Radel® R-5100

polyphenylsulfone

Radel® R-5100 is an opaque, general purpose polyphenylsulfone (PPSU) for injection molding, that offers exceptional hydrolytic stability, and toughness superior to other commercially-available, high-temperature engineering resins. This resin also offers a high deflection temperature and outstanding resistance to environmental stress cracking. Radel® polymers are inherently flame retardant, provide excellent thermal stability and possess good electrical properties.

- Black: Radel® R-5100 BK937
- Bone: Radel® R-5100 NT15
- Grey: Radel® R-5100 GY1137
- Grey: Radel® R-5100 GY1037
- Grey: Radel® R-5100 GY874
- Blue: Radel® R-5100 BU1027

Radel® R-5100
polyphenylsulfone

General		
Material Status	• Commercial: Active	
Availability	• Asia Pacific • Europe	• Latin America • North America
Filler / Reinforcement	• Filler	
Features	• Acid Resistant • Autoclave Sterilizable • Base Resistant • Biocompatible • Chemical Resistant • E-beam Sterilizable • Ethylene Oxide Sterilizable • Flame Retardant • General Purpose • 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 • Connectors • Dental Applications • Food Service Applications	• Hospital Goods • Medical Devices • Medical/Healthcare Applications • Plumbing Parts • Surgical Instruments
Agency Ratings	• FAA FAR 25.853a • ISO 10993 [1]	• NSF STD-51 [2] • NSF STD-61 [3]
RoHS Compliance	• RoHS Compliant	
Automotive Specifications	• ASTM D6394 SP0312	
Appearance	• Black • Colors Available	• Light Beige • Opaque
Forms	• Pellets	
Processing Method	• Blow Molding • Extrusion • Film Extrusion • Injection Molding	• Machining • Profile Extrusion • Sheet Extrusion • Thermoforming

Physical	Typical Value	Unit	Test method
Density / Specific Gravity	1.30		ASTM D792
Melt Mass-Flow Rate (MFR)	14 to 20	g/10 min	ASTM D1238
Molding Shrinkage - Flow	0.70	%	ASTM D955
Water Absorption (24 hr)	0.37	%	ASTM D570

Mechanical	Typical Value	Unit	Test method
Tensile Modulus	2340	MPa	ASTM D638
Tensile Strength			ASTM D638
Yield	69.6	MPa	
Break	69.6	MPa	
Tensile Elongation			ASTM D638
Yield	7.2	%	
Break	60	%	
Flexural Modulus	2410	MPa	ASTM D790

Mechanical	Typical Value	Unit	Test method
Flexural Strength (Yield)	91.0	MPa	ASTM D790
Compressive Modulus	1730	MPa	ASTM D695
Compressive Strength	98.9	MPa	ASTM D695
Shear Strength	62.7	MPa	ASTM D732
Poisson's Ratio	0.42		ASTM E132

Impact	Typical Value	Unit	Test method
Notched Izod Impact	690	J/m	ASTM D256
Unnotched Izod Impact	No Break		ASTM D256
Tensile Impact Strength	399	kJ/m²	ASTM D1822

Thermal	Typical Value	Unit	Test method
Deflection Temperature Under Load			ASTM D648
0.45 MPa, Unannealed	214	°C	
1.8 MPa, Unannealed	207	°C	
Glass Transition Temperature	220	°C	ASTM E1356
CLTE - Flow	5.6E-5	cm/cm/°C	ASTM D696
Thermal Conductivity	0.35	W/m/K	ASTM C177

Electrical	Typical Value	Unit	Test method
Volume Resistivity	9.0E+15	ohms·cm	ASTM D257
Dielectric Strength	14	kV/mm	ASTM D149
Dielectric Constant			ASTM D150
60 Hz	3.44		
1 kHz	3.40		

