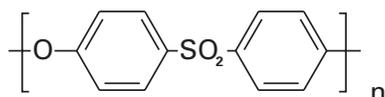


H-1000, H-2000, H-3000

RADEL H resin is a polymer of 4,4'-dihydroxydiphenylsulfone (bisphenol S) and 4,4'-dichlorodiphenylsulfone, and has the chemical structure shown below.



RADEL H resin offers high heat deflection temperature, excellent toughness, superior resistance to steam, boiling water, and mineral acids and bases. The resin is stable over a wide range of pH, and resists chlorine, radiation, and cleaning solutions. Articles made from this resin can

withstand repeated sterilization by most common methods.

This amorphous resin is sold as a powder and is intended for solution processing into membranes, coatings, and films. It can be dissolved by certain organic solvents and fabricated into flat sheets or hollow fibers.

The resin is offered in 3 grades of differing molecular weight. H-1000 has the lowest molecular weight, H-2000 is higher in molecular weight, and H-3000 is highest.

Typical Properties of RADEL H Resin

Properties	ASTM Test Method	Typical Values ⁽¹⁾			
		U.S. Customary units		SI units	
		Value	Units	Value	Units
General					
Specific Gravity	D 792	1.37		1.37	
Water Absorption, 24 hours	D 570	0.54	%	0.54	%
Reduced Viscosity ⁽²⁾	D 2857				
H-1000		0.52	dL/g	0.52	dL/g
H-2000		0.59	dL/g	0.59	dL/g
H-3000		0.76	dL/g	0.76	dL/g
Mechanical					
Tensile Strength	D 638	12.0	kpsi	83	MPa
Tensile Modulus	D 638	385	kpsi	2.6	GPa
Tensile Elongation at Yield	D 638	6.5	%	6.5	%
Tensile Elongation at Break	D 638	25 - 75	%	25 - 75	%
Flexural Strength	D 790	16.1	kpsi	111	MPa
Flexural Modulus	D 790	420	kpsi	2.9	GPa
Tensile Impact Strength	D 1822	160	ft-lb/in ²	336	kJ/m ²
Izod Impact Strength	D 256	1.6	ft-lb/in	85	J/m
Thermal					
Deflection Temperature, at 264 psi (1.82 MPa)	D 648	400	°F	204	°C
Coefficient of Thermal Expansion	D 696	27	ppm/°F	49	ppm/°C
Glass Transition Temperature	DSC ⁽³⁾	428	°F	220	°C

⁽¹⁾Actual properties of individual batches will vary within specification limits.

⁽²⁾Viscosity measured at 77°F (25°C) using dimethylformamide at a concentration of 1 gram per 100 mL.

⁽³⁾Differential Scanning Calorimetry

Drying

RADEL resins must be dried completely prior to melt processing to avoid defects like surface streaks or bubbles. However, when solution processing using water-miscible solvents, like N-methyl pyrrolidone, drying the powder is usually not necessary, because adsorbed water does not affect the molecular weight. If a water-immiscible solvent, like methylene chloride, is used, it may be prudent to dry the powder prior to solution preparation. Drying conditions recommended are 2.5 hours at 350°F (177°C).

Solution Processing*

RADEL H can be dissolved in dipolar aprotic solvents, such as dimethylformamide (DMF), dimethylacetamide (DMAC), and N-methyl pyrrolidone (NMP).

The resulting viscous solutions can then be used in the production of coatings, films, or membranes. Additives, such as polyvinyl pyrrolidone, polyethylene glycol, and butanol, can be easily incorporated into these solutions.

**Caution: Dimethylformamide (DMF), dimethylacetamide (DMAC), and N-methyl pyrrolidone (NMP) can be absorbed through the skin. Please consult the Material Safety Data Sheet (MSDS) (provided by your supplier) prior to using or handling these substances.*

Precautionary Labeling

On the basis of the toxicological, physical, and chemical properties of RADEL H resin, labeling used on containers is as follows:

Caution! Handling and/or processing this material may generate a dust which can cause mechanical irritation of the eyes, skin, nose, and throat.

Standard Packaging and Labeling

RADEL H resin is packaged in cardboard boxes containing 25 kg (55.115 pounds) of material. Special packaging can be supplied upon request. Individual packages will be plainly marked with the product number, the lot number, and the net weight.

Product Safety and Emergency Service

For product safety information or a Material Safety Data Sheet on a product of Solvay Advanced Polymers

1 (800) 621-4557

1 (770) 772-8880 outside of U.S.

For information or help in an emergency such as a spill, leak, fire or explosion, call day or night:

Emergency Health Information

1 (800) 621-4590

1 (770) 772-5177 outside of U.S.

Emergency Spill Information

CHEMTREC 1 (800) 424-9300

**1 (703) 527-3887 outside of U.S.
collect calls accepted**

For Additional Information

Technical Service

1 (800) 621-4557

Customer Service

1 (800) 848-9744

RADEL is a registered trademark of Solvay Advanced Polymers, L.L.C.

To our actual knowledge, the information contained herein is accurate as of the date of this document. However, neither Solvay Advanced Polymers, L.L.C. nor any of its affiliates makes any warranty, express or implied, or accepts any liability in connection with this information or its use. This information is for use by technically skilled persons at their own discretion and risk and does not relate to the use of this product in combination with any other substance or any other process. This is not a license under any patent or other proprietary right. The user alone must finally determine suitability of any information or material for any contemplated use, the manner of use and whether any patents are infringed.