

Radel® R PPSU, Polyphenylsulfone, unfilled, extruded

Search Categories: Polyphenylsulfone; ; FDA Approved

Material Notes: Radel® R is an extruded form of polyphenylsulfone (PPSU) that offers higher impact resistance and has superior hydrolysis resistance than other amorphous materials, including both polysulfone and polyetherimide (PEI). It retains much of the thermal resistance, stability, and machinability of PEI. These properties make it ideal for medical applications requiring autoclaving.

MECHANICAL PROPERTIES	ENGLISH VALUES	COMMENTS	METRIC VALUES
Specific Gravity	1.29	ASTM D792	1.29
Tensile Strength, psi	11000	ASTM D638	76 MPa
Tensile Modulus, psi	340000	ASTM D638	2,344 MPa
Elongation, %	30	ASTM D638	30 %
Flexural Strength, psi	15500	ASTM D790	107 MPa
Flexural Modulus, psi	345000	ASTM D790	2,379 MPa
Shear Strength, psi	9000	ASTM D732	62 MPa
Compressive Strength, psi	13400	ASTM D695, 10% Def.	92 MPa
Compressive Modulus, psi	280000	ASTM D695	1,931 MPa
Hardness, Rockwell M	80	ASTM D785	80
Hardness, Rockwell R	120	ASTM D785	120
Hardness, Durometer, Shore D Scale	80	ASTM D2240	80
Izod Impact (Notched), ft-lb/in	2.5	ASTM D256 Type A	133 J/m
Limiting PV, psi-fpm	1000	PTM55007	0.04 MPa-m/sec
k (wear) factor, 10 ⁻¹⁰ in ³ -min/lb-ft-hr	1000	PTM55007	1000 10 ⁻¹⁰ in ³ -min/lb-ft-hr
THERMAL PROPERTIES	ENGLISH VALUES	COMMENTS	METRIC VALUES
Coefficient of Thermal Expansion, 10E-4/°F	0.31	ASTM E831 (TMA)	0.56 10 ⁻⁴ /K
Deflection Temperature 264 psi, °F	405	ASTM D648	207 °C
Tg-Glass Transition (Amorphous), °F	428	ASTM D3418	220 °C
Continuous Service in Air (Max), °F	300	Without Load	149 °C
Thermal Conductivity, BTU-in/hr-ft ² -°F	2.4		0.35 W/m-K
ELECTRICAL PROPERTIES	VALUES	COMMENTS	METRIC VALUES
Dielectric Strength, Short Term, Volts/mil	360	ASTM D149(2)	14 kV/mm
Surface Resistance, Ohm/Square	1E+13	Lower Limit; EOS/ESD S11.11	1E+13 Ohm/Square
Dielectric Constant, 1 MHz	3.44	ASTM D150(2)	3.44
Dissipation Factor, 1 MHz	0.0017	ASTM D150(2)	0.0017
CHEMICAL PROPERTIES	ENGLISH VALUES	COMMENTS	METRIC VALUES
Water Absorption Immersion, 24 hr., %	0.37	ASTM D570	0.37 %
Water Absorption Immersion Sat, %	1.1	ASTM D570	1.1 %

Acids, Weak (acetic, dilute HCl)	3	Acceptable Service	3
Acids, Strong (conc. HCl or sulfuric)	2	Limited Service	2
Alkalies, Weak (dilute NaOH)	3	Acceptable Service	3
Alkalies, Strong (conc. NaOH)	3	Acceptable Service	3
Hydrocarbons, Aromatic (toluene)	2	Limited Service	2
Hydrocarbons, Aliphatic (gasoline)	3	Acceptable Service	3
Ketones, Esters (acetone)	1	Unacceptable	1
Ethers (diethyl ether, THF)	2	Limited Service	2
Chlorinated Solvents (methylene chloride)	1	Unacceptable	1
Alcohols (methanol, anti-freeze)	2	Limited Service	2
Inorganic Salt Solutions (NaCl, KCl)	3	Acceptable Service	3
Continuous Sunlight	2	Limited Service	2
Steam	3	Acceptable Service	3
COMPLIANCE	ENGLISH VALUES	COMMENTS	METRIC VALUES
Flammability, UL94 (5=V-0; 4=V-1; 3=V-2; 1=HB)	5 (V-0)	UL94	5
FDA (1=Yes)	1	Compliant	1
USDA (1=Yes)	0	Not Compliant	0
NSF (1=Yes)	0	Not Compliant	0
3A-Dairy (1=Yes)	0	Not Compliant	0
Canada AG (1=Yes)	1	Compliant	1
USP Class VI (1=Yes)	1	Compliant	1