

# 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	<ul style="list-style-type: none"> <li>• Commercial: Active</li> </ul>	
Availability	<ul style="list-style-type: none"> <li>• Asia Pacific</li> <li>• Europe</li> </ul>	<ul style="list-style-type: none"> <li>• Latin America</li> <li>• North America</li> </ul>
Features	<ul style="list-style-type: none"> <li>• Acid Resistant</li> <li>• Autoclave Sterilizable</li> <li>• Base Resistant</li> <li>• Biocompatible</li> <li>• Chemical Resistant</li> <li>• E-beam Sterilizable</li> <li>• Ethylene Oxide Sterilizable</li> <li>• Flame Retardant</li> <li>• Good Sterilizability</li> <li>• Good Thermal Stability</li> </ul>	<ul style="list-style-type: none"> <li>• Heat Sterilizable</li> <li>• High ESCR (Stress Crack Resist.)</li> <li>• High Heat Resistance</li> <li>• Hydrolytically Stable</li> <li>• Radiation (Gamma) Resistant</li> <li>• Radiation Sterilizable</li> <li>• Radiotranslucent</li> <li>• Steam Resistant</li> <li>• Steam Sterilizable</li> <li>• Ultra High Toughness</li> </ul>
Uses	<ul style="list-style-type: none"> <li>• Aerospace Applications</li> <li>• Aircraft Applications</li> <li>• Automotive Applications</li> <li>• Dental Applications</li> <li>• Food Service Applications</li> </ul>	<ul style="list-style-type: none"> <li>• Hospital Goods</li> <li>• Medical Devices</li> <li>• Medical/Healthcare Applications</li> <li>• Surgical Instruments</li> </ul>
Agency Ratings	<ul style="list-style-type: none"> <li>• ISO 10993</li> </ul>	
RoHS Compliance	<ul style="list-style-type: none"> <li>• RoHS Compliant</li> </ul>	
Automotive Specifications	<ul style="list-style-type: none"> <li>• ASTM D6394 SP0313</li> </ul>	
Appearance	<ul style="list-style-type: none"> <li>• Clear Amber</li> </ul>	<ul style="list-style-type: none"> <li>• Colors Available</li> </ul>
Forms	<ul style="list-style-type: none"> <li>• Pellets</li> </ul>	

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### General

Processing Method	<ul style="list-style-type: none"> <li>• Extrusion</li> <li>• Injection Molding</li> </ul>	<ul style="list-style-type: none"> <li>• Sheet Extrusion</li> <li>• Thermoforming</li> </ul>
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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 (3.18 mm)	0.70	%	ASTM D955
Water Absorption			ASTM D570
24 hr	0.37	%	
Equilibrium	1.1	%	

Mechanical	Typical Value	Unit	Test method
Tensile Modulus (3.18 mm)	2340	MPa	ASTM D638
Tensile Strength (3.18 mm)	69.6	MPa	ASTM D638
Tensile Elongation			ASTM D638
Yield, 3.18 mm	7.2	%	
Break, 3.18 mm	60 to 120	%	
Flexural Modulus (3.18 mm)	2410	MPa	ASTM D790
Flexural Strength (5.0% Strain, 3.18 mm)	91.0	MPa	ASTM D790

Impact	Typical Value	Unit	Test method
Notched Izod Impact (3.18 mm)	690	J/m	ASTM D256
Tensile Impact Strength (3.18 mm)	399	kJ/m <sup>2</sup>	ASTM D1822

Thermal	Typical Value	Unit	Test method
Deflection Temperature Under Load			ASTM D648
1.8 MPa, Unannealed, 3.18 mm	207	°C	
Glass Transition Temperature <sup>1</sup>	220	°C	DSC
CLTE - Flow (3.18 mm)	5.6E-5	cm/cm/°C	ASTM D696

Electrical	Typical Value	Unit	Test method
Volume Resistivity (3.18 mm)	9.0E+15	ohms-cm	ASTM D257
Dielectric Strength			ASTM D149
0.0254 mm	> 200	kV/mm	
3.18 mm	15	kV/mm	
Dielectric Constant (3.18 mm, 60 Hz)	3.44		ASTM D150

Flammability	Typical Value	Unit	Test method
Flame Rating <sup>2</sup> (0.76 mm)	V-0		UL 94

Optical	Typical Value	Unit	Test method
Refractive Index	1.672		ASTM D542

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### Additional Information

Steam Sterilization - w/ Morpholine <sup>3</sup>

### Typical Value Unit

> 1000 Cycles

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### Injection

Drying Temperature

149 °C

Drying Time

2.5 hr

Processing (Melt) Temp

360 to 391 °C

Mold Temperature

138 to 163 °C

Screw Compression Ratio

2.2:1.0

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## Extrusion

## Typical Value Unit

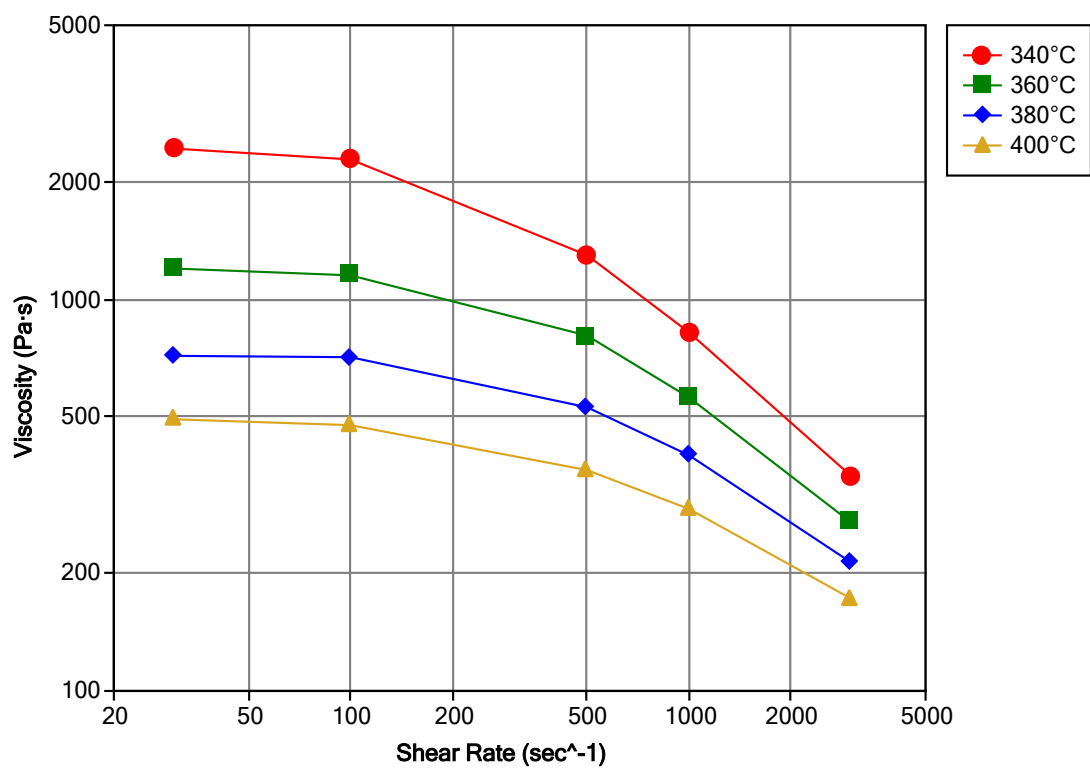
Drying Temperature

171 °C

Drying Time

4.0 hr

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## Notes

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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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