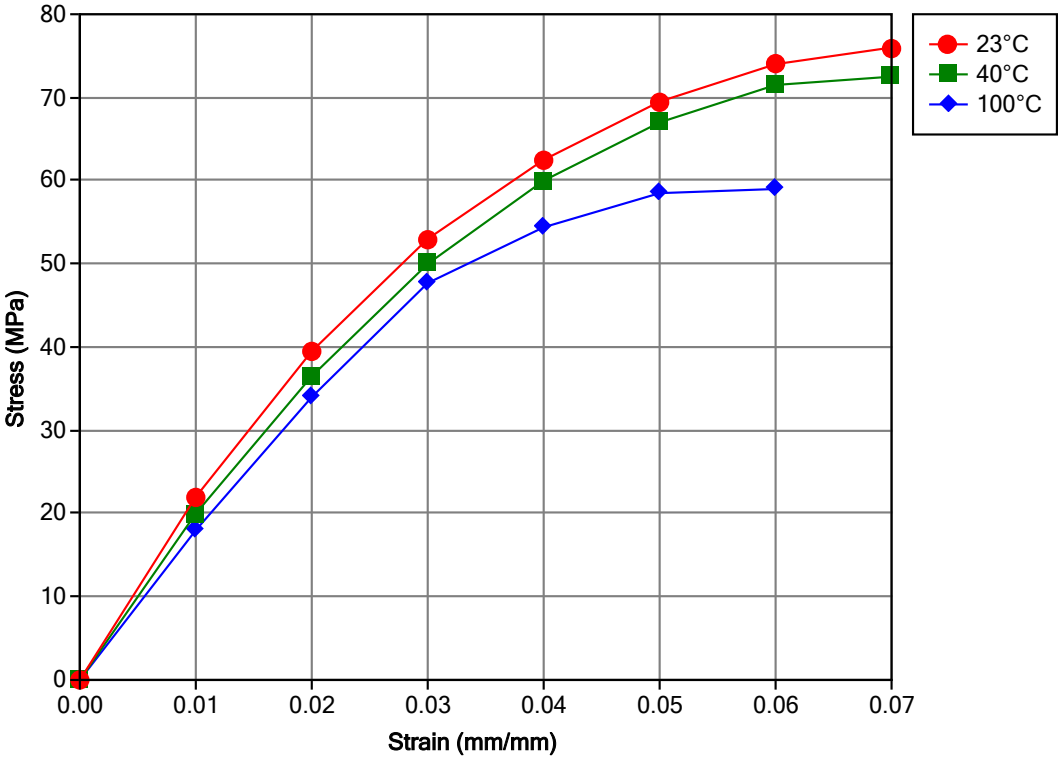
Flammability	Typical Value	Unit	Test method
Flame Rating [4]			UL 94
0.75 mm, ALL colors, UL file E36098	V-0		
Oxygen Index	38	%	ASTM D2863

Optical	Typical Value	Unit	Test method
Refractive Index	1.672		ASTM D542

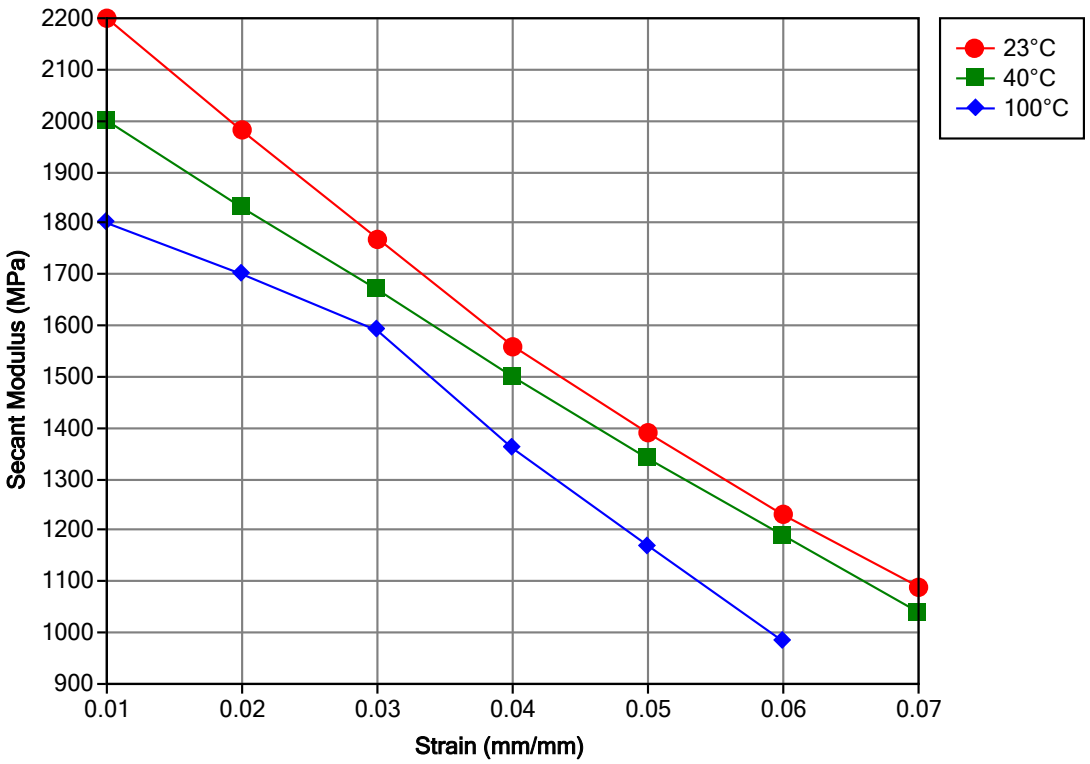
Injection	Typical Value	Unit
Drying Temperature	149	°C
Drying Time	2.5	hr
Suggested Max Moisture	0.050	%
Rear Temperature	321	°C
Middle Temperature	349	°C
Front Temperature	349	°C
Processing (Melt) Temp	343 to 388	°C
Mold Temperature	138 to 163	°C
Back Pressure	0.345 to 0.689	MPa

