Solvay Specialty Polymers AvaSpireÂ® AV-651 Polyaryletherketone (PAEK)

Category : Polymer , Thermoplastic , Polyketone

Material Notes:

AvaSpireÂ® AV-651 is an unreinforced polyaryletherketone (PAEK) that offers more ductility and impact strength than PEEK, with higher chemical and environmental stress cracking resistance than AvaSpireÂ® AV-650. It has been specifically formulated for applications requiring a balance of chemical resistance and mechanical strength along with good part aesthetics, bridging the performance gaps within the ultra polymers space.Features: Autoclave Sterilizable; Biocompatible; Ductile; E-beam Sterilizable; Ethylene Oxide Sterilizable; Fatigue Resistant; Flame Retardant; Good Chemical Resistance; Good Dimensional Stability; Good Impact Resistance; Good Sterilizability; Heat Sterilizable; High Heat Resistance; Radiation (Gamma) Resistant; Radiation Sterilizable; Radiotranslucent; Steam Resistant; Steam SterilizableUses: Aerospace Applications; Aircraft Applications; Bearings; Dental Applications; Film; Hospital Goods; Industrial Applications; Medical Devices; Medical/Healthcare Applications; Oil/Gas Applications; Pump Parts; Seals; Surgical InstrumentsInformation provided by Solvay Specialty Polymers.

Order this product through the following link:
http://www.lookpolymers.com/polymer_Solvay-Specialty-Polymers-AvaSpire-AV-651-Polyaryletherketone-PAEK.php

Physical Properties	Metric	English	Comments
Density	1.29 g/cc	0.0466 lb/inÂ³	ASTM D792
Water Absorption	0.20 % @Time 86400 sec	0.20 % @Time 24.0 hour	ISO 62
Viscosity	240000 cP @Shear Rate 1000 1/s, Temperature 400 Â°C	240000 cP @Shear Rate 1000 1/s, Temperature 752 Â°F	Melt Viscosity; ASTM D3835
Linear Mold Shrinkage, Flow	0.0070 - 0.0090 cm/cm @Thickness 3.18 mm	0.0070 - 0.0090 in/in @Thickness 0.125 in	
Linear Mold Shrinkage, Transverse	0.010 - 0.012 cm/cm @Thickness 3.18 mm	0.010 - 0.012 in/in @Thickness 0.125 in	ASTM D955
Melt Flow	25 g/10 min @Load 2.16 kg, Temperature 400 Â°C	25 g/10 min @Load 4.76 lb, Temperature 752 Â°F	ASTM D1238

Mechanical Properties	Metric	English	Comments
Hardness, Rockwell M	94	94	ASTM D785
Tensile Strength	87.0 MPa	12600 psi	50 mm/min; ASTM D638
Tensile Strength, Yield	89.0 MPa	12900 psi	Type 1A, 50 mm/min; ISO 527-2
Elongation at Break	>= 40 %	>= 40 %	Type 1A, 50 mm/min; ISO 527-2

Mechanical Properties	Metric	English	Comments
Elongation at Yield	5.7 %	5.7 %	Type 1A, 50 mm/min; ISO 527-2
	6.2 %	6.2 %	50 mm/min; ASTM D638
Tensile Modulus	3.00 GPa	435 ksi	50 mm/min; ASTM D638
	3.20 GPa	464 ksi	1 mm/min, Type 1A; ISO 527-2
Flexural Strength	124 MPa	18000 psi	ASTM D790
	127 MPa	18400 psi	ISO 178
Flexural Modulus	3.10 GPa	450 ksi	ASTM D790
	3.20 GPa	464 ksi	ISO 178
Compressive Strength	112 MPa	16200 psi	ASTM D695
Shear Strength	78.0 MPa	11300 psi	ASTM D732
Izod Impact, Notched	0.690 J/cm	1.29 ft-lb/in	ASTM D256
Izod Impact, Unnotched	NB	NB	ASTM D256
Izod Impact, Notched (ISO)	6.60 kJ/mÂ²	3.14 ft-lb/inÂ²	ISO 180
Izod Impact, Unnotched (ISO)	NB	NB	ISO 180

