AvaSpire® AV-651 CF30
polyaryletherketone

AvaSpire® AV-651 CF30 is a 30% carbon fiber reinforced version of AvaSpire® AV-651. This formulation offers some advantages relative to 30% carbon fiber reinforced PEEK which include better dimensional stability and warp resistance during injection molding. The AV-651 CF30 grade offers the highest strength, stiffness, and fatigue resistance of any AV-651-based grade. Furthermore, this resin generally retains most of the desirable ultra-performance attributes of carbon fiber reinforced PEEK. Those attributes include chemical resistance, fatigue resistance, and long term thermal oxidative stability.

The excellent balance of properties of AV-651 CF30 makes this grade well suited for a broad range of applications across a number of industries including healthcare, transportation, electronics, oil and gas, and chemical processing.

This resin can be easily melt processed by injection molding using standard equipment. The melt processing behavior of AV-651 CF30 is overall very similar to that of 30% CF reinforced PEEK. While the resin can also be extruded, the lower melt flow AV-621 CF30 grade is considered more suited for extrusion applications while offering the same property profile as AV-651 CF30.

General

Material Status	• Commercial: Active	
Availability	• Africa & Middle East • Asia Pacific • Europe	• Latin America • North America
Filler / Reinforcement	• Carbon Fiber, 30% Filler by Weight	
Features	• Autoclave Sterilizable • Chemical Resistant • E-beam Sterilizable • Ethylene Oxide Sterilizable • Fatigue Resistant • Flame Retardant • Good Dimensional Stability • Good Sterilizability • Heat Sterilizable	• High Heat Resistance • High Stiffness • High Strength • Radiation (Gamma) Resistant • Radiation Sterilizable • Radiotranslucent • Steam Resistant • Steam Sterilizable
Uses	• Dental Applications • Hospital Goods • Medical Devices • Medical/Healthcare Applications	• Pump Parts • Seals • Surgical Instruments
Agency Ratings	• ISO 10993	
RoHS Compliance	• RoHS Compliant	
Appearance	• Black	
Forms	• Pellets	
Processing Method	• Injection Molding • Machining	• Profile Extrusion

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Physical	Typical Value	Unit	Test method
Density / Specific Gravity	1.42		ASTM D792
Melt Mass-Flow Rate (MFR) (400°C/2.16 kg)	4.5	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)	0.20	%	ASTM D570

Mechanical	Typical Value	Unit	Test method
Tensile Modulus			
-- [2]	20700	MPa	ASTM D638
--	21100	MPa	ISO 527-1/1A/1
Tensile Stress			
Yield	192	MPa	ISO 527-2/1A/5
-- [2]	184	MPa	ASTM D638
Tensile Elongation			
Break [2]	1.5	%	ASTM D638
Break	1.5	%	ISO 527-2/1A/5
Flexural Modulus			
--	17200	MPa	ASTM D790
--	19100	MPa	ISO 178
Flexural Strength			
--	262	MPa	ASTM D790
--	280	MPa	ISO 178
Compressive Strength	168	MPa	ASTM D695
Shear Strength	94.0	MPa	ASTM D732

Impact	Typical Value	Unit	Test method
Notched Izod Impact			
--	59	J/m	ASTM D256
--	8.4	kJ/m²	ISO 180
Unnotched Izod Impact			
--	590	J/m	ASTM D4812
--	37	kJ/m²	ISO 180

Hardness	Typical Value	Unit	Test method
Rockwell Hardness			ASTM D785
M-Scale, 23°C, 3.20 mm, Injection Molded	100 to 105		
Shore Hardness			ASTM D2240
Shore D, 23°C, 3.20 mm, Injection Molded	85 to 90		

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Thermal	Typical Value	Unit	Test method
Deflection Temperature Under Load [3]			ASTM D648
1.8 MPa, Annealed, 3.20 mm	212	°C	
Glass Transition Temperature	158	°C	ASTM D3418
Peak Melting Temperature	345	°C	ASTM D3418
CLTE - Flow (-50 to 50°C)	8.2E-6	cm/cm/°C	ASTM E831
Specific Heat			DSC
50°C	1320	J/kg/°C	
200°C	1770	J/kg/°C	
Thermal Conductivity	0.36	W/m/K	ASTM E1530

Fill Analysis	Typical Value	Unit	Test method
Melt Viscosity (400°C, 1000 sec^-1)	540	Pa·s	ASTM D3835

Injection	Typical Value	Unit
Drying Temperature	149	°C
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.

[1] 5" x 0.5" x 0.125" bars

[2] 5.0 mm/min

[3] 2 hours at 200°C

SYENSQO