.42	ASTM D792	
Melt Mass-Flow Rate (MFR) (400°C/2.16 kg)		1.0 g/10 min	ASTM D1238	
Molding Shrinkage ¹			ASTM D955	
Flow: 3.18 mm		0.0 to 0.20 %		
Across Flow : 3.18 mm		0.90 to 1.1 %		
/ /				

Water Absorption (24 hr)

0.10 %

ASTM D570

Tensile Modulus	Mechanical	Typical Value	Unit	Test method
(23300 MPa (SO 527-1/IA) Tensile Stress Yield 196 MPa (SO 527-1/IA) Tensile Elongation Break² 2,2 % ASTM D638 Break 2,2 % ISO 527-2/IA/5 Flexural Modulus (21300 MPa (SO 527-2/IA/5) Flexural Strength (21300 MPa (SO 527-2/IA/5) Flexural Strength (21300 MPa (SO 527-2/IA/5) Flexural Strength 152 MPa (SO 527-2/IA/5) Compressive Strength 152 MPa (SO 527-2/IA/5) Compressiv	Tensile Modulus			
Tensile Stress 196 MPa ISO 527-2/IA/5 Ch-2-2 1-2 181 MPa ASTM D638 Tensile Elongation Break² 2.2 % ASTM D638 Break 2.2 % ISO 527-2/IA/5 Flexural Modulus - 15100 MPa ASTM D790 15100 MPa ASTM D790 21300 MPa ISO 178 Flexural Strength 276 MPa ASTM D790 296 MPa ISO 178 Compressive Strength 152 MPa ASTM D790 296 MPa ASTM D790 Shear Strength 91.0 MPa ASTM D790 Shear Strength 91.0 MPa ASTM D792 Impact Typical Value Unit Test method Notched Izad Impact - 69 J/m ASTM D256 9.6 kJ/m² ISO 180 Unnotched Izad Impact - 640 J/m ASTM D4812 640 J/m ASTM D4812 19.0 kJ/m² ISO 180 19.0 kJ/m²	2	17200	MPa	ASTM D638
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Tensile Elongation	Tensile Stress			
Tensile Elongation Solution (a)	Yield	196	MPa	ISO 527-2/1A/5
Break 2.2 % ASTM D688 Break Break ASTM D688 ISO 527-2/IA/5 Flexural Modulus I5100 MPa ASTM D790 ASTM D79	2	181	MPa	ASTM D638
Break 2.2 % ISO 527-2/IA/5 Flexural Modulus 15100 MPa ASTM D790 21300 MPa ISO 178 Flexural Strength 276 MPa ASTM D790 296 MPa ISO 178 Compressive Strength 152 MPa ASTM D695 Shear Strength 91.0 MPa ASTM D695 Shear Strength 91.0 MPa ASTM D792 Impact Typical Value Unit Test method Notched Izod Impact 9.6 kJ/m² ISO 180 Unnotched Izod Impact 640 J/m ASTM D4812 9.6 kJ/m² ISO 180 Unnotched Izod Impact Typical Value Unit Test method Nockwell Hardness (M-Scale) 101 ASTM D885 Hardness Typical Value Unit Test method Deflection Temperature Under Load 3 ASTM D785 1.8 MPa, Annealed, 3.20 mm 210 °C Glass Transition Temperature 160 °C ASTM D3418 Peak Melting Temperature 340 °C ASTM E83 Specific Heat	<u> </u>			
Flexural Modulus 15100 MPa ASTM D790 21300 MPa ISO 178 Flexural Strength 276 MPa ASTM D790 296 MPa ISO 178 Compressive Strength 152 MPa ASTM D695 Shear Strength 9.0 MPa ASTM D732 Impact Typical Value Unit Test method Notched Izod Impact 69 J/m ASTM D256 69 J/m² ASTM D256 640 J/m² ASTM D4812 7ypical Value Unit Test method Rockwell Hardness (M-Scale) 101 ASTM D585 Thermal Typical Value Unit Test method Deflection Temperature Under Load³	Break ²	2.2	%	