Thermal Properties	Metric	English	Comments
CTE, linear, Parallel to Flow	47.0 Âµm/m-Â°C @Temperature -50.0 - 50.0 Â°C	26.1 Âµin/in-Â°F @Temperature -58.0 - 122 Â°F	1
Specific Heat Capacity	1.31 J/g-Â°C @Temperature 50.0 Â°C	0.313 BTU/lb-Â°F @Temperature 122 Â°F	ASTM C351
	1.82 J/g-Â°C @Temperature 200 Â°C	0.435 BTU/lb-Â°F @Temperature 392 Â°F	ASTM C351
Thermal Conductivity	0.240 W/m-K	1.67 BTU-in/hr-ftÂ²-Â°F	ASTM C177
Melting Point	345 Â°C	653 Â°F	ASTM D3418
Deflection Temperature at 1.8 MPa (264 psi)	190 Â°C @Thickness 3.20 mm	374 Â°F @Thickness 0.126 in	Annealed; ASTM D648
Glass Transition Temp, Tg	158 Â°C	316 Â°F	DSC

Thermal Properties	Metric	English	Comments
Flammability, UL94	@Thickness 0.800 - 1.60 mm	@Thickness 0.0315 - 0.0630 in	

Electrical Properties	Metric	English	Comments
Volume Resistivity	5.00e+17 ohm-cm	5.00e+17 ohm-cm	ASTM D257
Surface Resistance	>= 1.90e+17 ohm	>= 1.90e+17 ohm	ASTM D257
Dielectric Constant	3.1 @Frequency 60.0 Hz	3.1 @Frequency 60.0 Hz	ASTM D150
	3.1 @Frequency 1.00e+6 Hz	3.1 @Frequency 1.00e+6 Hz	ASTM D150
	3.12 @Frequency 1000 Hz	3.12 @Frequency 1000 Hz	ASTM D150
Dielectric Strength	16.0 kV/mm @Thickness 3.00 mm	406 kV/in @Thickness 0.118 in	ASTM D149
Dissipation Factor	0.0010 @Frequency 60.0 Hz	0.0010 @Frequency 60.0 Hz	ASTM D150
	0.0010 @Frequency 1000 Hz	0.0010 @Frequency 1000 Hz	ASTM D150
	0.0040 @Frequency 1.00e+6 Hz	0.0040 @Frequency 1.00e+6 Hz	ASTM D150

Processing Properties	Metric	English	Comments
Rear Barrel Temperature	355 Â°C	671 Â°F	
Middle Barrel Temperature	365 Â°C	689 Â°F	
Front Barrel Temperature	370 Â°C	698 Â°F	
Nozzle Temperature	375 Â°C	707 Â°F	
Melt Temperature	365 - 390 Â°C	689 - 734 Â°F	
Mold Temperature	150 - 180 Â°C	302 - 356 Â°F	
Drying Temperature	150 Â°C	302 Â°F	

Processing Properties	Metric @Time 14400 sec	English @Time 4.00 hour	Comments

Descriptive Properties	Value	Comments
Agency Ratings	FAA FAR 25.853a; ISO 10993; ISO 10993-Part 1	
Availability	Africa & Middle East	
	Asia Pacific	
	Europe	
	Latin America	
	North America	
Color	Beige; Natural	
Form	Pellets	
Injection Rate	Fast	
Processing Technique	Extrusion Blow Molding	
	Fiber (Spinning) Extrusion; Film Extrusion	
	Injection Blow Molding; Injection Molding	
	Machining; Profile Extrusion	
	Thermoforming; Wire & Cable Extrusion	
RoHS Compliance	RoHS Compliant	
Screw Compression Ratio	2.0:1.0 to 3.0:1.0	

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