

Radel® R-5100

Polyphenylsulfone
Solvay Specialty Polymers

Message:

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
- Red: Radel® R-5100 RD 1018
- Orange: Radel® R-5100 OR1145
- Yellow: Radel® R-5100 YL1337
- Green: Radel® R-5100 GN1007
- Blue: Radel® R-5100 BU1027
- Violet: Radel® R-5100 VT2582
- Brown: Radel® R-5100 BN1164

General Information		
UL YellowCard	E36098-628748	E161096-224267
Filler / Reinforcement	Filler	
Features	Acid Resistant	
	Autoclave Sterilizable	
	Base Resistant	
	Biocompatible	
	E-beam Sterilizable	
	Ethylene Oxide Sterilizable	
	Flame Retardant	
	General Purpose	
	Good Chemical Resistance	
	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 3
	NSF 51 4
	NSF 61 5
RoHS Compliance	RoHS Compliant
Appearance	Black
	Colors Available
	Light Beige
	Opaque
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	1.30	g/cm ³	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	Nominal 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
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	Nominal Value	Unit	Test Method
Notched Izod Impact	690	J/m	ASTM D256
Unnotched Izod Impact	No Break		ASTM D256
Tensile Impact Strength	399	kJ/m ²	ASTM D1822
Thermal	Nominal 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	Nominal 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	Nominal Value	Unit	Test Method
Flame Rating ¹ (0.750 mm, ALL colors, UL file E36098)	V-0		UL 94
Oxygen Index	38	%	ASTM D2863
Optical	Nominal Value		Test Method
Refractive Index	1.672		ASTM D542
Injection	Nominal 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
Screw Compression Ratio	2.2:1.0	

NOTE

1.
- These flammability ratings are not intended to reflect hazards presented by these or any other materials under actual fire conditions.

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Recommended distributors for this material

Susheng Import & Export Trading Co.,Ltd.

Tel: +86 21 5895 8519

Phone: +86 13424755533

Email: sales@su-jiao.com

No. 215, Lianhe North Road, Fengxian District, Shanghai, China



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