15100 MPa ASTM D790 21300 MPa 1SO 178 Flexural Strength 276 MPa ASTM D790 296 MPa ISO 178 Compressive Strength 152 MPa ASTM D695 Shear Strength 91.0 MPa ASTM D695 Shear Strength 91.0 MPa ASTM D732 Impact Typical Value Unit Test method Notched Izod Impact 69 J/m ASTM D256 9.6 kJ/m² ISO 180 Unnotched Izod Impact 640 J/m ASTM D4812 9.6 kJ/m² ISO 180 Unnotched Izod Impact 640 J/m ASTM D4812 39 kJ/m² ISO 180 Unnotched Izod Impact 1 640 J/m ASTM D4812 39 kJ/m² ISO 180 Unnotched Izod Impact 1 640 J/m ASTM D4812 39 kJ/m² ISO 180 Unnotched Izod Impact 1 640 J/m ASTM D4812 39 kJ/m² ISO 180 Unnotched Izod Impact 1 640 J/m ASTM D4812 39 kJ/m² ISO 180 Unnotched Izod Impact 1 640 J/m ASTM D4812 39 kJ/m² ISO 180 Unnotched Izod Impact 1 640 J/m ASTM D4812 39 kJ/m² ISO 180 Unnotched Izod Impact 640 J/m ASTM D4812 39 kJ/m² ISO 180 Unnotched Izod Impact 640 J/m ASTM D4812 39 kJ/m² ISO 180 Unnotched Izod Impact 640 J/m ASTM D4812 39 kJ/m² ISO 180 Unnotched Izod Impact 640 J/m ASTM D4812 640 J	Break	2.2	%	ISO 527-2/1A/5
21300 MPa ISO 178 Flexural Strength 276 MPa ASTM D790 296 MPa ISO 178 Compressive Strength 152 MPa ASTM D695 Shear Strength 91.0 MPa ASTM D732 Impact Typical Value Unit Test method Notched Izod Impact 69 J/m ASTM D256 9.6 kJ/m² ISO 180 Unnotched Izod Impact 640 J/m ASTM D4812 9.6 kJ/m² ISO 180 Hardness Typical Value Unit Test method Rockwell Hardness (M-Scale) 101 ASTM D785 Thermal Typical Value Unit Test method Deflection Temperature Under Load ³ ASTM D785 1.8 MPa, Annealed, 3.20 mm 210 °C Glass Transition Temperature 160 °C ASTM D3418 Peak Melting Temperature 340 °C ASTM D3418 Peak Melting Temperature 5.0e-6 cm/cm/°C ASTM D8318 Specific Heat DSC SSTM D3818 200	Flexural Modulus			
Flexural Strength				ASTM D790
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296 MPa ISO 178 Compressive Strength 152 MPa ASTM D695 Shear Strength 91.0 MPa ASTM D732 Impact Typical Value Unit Test method Notched Izod Impact 69 J/m ASTM D256 69 J/m² ASTM D256 9.6 kJ/m² ISO 180 Unnotched Izod Impact 640 J/m ASTM D4812 640 J/m ASTM D4812 ISO 180 Hardness Typical Value Unit Test method Rockwell Hardness (M-Scale) 101 ASTM D785 Thermal Typical Value Unit Test method Deflection Temperature Under Load³ Typical Value Unit Test method Method °C ASTM D3418 Peak Melting Temperature 160 °C ASTM D3418 Peak Melting Temperature 340 °C ASTM D3418 Peak Melting Temperature 350 J/kg/°C ASTM E1530 50°C 1350 J/kg/°C ASTM E1530 Test method Melt Viscosity (400°C, 1000 sec^-1) 790 Pa·s </td <td>Flexural Strength</td> <td></td> <td></td> <td></td>	Flexural Strength			
