



MANUFACTURING CORPORATION

- Plastics Machining
- Spring Energized Seals
- Rotary Lip Seals

### Material Data Sheet

Material: Radel® R Polyphenylsulfone (PPSU)

Radel® R polyphenylsulfone (PPSU) is an amorphous high performance thermoplastic offering better impact resistance and chemical resistance than polysulfone and polyetherimide (Ultem® PEI) as with Figures 15 and 16. Radel offers superior hydrolysis resistance when compared to other amorphous thermoplastics as measured by steam autoclaving cycles to failure. In fact, Radel R has virtually unlimited steam sterilizability . This factor makes it an excellent choice for medical devices as steam autoclaves are widely used to sterilize medical devices. It also resists common acids and bases — including commercial washing solutions over a broad temperature range. Radel R is stocked in natural (bone white) and available in transparent and custom colors. It is commonly used in sterilization trays, dental and surgical instrument handles, and in fluid handling coupling and fitting applications. Radel R is USP Class VI compliant. It is suitable for use in electronic assembly equipment and devices that must withstand solder temperatures. Radel has a heat deflection temperature of 405°F (207°C).

Mechanical Properties	Test Method ASTM	Value	Units
Specific Gravity, 73°F	D792	1.29	
Tensile Strength, 73°F	D638	11,000	psi
Tensile Modulus of Elasticity, °F	D638	340,000	psi
Tensile Elongation ( at break), 73°F	D638	30	%
Flexural Strength, 73°F	D790	15,500	psi
Flexural Modulus of Elasticity, 73°F	D790	345,000	psi
Shear Strength, 73°F	D732	9,000	psi
Compressive Strength, 10% Deformation, 73°F	D695	13,400	psi
Compressive Modulus of Elasticity, 73°F	D695	280,000	psi
Hardness, Rockwell, Scale as noted, 73°F	D785	M80 (R120)	
Hardness, Durometer, Shore "D" Scale, 73°F	D2240	D80	
Izod Impact (notched), 73°F	D256 Type A	2.5	ft-lb/in of notch
Coefficient of Friction (Dry vs. Steel) Dynamic	QTM 55007		
Limiting PV (with 4:1 safety factor applied)	QTM 55007		ft.lbs./in. <sup>2</sup> min
Wear Factor "k" x 10 <sup>-10</sup>	QTM 55010	>1,000	in. <sup>3</sup> -min/ft.lbs.hr
<b>Thermal Properties</b>			
Coefficient of Linear Thermal Expansion (-40°F to 300°F)	E-831 (TMA)	3.1 x 10 <sup>-5</sup>	in/in./°F
Heat Deflection Temperature 264 psi	D648	405	°F
TG-Glass transition (amorphous)	D3418	428	°F
Melting Point (Crystalline) peak	D3418	N/A	°F
Continuous Service Temperature in Air (Max.) (1)		300	°F
Thermal Conductivity	F433	2.4	BTU-in/hr-ft <sup>2</sup> -°F
<b>Electrical Properties</b>			
Dielectric Strength, Short Term	D149	360	Volts/mil
Surface Resistivity	EOS/ESD S11.11	>10 <sup>13</sup>	ohm/square
Dielectric Constant, 106 Hz	D150	3.44	
Dissipation Factor, 106 Hz	D150	0.0017	
Flammability @ 3.1 mm (1/8 in.)	UL 94	V-0	
FDA Compliant		Yes	

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\*The values shown in these and the following charts are typical, average properties. Actual values may differ due to variations in resin formulations and processing methods. These values are obtained from sources believed to be reliable, including the resin manufactures, converters and other published sources. However, they should not be used for specification or design purposes. Above information is provided by Quadrant EPP.