

Radel® R-5000

Polyphenylsulfone
Solvay Specialty Polymers

Message:

Radel® R-5000 is a transparent polyphenylsulfone (PPSU) which offers exceptional hydrolytic stability, and toughness superior to other commercially-available, high-temperature engineering resins. This resin 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.
Clear: Radel® R-5000 CL 301
Natural: Radel® R-5000 NT

General Information	
UL YellowCard	E161096-224266
Features	Acid Resistant
	Autoclave Sterilizable
	Base Resistant
	Biocompatible
	Detergent Resistant
	E-beam Sterilizable
	Ethylene Oxide Sterilizable
	Flame Retardant
	General Purpose
	Good Chemical Resistance
	Good Dimensional Stability
	Good Electrical Properties
	Good Sterilizability
	Good Thermal Aging Resistance
	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	Automotive Applications
	Dental Applications
	Food Service Applications

Hospital Goods
 Medical Devices
 Medical/Healthcare Applications
 Membranes
 Surgical Instruments

Agency Ratings	FAA FAR 25.853a
	ISO 10993
	NSF 51 3
	NSF 61 4

RoHS Compliance	RoHS Compliant
Appearance	Clear/Transparent
Forms	Pellets
Processing Method	Blow Molding
	Extrusion
	Film Extrusion
	Injection Molding
	Machining
	Profile Extrusion
	Sheet Extrusion
	Thermoforming

Multi-Point Data	Isothermal Stress vs. Strain (ISO 11403-1)
	Secant Modulus vs. Strain (ISO 11403-1)
	Viscosity vs. Shear Rate (ISO 11403-2)

Physical	Nominal Value	Unit	Test Method
Specific Gravity	1.29	g/cm ³	ASTM D792
Melt Mass-Flow Rate (MFR) (365°C/5.0 kg)	14 to 20	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	Nominal 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	Nominal Value	Unit	Test Method
Notched Izod Impact (3.18 mm)	690	J/m	ASTM D256
Tensile Impact Strength (3.18 mm)	399	kJ/m ²	ASTM D1822
Thermal	Nominal Value	Unit	Test Method
Deflection Temperature Under Load (1.8 MPa, Unannealed, 3.18 mm)	207	°C	ASTM D648
Glass Transition Temperature	220	°C	ASTM E1356
CLTE - Flow (3.18 mm)	5.6E-5	cm/cm/°C	ASTM D696
Electrical	Nominal Value	Unit	Test Method
Volume Resistivity	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	Nominal Value	Unit	Test Method
Flame Rating ¹ (0.762 mm)	V-0		UL 94
Optical	Nominal Value		Test Method
Refractive Index	1.672		ASTM D542
Additional Information	Nominal Value	Unit	
Steam Sterilization - w/ Morpholine ²	> 1000	Cycles	
Injection	Nominal Value	Unit	
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		
Extrusion	Nominal Value	Unit	
Drying Temperature	171	°C	
Drying Time	4.0	hr	
Cylinder Zone 1 Temp.	338 to 388	°C	
Cylinder Zone 2 Temp.	338 to 388	°C	
Cylinder Zone 3 Temp.	338 to 388	°C	
Cylinder Zone 4 Temp.	338 to 388	°C	
Cylinder Zone 5 Temp.	338 to 388	°C	
Adapter Temperature	327 to 371	°C	
Melt Temperature	343 to 399	°C	
Die Temperature	327 to 371	°C	
NOTE			

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

1.

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

2.

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