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Notched Izod Impact 69 J/m ASTM D256 9.6 kJ/m² ISO 180 Unnotched Izod Impact 640 J/m ASTM D4812 39 kJ/m² ISO 180 Hardness Typical Value Unit Test method Rockwell Hardness (M-Scale) 101 ASTM D785 Thermal Typical Value Unit Test method Deflection Temperature Under Load³ ASTM D648 1.8 MPa, Annealed, 3.20 mm 210 °C Glass Transition Temperature 160 °C ASTM D3418 Peak Melting Temperature 340 °C ASTM D3418 CLTE - Flow (-50 to 50 °C) 5.0E-6 cm/cm/°C ASTM E831 Specific Heat DSC 50 °C 1350 J/kg/°C DSC 50°C ASTM E1530 Fill Analysis Typical Value Unit Test method Melt Viscosity (400 °C, 1000 sec^-1) Typical Value Unit Test method Injection Typical Value Unit Test method	Shear Strength	91.0	МРа	ASTM D732
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Rockwell Hardness (M-Scale) 101 ASTM D785 Thermal Typical Value Unit Test method Deflection Temperature Under Load 3 ASTM D648 1.8 MPa, Annealed, 3.20 mm 210 °C Glass Transition Temperature 160 °C ASTM D3418 Peak Melting Temperature 340 °C ASTM D3418 CLTE - Flow (-50 to 50°C) 5.0E-6 cm/cm/°C ASTM E831 Specific Heat DSC 50°C 1350 J/kg/°C 200°C 1810 J/kg/°C Thermal Conductivity 0.35 W/m/K ASTM E1530 Fill Analysis Typical Value Unit Test method Melt Viscosity (400°C, 1000 sec^-1) 790 Pa·s ASTM D3835 Injection Typical Value Unit Typical Value Unit		39	kJ/m²	ISO 180
Rockwell Hardness (M-Scale) 101 ASTM D785 Thermal Typical Value Unit Test method Deflection Temperature Under Load 3 ASTM D648 1.8 MPa, Annealed, 3.20 mm 210 °C Glass Transition Temperature 160 °C ASTM D3418 Peak Melting Temperature 340 °C ASTM D3418 CLTE - Flow (-50 to 50°C) 5.0E-6 cm/cm/°C ASTM E831 Specific Heat DSC 50°C 1350 J/kg/°C 200°C 1810 J/kg/°C Thermal Conductivity 0.35 W/m/K ASTM E1530 Fill Analysis Typical Value Unit Test method Melt Viscosity (400°C, 1000 sec^-1) 790 Pa·s ASTM D3835 Injection Typical Value Unit Typical Value Unit				
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Melt Viscosity (400°C, 1000 sec^-1) 790 Pa·s ASTM D3835 Injection Typical Value Unit	Thermal Conductivity			ASTM E1530
Melt Viscosity (400°C, 1000 sec^-1) 790 Pa·s ASTM D3835 Injection Typical Value Unit	Fill Analysis	Typical Value	Unit	Test method
Injection Typical Value Unit				
	More viscosity (400 0, 1000 300 1)	730	1 4 5	701M D0000
Drying Temperature 149 °C	Injection	Typical Value	Unit	
	Drying Temperature	149	°C	

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polyaryletherketone

Injection	Typical Value Unit	
Drying Time	4.0 hr	
Rear Temperature	366 °C	
Middle Temperature	371 °C	
Front Temperature	377 °C	
Nozzle Temperature	382 °C	
Processing (Melt) Temp	366 to 388 °C	
Mold Temperature	149 to 177 °C	
Injection Rate	Fast	
Screw Compression Ratio	2.0:1.0 to 3.0:1.0	

Injection Notes

Back Pressure: Minimum

Notes

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

- 15" x 0.5" x 0.125" bars
- ² 5.0 mm/min
- ³ 2 hours at 200°C

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