

AvaSpire® AV-651

Polyaryletherketone
Solvay Specialty Polymers

Message:

AvaSpire® 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 AvaSpire® 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. These properties make it well-suited for applications in healthcare, transportation, electronics, chemical processing and other industrial uses. AvaSpire® AV-651 can be easily processed by typical injection molding and extrusion methods using conventional processing equipment.
Natural: AvaSpire AV-651 NT
Beige: AvaSpire AV-651 BG 15

General Information	
UL YellowCard	E140728-100211990
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 Sterilizable
Uses	Aerospace Applications
	Aircraft Applications
	Bearings
	Dental Applications
	Film
	Hospital Goods
	Industrial Applications
	Medical Devices
	Medical/Healthcare Applications

Oil/Gas Applications

Pump Parts

Seals

Surgical Instruments

Agency Ratings	FAA FAR 25.853a 3
	ISO 10993
	ISO 10993-Part 1
RoHS Compliance	RoHS Compliant
Appearance	Beige
	Natural Color
Forms	Pellets
Processing Method	Extrusion Blow Molding
	Fiber (Spinning) Extrusion
	Film Extrusion
	Injection Blow Molding
	Injection Molding
	Machining
	Profile Extrusion
	Thermoforming
	Wire & Cable Extrusion
Multi-Point Data	Isothermal Stress vs. Strain (ISO 11403-1)
	Viscosity vs. Shear Rate (ISO 11403-2)

Physical	Nominal Value	Unit	Test Method
Specific Gravity	1.29	g/cm ³	ASTM D792
Melt Mass-Flow Rate (MFR) (400°C/2.16 kg)	25	g/10 min	ASTM D1238
Molding Shrinkage ¹			ASTM D955
Flow : 3.18 mm	0.70 to 0.90	%	
Across Flow : 3.18 mm	1.0 to 1.2	%	
Water Absorption (24 hr)	0.20	%	ASTM D570
Hardness	Nominal Value	Unit	Test Method
Rockwell Hardness (M-Scale)	94		ASTM D785
Mechanical	Nominal Value	Unit	Test Method
Tensile Modulus			
-- ²	3000	MPa	ASTM D638
--	3200	MPa	ISO 527-2/1A/1
Tensile Stress			

Yield	89.0	MPa	ISO 527-2/1A/50
-- ³	87.0	MPa	ASTM D638
Tensile Elongation			
Yield ⁴	6.2	%	ASTM D638
Yield	5.7	%	ISO 527-2/1A/50
Break ⁵	> 40	%	ASTM D638
Break	> 40	%	ISO 527-2/1A/50
Flexural Modulus			
--	3100	MPa	ASTM D790
--	3200	MPa	ISO 178
Flexural Strength			
--	124	MPa	ASTM D790
--	127	MPa	ISO 178
Compressive Strength	112	MPa	ASTM D695
Shear Strength	78.0	MPa	ASTM D732
Impact	Nominal Value	Unit	Test Method
Notched Izod Impact			
--	69	J/m	ASTM D256
--	6.6	kJ/m ²	ISO 180
Unnotched Izod Impact	No Break		ASTM D256, ISO 180
Thermal	Nominal Value	Unit	Test Method
Deflection Temperature Under Load ⁶ (1.8 MPa, Annealed, 3.20 mm)	190	°C	ASTM D648
Glass Transition Temperature	158	°C	ASTM D3418
Peak Melting Temperature	345	°C	ASTM D3418
CLTE - Flow (-50 to 50°C)	4.7E-5	cm/cm/°C	ASTM E831
Specific Heat			DSC
50°C	1310	J/kg/°C	
200°C	1820	J/kg/°C	
Thermal Conductivity	0.24	W/m/K	ASTM E1530
Electrical	Nominal Value	Unit	Test Method
Surface Resistivity	> 1.9E+17	ohms	ASTM D257
Volume Resistivity	5.0E+17	ohms · cm	ASTM D257
Dielectric Strength (3.00 mm)	16	kV/mm	ASTM D149
Dielectric Constant			ASTM D150
60 Hz	3.10		
1 kHz	3.12		
1 MHz	3.10		
Dissipation Factor			ASTM D150
60 Hz	1.0E-3		
1 kHz	1.0E-3		
1 MHz	4.0E-3		

Flammability	Nominal Value	Unit	Test Method
Flame Rating			UL 94
0.800 mm	V-0		
1.60 mm	V-0		
Fill Analysis	Nominal Value	Unit	Test Method
Melt Viscosity (400°C, 1000 sec ⁻¹)	240	Pa·s	ASTM D3835
Injection	Nominal 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		
NOTE			
1.	5" x 0.5" x 0.125"		
2.	50 mm/min		
3.	50 mm/min		
4.	50 mm/min		
5.	50 mm/min		
6.	2 hours at 200°C		

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