



RADEL® R

R-5500 SERIES

RADEL® R is a Polyphenylsulfone produced by Solvay Advanced Polymers. RADEL® R is in the same performance category as products like Polysulfone and ULTEM® (PEI). RADEL® R has

increased performance versus Polysulfone and ULTEM® in terms of temperature, impact strength and chemical resistance. RADEL® R has exceptional resistance to repeated steam autoclaving without loss

of dimensional stability or physical properties. RADEL® R comes in both opaque and transparent grades. The transparent grade is R-5500 and the opaque grade is R-5100.

- **High tensile strength**
- **Excellent heat resistance**
- **Very high resistance to environmental stress**
- **Great mechanical strength**
- **High dielectric strength and stability**
- **Low dissipation factor**
- **Very good machinability and finishing**
- **Available in opaque and transparent grades**

RADEL® R series products are targeted at a number of industries and applications. The initial target market is the medical industry. RADEL® R is used in applications for surgical tools and instruments because of its resistance to autoclave sterilization damage. A second market for RADEL® R is electronics because of its temperature resistance and dielectric properties.

TYPICAL PROPERTY VALUES

| | PROPERTIES | ASTM Test Method | Units | RADEL® R 5500 | |
|---|---|--------------------------------------|----------------------------------|----------------------|-----|
| PHYSICAL | Density | D792 | lbs/in ³ | 0.0466 | |
| | Specific Gravity | D792 | - | 1.29 | |
| | Water Absorption, @ 24 hours, 73°F | D570 | % | 0.37 | |
| | @ Saturation, 73°F | D570 | % | 1.1 | |
| MECHANICAL | Tensile Strength @ Yield, 73°F | D638 | psi | 10,100 | |
| | Tensile Modulus | D639 | psi | 340,000 | |
| | Elongation @ Break, 73°F | D638 | % | 60 | |
| | Flexural Strength, 73°F | D790 | psi | 13,200 | |
| | Flexural Modulus, 73°F | D790 | psi | 350,000 | |
| | Compressive Strength | D695 | psi | 14,350 | |
| | Izod Impact Strength, 73° | D256 | ft-lb/in | 13 | |
| | Rockwell Hardness, 73°F | D785 | R Scale | R123 | |
| | Shure Hardness | - | D Scale | - | |
| | Wear Factor Against Steel, 40 psi, 50 fpm | D3702 | in ³ x $\frac{1}{hr}$ | PV | - |
| | Static Coefficient of Friction | D3702 | - | - | - |
| | Dynamic Coefficient of Friction, 40 psi, 50 fpm | D3702 | - | - | - |
| | THERMAL | Heat Deflection Temperature @ 66 psi | D648 | °F | 428 |
| @ 264 psi | | D648 | °F | 420 | |
| Coefficient of Linear Thermal Expansion | | D696 | in/in/°F | 1.7 | |
| Maximum Servicing Temperature, Intermittent | | - | °F | 360 | |
| Long Term | | UL746B | °F | - | |
| Specific Heat | | - | BTU/lb-°F | 0.27 | |
| Thermal Conductivity | | - | - | - | |
| Vicat Softening Point | | - | °F | 424 | |
| Melting Point | | D2133 | °F | - | |
| Flammability | UL94 | - | V-0 | | |
| ELECTRICAL | Surface Resistivity | D257 | Ohm/square | - | |
| | Volume Resistivity | D257 | ohm-cm | 1 x 10 ¹⁵ | |
| | Dielectric Strength | D149 | V/mil | 360 | |
| | Dielectric Constant, @ 60Hz, 73°F, 50% RH | D150 | - | 3.44 | |
| | @ 1MHz | D150 | - | - | |
| | @ 20GHz | D150 | - | - | |
| | @ 30GHz | D150 | - | - | |
| | Dissipation Factor, @ 60Hz, 73°F | D150 | - | - | |

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MATERIAL AVAILABILITY

Rods: Diameters: 1" to 3-1/2"
Length: 4' and 8'

Primary Specification (Typical) (Resin)

ASTM-D-6394 SP0311

Profiles, tubes, and special sizes are custom-produced on request.



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