

# Radel® R-5800

## polyphenylsulfone

Radel® R-5800 is a high melt flow grade of Radel® polyphenylsulfone (PPSU). It is especially well-suited for parts requiring long flow length with thin walls. Radel® resins offer exceptional hydrolytic stability and toughness superior to other commercially-available, high-temperature engineering resins. They also offer high deflection temperatures and outstanding resistance to environmental stress cracking. Radel® polymers are inherently flame retardant, provide excellent thermal stability and possess good electrical properties.

Additional Radel® grades include a transparent injection molding grade (R-5000), an opaque, general purpose, injection molding grade (R-5100) and a transparent, extrusion grade (R-5500).

- Natural/Transparent: Radel® R-5800 NT
- Additional Made-to-Order Colors Available

### General

Material Status	• Commercial: Active	
Availability	• Asia Pacific • Europe	• Latin America • North America
Features	• Acid Resistant • Autoclave Sterilizable • Base Resistant • Biocompatible • Chemical Resistant • E-beam Sterilizable • Ethylene Oxide Sterilizable • Flame Retardant • Good Sterilizability • Good Thermal Stability	• Heat Sterilizable • High ESCR (Stress Crack Resist.) • High Heat Resistance • Hydrolytically Stable • Radiation (Gamma) Resistant • Radiation Sterilizable • Radiotranslucent • Steam Resistant • Steam Sterilizable • Ultra High Toughness
Uses	• Aerospace Applications • Aircraft Applications • Automotive Applications • Dental Applications • Food Service Applications	• Hospital Goods • Medical Devices • Medical/Healthcare Applications • Surgical Instruments
Agency Ratings	• ISO 10993	
RoHS Compliance	• RoHS Compliant	
Automotive Specifications	• ASTM D6394 SP0313	
Appearance	• Clear Amber	• Colors Available
Forms	• Pellets	
Processing Method	• Extrusion • Injection Molding	• Sheet Extrusion • Thermoforming

### Physical

	Typical Value Unit	Test method
Density / Specific Gravity	1.29	ASTM D792
Melt Mass-Flow Rate (MFR) (365°C/5.0 kg)	20 to 28 g/10 min	ASTM D1238
Molding Shrinkage - Flow (0.125 in)	7.0E-3 in/in	ASTM D955
Water Absorption		ASTM D570
24 hr	0.37 %	
Equilibrium	1.1 %	

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Mechanical	Typical Value	Unit	Test method
Tensile Modulus (0.125 in)	340000	psi	ASTM D638
Tensile Strength (0.125 in)	10100	psi	ASTM D638
Tensile Elongation			ASTM D638
Yield, 0.125 in	7.2	%	
Break, 0.125 in	60 to 120	%	
Flexural Modulus (0.125 in)	350000	psi	ASTM D790
Flexural Strength (5.0% Strain, 0.125 in)	13200	psi	ASTM D790
Impact	Typical Value	Unit	Test method
Notched Izod Impact (0.125 in)	13	ft·lb/in	ASTM D256
Tensile Impact Strength (0.125 in)	190	ft·lb/in <sup>2</sup>	ASTM D1822
Thermal	Typical Value	Unit	Test method
Deflection Temperature Under Load			ASTM D648
264 psi, Unannealed, 0.125 in	405	°F	
Glass Transition Temperature <sup>1</sup>	428	°F	DSC
CLTE - Flow (0.125 in)	3.1E-5	in/in/°F	ASTM D696
Electrical	Typical Value	Unit	Test method
Volume Resistivity (0.125 in)	9.0E+15	ohms·cm	ASTM D257
Dielectric Strength			ASTM D149
0.00100 in	> 5000	V/mil	
0.125 in	380	V/mil	
Dielectric Constant (0.125 in, 60 Hz)	3.44		ASTM D150
Flammability	Typical Value	Unit	Test method
Flame Rating <sup>2</sup> (0.030 in)	V-0		UL 94
Optical	Typical Value	Unit	Test method
Refractive Index	1.672		ASTM D542
Additional Information	Typical Value	Unit	
Steam Sterilization - w/ Morpholine <sup>3</sup>	> 1000	Cycles	

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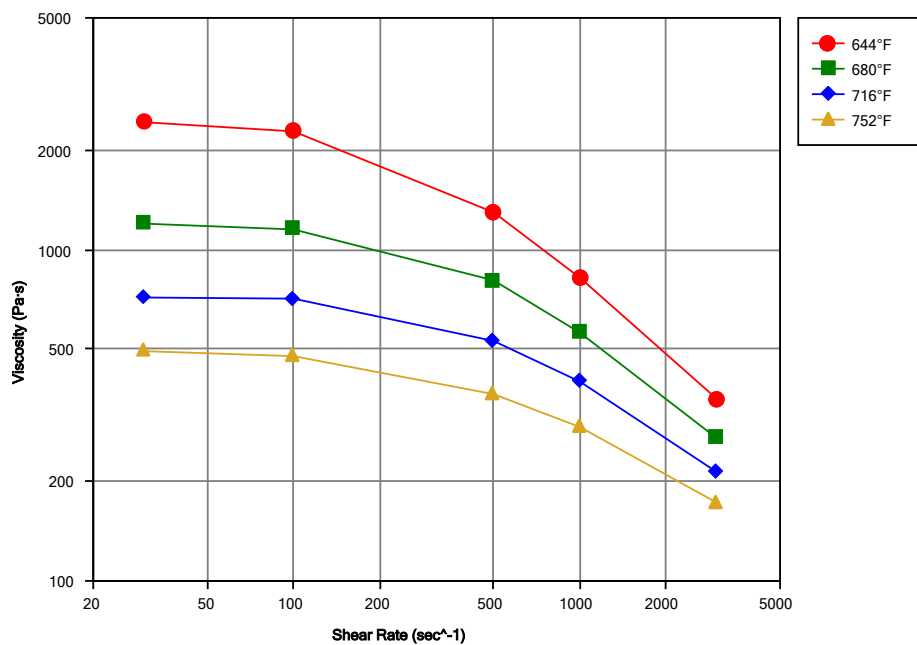
Injection	Typical Value	Unit
Drying Temperature	300	°F
Drying Time	2.5	hr
Processing (Melt) Temp	680 to 735	°F
Mold Temperature	280 to 325	°F
Screw Compression Ratio	2.2:1.0	

Extrusion	Typical Value	Unit
Drying Temperature	340	°F
Drying Time	4.0	hr

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## Viscosity vs. Shear Rate (ISO 11403-2)



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### Notes

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

<sup>1</sup> Heating rate of 36°F (20°C) per minute.

<sup>2</sup> These flammability ratings are not intended to reflect hazards presented by these or any other materials under actual fire conditions.

<sup>3</sup> Cycles passed without cracking, crazing, or rupture.

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 flexure
- Additive: Morpholine at 50 ppm

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