Product Data

UDEL® polysulfone

P-1700 NT LCD

UDEL polysulfones are tough, rigid, high-strength thermoplastics suitable for continuous use up tp 150°C. UDEL grade P-1700 NT LCD is well suited for the fabrication of porous membranes. The membranes can be made into hollow fibers, tubes, plates, or spiral wound elements. These are used in a variety of filtration applications, such as treating potable or waste water, purifying pharmaceuticals, separating gases, and processing blood or dairy and food products.

This resin is soluble in commercially available, water-miscible, dipolar, aprotic solvents, like dimethylacetamide (DMAC), dimethylformamide (DMF), and N-methyl pyrrolidone (NMP). This material offers membrane producers very good control of pore size and pore size distribution, high membrane strength, and good film-forming properties.

The advantages of UDEL P-1700 NT LCD are attributed to the lower level of cyclic dimer present in the polymer. Cyclic dimer, normally produced during the manufacturing of polysulfone, can to 'scaling' within the vessels and pipes used in the membrane manufacturing process. This build-up can cause disruptions in operations since equipment may need to be shut down and cleaned. UDEL P-1700 NT LCD can improve the stability and shelf life of the dope solution used during solution processing, which may translate to greater efficiencies in the overall fabrication process.

In addition, this resin may offer a number of technical advantages such as higher fiber strength for fewer fiber breaks and more consistent filtration, plus fewer surface defects. Both factors can help improve membrane performance and production yield.

The resultant membranes have excellent hydrolytic stability and are compatible with pH's ranging from 2 to 13. They tolerate a variety of cleaning methods, including hydrochloric acid or sodium hydroxide. The resin has a Tg of 185°C indicating high thermal resistance.

Typical Properties of UDEL P-1700 NT LCD Resin

Properties	ASTM Test Method	Typical Values[1] U.S. Customary units Value	Units	SI units Value	Units
General					
Specific Gravity	D 792	1.24		1.24	
Water Absorption, 24 hours	D 570	0.30	%	0.30	%
Melt Flow at 650°F (343°C)	D 1238	6.5	g/10 min	6.5	g/10 min
Mold Shrinkage	D 955	0.007	in/in	0.007	mm/mm
Mechanical					
Tensile Strength	D 638	10.2	kpsi	70.3	MPa
Tensile Modulus	D 638	360	kpsi	2.48	GPa
Tensile Elongation at Break	D 638	50-100	%	50-100	%
Flexural Strength	D 790	15.4	kpsi	106.2	MPa
Flexural Modulus	D 790	390	kpsi	2.69	GPa
Tensile Impact Strength	D 1822	200	ft-lb/in^2	420	kJ/m^2
Impact Strength- Notched Izod	D 256	1.3	ft-lb/in	69	J/m
Thermal					
Deflection Temperature at 264 psi (1.8 MPa)	D 648	345	°F	174	°C
Coefficient of Thermal Expansion	D 696	31	ppm/°F	56	ppm/°C
Electrical					
Dielectric Strength	D 149	425	V/mil	17	kV/mm
Dielectric Constant @ 60 Hz	D 150	3.15		3.15	
Dielectric Constant @ 10^3 Hz		3.14		3.14	
Dielectric Constant @ 10^6 Hz		3.10		3.10	
Dissipation Factor @ 60 Hz	D 150	0.0011		0.0011	
Dissipation Factor @ 10^3 Hz		0.0013		0.0013	
Dissipation Factor @ 10^6 Hz		0.0050		0.0050	
Volume Resistivity	D 257	5 x 10^{16}	ohm-cm	5 x 10^{16}	ohm-cm

[1] Actual properties of individual batches will vary within specification limits.

Solvay Advanced Polymers

SOLVAY

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Drying

UDEL P-1700 polysulfones may be dried before preparing solutions. Pellets can be dried in a circulating hot air oven, by spreading the pellets on trays to a 1-2 inch depth and drying for 3.5 hours at 275° to 325°F (135° to 163°C).

Solution Processing

UDEL P-1700 NT LCD resin can be dissolved in dipolar aprotic solvents such as DMF, DMAC, and NMP.

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

Standard Packaging and Labeling

UDEL P-1700 NT LCD polysulfone resin is packaged in multiwall paper bags containing 55.115 pounds (25 kg) of material. Special packaging can be supplied upon request. Individual packages will be plainly marked with the product number, the color, the lot number, and the net weight.

Precautionary Labeling

On the basis of the toxicological, physical, and chemical properties of UDEL P-1700 NT LCD polysulfone 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.

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