

Solvay Specialty Polymers AvaSpire® AV-651 CF30 Polyaryletherketone (PAEK) (Unverified Data**)

Category : Polymer , Thermoplastic , Polyketone , Polyaryletherketone (PAEK), Carbon Fiber Filled

Material Notes:

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. Injection Notes:

Back Pressure: Minimum Information provided by Solvay Specialty Polymers.

Order this product through the following link:

http://www.lookpolymers.com/polymer_Solvay-Specialty-Polymers-AvaSpire-AV-651-CF30-Polyaryletherketone-PAEK-nbspUnverified-Data.php

Physical Properties	Metric	English	Comments
Specific Gravity	1.42 g/cc	1.42 g/cc	ASTM D792
Filler Content	30 %	30 %	Carbon Fiber Reinforcement
Water Absorption	0.20 % @Time 86400 sec	0.20 % @Time 24.0 hour	ASTM D570
Viscosity	540000 cP @Shear Rate 1000 1/s, Temperature 400 °C	540000 cP @Shear Rate 1000 1/s, Temperature 752 °F	Melt; ASTM D3835
Linear Mold Shrinkage, Flow	0.00 - 0.0020 cm/cm @Thickness 3.18 mm	0.00 - 0.0020 in/in @Thickness 0.125 in	5" x 0.5" x 0.125" bars; ASTM D955
Linear Mold Shrinkage, Transverse	0.0090 - 0.011 cm/cm @Thickness 3.18 mm	0.0090 - 0.011 in/in @Thickness 0.125 in	5" x 0.5" x 0.125" bars; ASTM D955
Melt Flow	4.5 g/10 min @Load 2.16 kg, Temperature 400 °C	4.5 g/10 min @Load 4.76 lb, Temperature 752 °F	ASTM D1238

Mechanical Properties	Metric	English	Comments
Hardness, Rockwell M	104	104	M-Scale; ASTM D785

Tensile Strength Mechanical Properties	184 MPa Metric	26700 psi English	5.0 mm/min; ASTM D638 Comments
Tensile Strength, Yield	192 MPa	27800 psi	ISO 527-2/1A/5
Elongation at Break	1.5 %	1.5 %	5.0 mm/min; ASTM D638
	1.5 %	1.5 %	ISO 527-2/1A/5
Tensile Modulus	20.7 GPa	3000 ksi	5.0 mm/min; ASTM D638
	21.1 GPa	3060 ksi	ISO 527-2/1A/1
Flexural Strength	262 MPa	38000 psi	ASTM D790
	280 MPa	40600 psi	ISO 178
Flexural Modulus	17.2 GPa	2490 ksi	ASTM D790
	19.1 GPa	2770 ksi	ISO 178
Compressive Strength	168 MPa	24400 psi	ASTM D695
Shear Strength	94.0 MPa	13600 psi	ASTM D732
Izod Impact, Notched	0.590 J/cm	1.11 ft-lb/in	ASTM D256
	5.90 J/cm	11.1 ft-lb/in	ASTM D4812
Izod Impact, Notched (ISO)	8.40 kJ/m ²	4.00 ft-lb/in ²	ISO 180
Izod Impact, Unnotched (ISO)	37.0 kJ/m ²	17.6 ft-lb/in ²	ISO 180

Thermal Properties	Metric	English	Comments
CTE, linear, Parallel to Flow	8.20 $\mu\text{m}/\text{m}\cdot^{\circ}\text{C}$ @Temperature -50.0 - 50.0 $^{\circ}\text{C}$	4.56 $\mu\text{in}/\text{in}\cdot^{\circ}\text{F}$ @Temperature -58.0 - 122 $^{\circ}\text{F}$	TMA; ASTM E831
Specific Heat Capacity	1.32 J/g $\cdot^{\circ}\text{C}$ @Temperature 50.0 $^{\circ}\text{C}$	0.315 BTU/lb $\cdot^{\circ}\text{F}$ @Temperature 122 $^{\circ}\text{F}$	DSC
	1.77 J/g $\cdot^{\circ}\text{C}$ @Temperature 200 $^{\circ}\text{C}$	0.423 BTU/lb $\cdot^{\circ}\text{F}$ @Temperature 392 $^{\circ}\text{F}$	DSC
Thermal Conductivity	0.360 W/m-K	2.50 BTU-in/hr-ft ² - $^{\circ}\text{F}$	ASTM E1530
Melting Point	345 $^{\circ}\text{C}$	653 $^{\circ}\text{F}$	Peak; ASTM D3418
Deflection Temperature at 1.8 MPa (264 psi)	212 $^{\circ}\text{C}$ @Thickness 3.20 mm	414 $^{\circ}\text{F}$ @Thickness 0.126 in	Annealed; 2 hours at 200 $^{\circ}\text{C}$; ASTM D648
Glass Transition Temp, Tg	158 $^{\circ}\text{C}$	316 $^{\circ}\text{F}$	ASTM D3418

Thermal Properties	Metric	English	Comments
Processing Properties	Metric	English	Comments
Rear Barrel Temperature	366 °C	691 °F	
Middle Barrel Temperature	371 °C	700 °F	
Front Barrel Temperature	377 °C	711 °F	
Nozzle Temperature	382 °C	720 °F	
Melt Temperature	366 - 388 °C	691 - 730 °F	
Mold Temperature	149 - 177 °C	300 - 351 °F	
Drying Temperature	149 °C	300 °F	
Dry Time	4.00 hour	4.00 hour	

Descriptive Properties	Value	Comments
Appearance	Black	
Availability	Africa & Middle East	
	Asia Pacific	
	Europe	
	North America	
	South America	
Features	Autoclave Sterilizable	
	E-beam Sterilizable	
	Ethylene Oxide Sterilizable	
	Fatigue Resistant	
	Flame Retardant	
	Good Chemical Resistance	
	Good Dimensional Stability	
	Good Sterilizability	
	Heat Sterilizable	
	High Heat Resistance	
	High Stiffness	

Descriptive Properties	Value	Comments
	Radiation (Gamma) Resistant	
	Radiation Sterilizable	
	Radiotranslucent	
	Steam Resistant	
	Steam Sterilizable	
Forms	Pellets	
Generic	PAEK	
Injection Rate	Fast	
Processing Method	Injection Molding	
	Machining	
	Profile Extrusion	
RoHS Compliance	RoHS Compliant	
Screw Compression Ratio	2.0:1.0 to 3.0:1.0	
Uses	Dental Applications	
	Hospital Goods	
	Medical Appliances	
	Medical/Healthcare Applications	
	Pump Parts	
	Seals	
	Surgical Instruments	

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