

Product Data

RADEL® R polyphenylsulfone

R-5000, R-5100 NT15, R-5500

RADEL R polyphenylsulfone resins offer exceptional hydrolytic stability, and toughness superior to other commercially-available, high-temperature engineering resins. They offer high deflection temperatures and outstanding resistance to environmental stress cracking. The polymer is inherently flame retardant, and also has excellent thermal stability and good electrical properties.

RADEL R resins are available as an opaque general purpose injection molding grade—R-5100 NT15, a transparent injection molding grade—R-5000, and a transparent extrusion grade—R-5500.

Typical Properties of RADEL R-5000, R-5100 NT15, and R-5500 Resins

Property	ASTM Test Method	Typical Values ⁽¹⁾	
		U.S. Customary Units Value	SI Units Value
Mechanical			
Tensile Strength	D 638	10.1 kpsi	70 MPa
Tensile Modulus	D 638	340 kpsi	2.3 GPa
Tensile Elongation at Yield	D 638	7.2 %	7.2 %
Tensile Elongation at Break	D 638	60-120 %	60-120 %
Flexural Strength ⁽²⁾	D 790	13.2 kpsi	91 MPa
Flexural Modulus	D 790	350 kpsi	2.4 GPa
Tensile Impact Strength	D 1822	190 ft-lb/in ²	400 kJ/m ²
Izod Impact, Notched	D 256	13 ft-lb/in	690 J/m
Thermal			
Deflection Temperature at 264 psi (1.82 MPa)	D 648	405 °F	207 °C
Flammability Rating ⁽³⁾	UL-94	V-0	V-0
Coefficient of Thermal Expansion	D 696	31 ppm/°F	56 ppm/°C
Glass Transition Temperature ⁽⁴⁾		428 °F	220 °C
Electrical			
Dielectric Strength at 0.125 in. (3.2 mm)	D 149	380 V/mil	15 kV/mm
Dielectric Strength at 0.001 in. (0.02 mm)		>5,000 V/mil	>200 kV/mm
Dielectric Constant at 60 Hz	D 150	3.44	3.44
Volume Resistivity	D 257	9 x 10 ¹⁶ ohm-cm	9 x 10 ¹⁶ ohm-cm
Chemical			
Steam Sterilization ⁽⁵⁾ w/ Morpholine, cycles passed without cracking, crazing, or rupture		>1000 cycles	>1000 cycles
Water Absorption at 24 hours	D 570	0.37 %	0.37 %
Water Absorption at Equilibrium	D 570	1.10 %	1.10 %
General and Fabrication			
Specific Gravity	D 792	1.29	1.30
Refractive Index	D 542	1.672	opaque
Melt Flow at 689°F (365°C), 5.0 kg, g/10 min	D 1238	17	17
Mold Shrinkage, %	D 955	0.7	0.7

⁽¹⁾ Actual properties of individual batches will vary within specification limits. Unless otherwise specified, properties were measured using one-eighth inch (3.2 mm) thick injection molded specimens.
⁽²⁾ at 5% strain

⁽³⁾ These flammability ratings are not intended to reflect hazards presented by these or any other materials under actual fire conditions.

⁽⁴⁾ Measured by differential scanning calorimetry at a heating rate of 36°F (20°C) per minute.

⁽⁵⁾ Steam Autoclave Conditions: Temperature - 270°F (132°C); Time - 30 minutes/cycle; Steam Pressure - 27 psig (0.19 MPa); Stress Level - 1000 psi (7.0 MPa) in (texture: Aquidiva - Morpholine at 50 ppm.

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