Injection	Typical Value	Unit
Screw Compression Ratio	2.2:1.0	

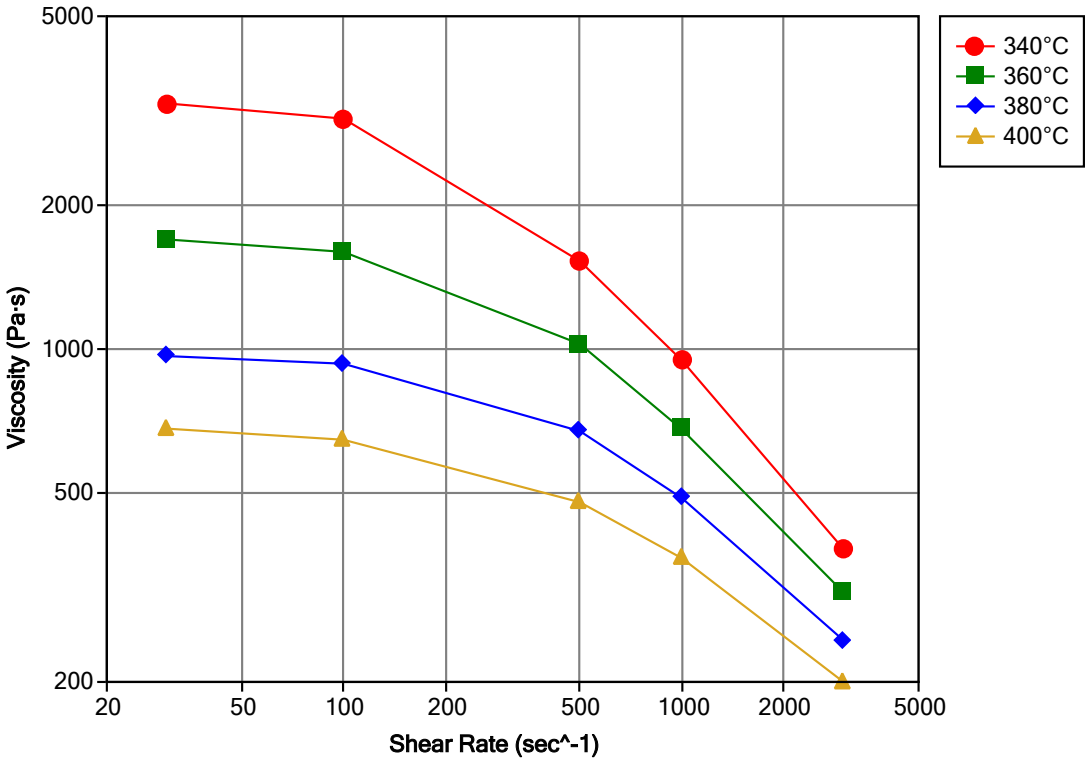
Isothermal Stress vs. Strain (ISO 11403-1)



Secant Modulus vs. Strain (ISO 11403-1)



Viscosity vs. Shear Rate (ISO 11403-2)



Notes

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

[1] For limited exposure (less than 24 hours).

[2] NSF STD-51 compliant for NT15 only.

[3] NSF STD-61 compliant for BK937, NT15 and GY1037 only. Tested at 82 °C (180 °F) (Commercial Hot).

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

www.solvay.com

SpecialtyPolymers.EMEA@solvay.com | Europe, Middle East and Africa
SpecialtyPolymers.Americas@solvay.com | Americas
SpecialtyPolymers.Asia@solvay.com | Asia and Australia

SOLVAY
asking more from chemistry®

Safety Data Sheets (SDS) are available by emailing us or contacting your sales representative. Always consult the appropriate SDS before using any of our products.

Neither Solvay Specialty Polymers nor any of its affiliates makes any warranty, express or implied, including merchantability or fitness for use, or accepts any liability in connection with this product, related information or its use. Some applications of which Solvay's products may be proposed to be used are regulated or restricted by applicable laws and regulations or by national or international standards and in some cases by Solvay's recommendation, including applications of food/feed, water treatment, medical, pharmaceuticals, and personal care. Only products designated as part of the Solviva® family of biomaterials may be considered as candidates for use in implantable medical devices. The user alone must finally determine suitability of any information or products for any contemplated use in compliance with applicable law, the manner of use and whether any patents are infringed. The information and the products are for use by technically skilled persons at their own discretion and risk and does not relate to the use of this product in combination with any other substance or any other process. This is not a license under any patent or other proprietary right.