Veradel® AG-320
polyethersulfone

Veradel® AG-320 is a 20% glass fiber reinforced grade of polyethersulfone (PESU). Adding glass fiber to polyethersulfone substantially increases the rigidity, tensile strength, creep resistance, dimensional stability and chemical resistance of the material, while maintaining most of its other basic characteristics. The combination of structural properties and cost effectiveness make this resin an attractive alternative to metals in many engineering applications.

This grade was formerly marketed as Radel® A PESU

- Natural: Veradel® AG-320 NT
- Black: Veradel® AG-320 BK 184

General

Material Status	• Commercial: Active	
Availability	• Africa & Middle East • Asia Pacific • Europe	• Latin America • North America
Filler / Reinforcement	• Glass Fiber, 20% Filler by Weight	
Features	• Acid Resistant • Chemical Resistant • Creep Resistant • Flame Retardant • Food Contact Acceptable • Good Adhesion • Good Dimensional Stability • Good Strength	• Good Thermal Stability • Good Toughness • High Heat Resistance • High Rigidity • High Tensile Strength • Hydrolysis Resistant • Medium Flow • Medium Molecular Weight
Uses	• Appliance Components • Appliances • Automotive Electronics • Batteries • Business Equipment • Electrical Parts • Electrical/Electronic Applications	• Food Service Applications • Industrial Applications • Metal Replacement • Microwave Cookware • Plumbing Parts • Valves/Valve Parts
Agency Ratings	• NSF STD-51[1]	
RoHS Compliance	• RoHS Compliant	
Automotive Specifications	• FORD WSK-M4D773-A2 Color: BK184 Black	• FORD WSK-M4D773-A2 Color: NT Natural
Appearance	• Black • Colors Available	• Natural Color
Forms	• Pellets	
Processing Method	• Injection Molding	

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Physical	Typical Value	Unit	Test method
Density / Specific Gravity	1.51		ASTM D792
Melt Mass-Flow Rate (MFR) (343°C/2.16 kg)	6.0	g/10 min	ASTM D1238
Molding Shrinkage - Flow	0.40	%	ASTM D955
Water Absorption (24 hr)	0.45	%	ASTM D570

Mechanical	Typical Value	Unit	Test method
Tensile Modulus	5690	MPa	ASTM D638
Tensile Strength (Yield)	109	MPa	ASTM D638
Tensile Elongation (Break)	3.2	%	ASTM D638
Flexural Modulus	6550	MPa	ASTM D790
Flexural Strength	162	MPa	ASTM D790

Impact	Typical Value	Unit	Test method
Notched Izod Impact	59	J/m	ASTM D256

Thermal	Typical Value	Unit	Test method
Deflection Temperature Under Load			ASTM D648
1.8 MPa, Unannealed, 3.18 mm	214	°C	
CLTE - Flow (3.18 mm)	3.1E-5	cm/cm/°C	ASTM D696
RTI Elec (0.43 mm)	180	°C	UL 746B
RTI Imp (0.43 mm)	180	°C	UL 746B
RTI Str (0.43 mm)	180	°C	UL 746B

Electrical	Typical Value	Unit	Test method
Volume Resistivity	> 1.0E+16	ohms·cm	ASTM D257
Dielectric Strength	17	kV/mm	ASTM D149
Dielectric Constant			ASTM D150
60 Hz	3.84		
1 kHz	3.84		
1 MHz	3.88		
Dissipation Factor			ASTM D150
60 Hz	1.5E-3		
1 kHz	1.8E-3		
1 MHz	8.1E-3		
Arc Resistance	120 to 179	sec	ASTM D495
Arc Resistance	PLC 5		ASTM D495
Comparative Tracking Index (CTI)	100 to 250	V	UL 746A
Comparative Tracking Index (CTI)	PLC 4		UL 746A
High Amp Arc Ignition (HAI)			UL 746A
0.430 mm	> 120		
0.800 mm	> 120		
3.00 mm	> 120		
High Amp Arc Ignition (HAI) (0.43 mm)	PLC 0		UL 746A
High Voltage Arc Tracking Rate (HVTR)	80.1 to 150	mm/min	UL 746A
High Voltage Arc Tracking Rate (HVTR)	PLC 3		UL 746A

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Electrical	Typical Value	Unit	Test method
Hot-wire Ignition (HWI)			UL 746A
0.430 mm	51	sec	
0.800 mm	67	sec	
Hot-wire Ignition (HWI)			UL 746A
0.43 mm	PLC 2		
0.8 mm	PLC 1		

Flammability	Typical Value	Unit	Test method
Flame Rating [2] (0.43 mm, All)	V-0		UL 94
Glow Wire Flammability Index (0.43 mm)	960	°C	IEC 60695-2-12
Glow Wire Ignition Temperature (0.43 mm)	850	°C	IEC 60695-2-13

Injection	Typical Value	Unit
Drying Temperature	149 to 177	°C
Drying Time	2.5 to 4.0	hr
Processing (Melt) Temp	343 to 399	°C
Mold Temperature	149 to 163	°C
Injection Rate	Fast	
Back Pressure	0.345 to 0.689	MPa
Screw Compression Ratio	2.0:1.0	

Notes

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

[1] Maximum Temperature of Use: 190°C (375°F)

[2] These flammability ratings are not intended to reflect hazards presented by these or any other materials under actual fire conditions.

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