

AG-321, AG-331

RADEL AG-321 and AG-331 resins are 20 and 30% glass fiber reinforced polyethersulfone compounds. Adding glass fiber to RADEL A-300 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 these resins attractive alternatives to metals in many engineering applications.

RADEL AG-321 and AG-331 resins can be fabricated with conventional injection molding equipment. They are opaque, grayish materials in their natural form and may be readily colored.

Typical Properties of RADEL AG-321 and AG-331 Resins

Property	ASTM Test Method	Typical Values ⁽¹⁾					
		U.S. Customary Units			SI Units		
		AG-321	AG-331	Units	AG-321	AG-331	Units
Mechanical							
Tensile Strength	D 638	15.8	18.9	kpsi	109	130	MPa
Tensile Elongation	D 638	3.2	1.9	%	3.2	1.9	%
Tensile Modulus	D 638	825	1,250	kpsi	5.69	8.62	GPa
Flexural Strength	D 790	23.5	26.0	kpsi	162	180	MPa
Flexural Modulus	D 790	950	1,250	kpsi	6.55	8.62	GPa
Notched Izod	D 256	1.1	1.4	ft-lb/in	59	75	J/m
Tensile Impact	D 1822	31	34	ft-lb/in ²	65	72	kJ/m ²
Thermal							
Deflection Temperature ⁽³⁾ at 264 psi (1.8 MPa)	D 648	417	420	°F	214	216	°C
Coefficient of Thermal Expansion	D 696	17	17	ppm/°F	31	31	ppm/°C
Flammability Rating ⁽²⁾ at thickness	UL 94	V0	V0	0.017 in	V0	V0	0.43 mm
Electrical							
Volume Resistivity	D 257	>10 ¹⁶	>10 ¹⁶	ohm-cm	>10 ¹⁶	>10 ¹⁶	ohm-cm
Dielectric Strength	D 149	440	440	V/mil	17	17	kV/mm
Dielectric Constant at 60 Hz	D 150	3.84	4.11		3.84	4.11	
Dielectric Constant at 10 ³ Hz		3.84	4.13		3.84	4.13	
Dielectric Constant at 10 ⁶ Hz		3.88	4.17		3.88	4.17	
Dissipation Factor at 60 Hz	D 150	0.0015	0.0019		0.0015	0.0019	
Dissipation Factor at 10 ³ Hz		0.0018	0.0018		0.0018	0.0018	
Dissipation Factor at 10 ⁶ Hz		0.0081	0.0094		0.0081	0.0094	
General							
Specific Gravity	D 1505	1.51	1.58		1.51	1.58	
Water Absorption, 24 hours	D 570	0.45	0.39	%	0.45	0.39	%
Melt Flow at 380°C (716°F), 2.16 kg	D 1238	18	13	g/10 min	18	13	g/10 min
Mold Shrinkage	D 955	0.4	0.3	%	0.4	0.3	%

⁽¹⁾ Properties of individual batches will vary within specification limits. Properties are typical of uncolored material. Colorants or other additives may alter properties.

⁽²⁾ These flammability ratings are not intended to reflect hazards presented by these or any material under actual fire conditions.

⁽³⁾ As molded, not annealed, 0.125 in. (3.2 mm) bar thickness.

Drying

RADEL AG-321 and AG-331 polyethersulfone must be dried completely prior to melt processing. Incomplete drying will result in defects in the formed part ranging from surface streaks to severe bubbling. Because the polymer is thermally and hydrolytically stable, molding wet resin does not usually result in degradation; therefore, the defective parts can usually be recovered as regrind.

Pellets of RADEL AG-321 and AG-331 resins can be dried on trays in a circulating air oven or in a hopper dryer. Recommended drying conditions are: 2.5 hours at 350°F (177°C); or 3.5 hours at 300°F (149°C); or 4.5 hours at 275°F (135°C). Note: Do not dry below 275°F (135°C). Dried resin should be handled carefully to prevent reabsorption of moisture from the atmosphere by employing dry containers and covered hoppers.

Injection Molding

RADEL AG-321 and AG-331 resins can be readily injection molded in most screw injection machines. Stock temperature requirements will generally range from 650° to 750°F (343° to 399°C), depending on mold design and the type of equipment being used. A general purpose, 2:1 compression ratio screw is recommended, with back pressures of 50 to 100 psi (0.3 to 0.7 MPa). Injection speeds should be as fast as possible, consistent with part appearance requirements. Mold temperatures of at least 280°F (138°C) are suggested. In the case of long-flow or thin-walled parts, or where low residual stresses are required, mold temperatures as high as 300° to 325°F (149° to 163°C) can be used.

Standard Packaging and Labeling

RADEL AG-321 and AG-331 resins are packaged in multiwall paper bags containing 55.115 pounds (25 kg) of material. Special packaging can be supplied upon request. Individual packages will be plainly marked with the product number, the color, the lot number, and the net weight.

Precautionary Labeling

On the basis of the toxicological, physical, and chemical properties of RADEL AG-321 and AG-331 resins, labeling used on containers is as follows:

Caution! Handling and/or processing this material may generate a dust which can cause mechanical irritation of the eyes, skin, nose, and throat.

Product Safety and Emergency Service

For product safety information or a Material Safety Data Sheet on a product of Solvay Advanced Polymers

1 (800) 621-4557

1 (770) 772-8880 outside of U.S.

For information or help in an emergency such as a spill, leak, fire or explosion, call day or night:

Emergency Health Information

1 (800) 621-4590

1 (770) 772-5177 outside of U.S.

Emergency Spill Information

CHEMTREC 1 (800) 424-9300

**1 (703) 527-3887 outside of U.S.
collect calls accepted**

For Additional Information

Technical Service

1 (800) 621-4557

Customer Service

1 (800) 848-9744

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