Product Data

UDEL® polysulfone

P-1700 HC

Udel P-1700 HC is a new low color grade of polysulfone that is nearly water white in color. Polysulfones have long been known for transparency and clarity but have been somewhat limited by a slight yellow cast which has been typical of the material. This grade was designed to eliminate the yellow cast and provide design flexibility and improved aesthetics for applications where a yellow cast is undesirable.

In general, Udel polysulfone is a tough, rigid, high strength, high heat thermoplastic with properties that are retained at temperatures from -150°F to 300°F (-101°C to 149°C). The heat deflection temperature at 264 psi (1.82 MPa) is 345°F (174°C). Other key properties of polysulfone include resistance to hydrolysis by hot water and resistance to acids and bases. In addition, the resin is resistant to a wide range of cleaners and disinfectants.

Polysulfone's resistance to alcohols and aliphatic hydrocarbons is also good; however, the resin is generally not resistant to polar organic or chlorinated solvents.

In general, this resin complies with FDA regulations concerning the use of plastics in direct food contact. Contact a Solvay representative for details.

Potential applications for this grade include food and beverage service, tableware applications, dairy equipment, steam-sterilizable medical devices, appliance components, such as transparent guards, protective windows and sight glasses.

Typical Properties of Udel P-1700 HC 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, 343°C, 2.16 kg	D 1238	7.5	g/10 min	7.5	g/10 min
Mold Shrinkage	D 955	0.007	in/in	0.007	mm/mm
Mechanical					
Tensile Strength	D 638	11.0	kpsi	75.9	MPa
Tensile Modulus	D 638	390	kpsi	2.69	GPa
Tensile Elongation at Yield	D 638	5.8	%	5.8	%
Tensile Elongation at Break	D 638	50-100	%	50-100	%
Flexural Strength	D 790	15.5	kpsi	107	MPa
Flexural Modulus	D 790	400	kpsi	2.76	GPa
Impact Strength - Notched Izod	D 256	1.2	ft-lb/in	64	J/m
Thermal					
Deflection Temperature[2] at 264 psi (1.8 MPa)	D 648	352	°F	178	°C
Glass Transition Temperature	E 1356	365	°F	185	°C
Coefficient of Thermal Expansion	D 696	31	µin/in°F	56	µm/m°C
Optical					
Light Transmittance (2.5 mm, 0.100 in.)	D 1003	80	%	80	%
Yellowness Index (2.5 mm, 0.100 in.)	D 1925	2		2	
Haze (2.5 mm, 0.100 in.)	D 1003	2	%	2	%
Refractive Index	D 542	1.635		1.635	

[1] Actual properties of individual batches will vary within specification limits.
[2] Measured using annealed 0.125 in (3.2 mm) thick specimens

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Drying

Udel P-1700 HC polysulfone must be dried before fabrication to avoid streaking, splaying, or bubbling. Pellets can be dried in a circulating hot air oven or in a dehumidified hopper dryer.

To oven dry, spread the pellets on trays to a 1-2 inch depth and dry for 3 hours at 300°F (149°C). Do not dry for longer than 3.5 hours. Excessive time in the drying oven can lead to an increase in resin color. Handle the dried resin carefully to prevent reabsorption of moisture from the atmosphere.

To hopper dry, use inlet air with a dew point of -25°F (-32°C) at a temperature of 300°F (149°C) and a residence time of 2.5 to 3.5 hours.

Injection Molding

Udel P-1700 HC resin can be readily injection molded on standard screw injection equipment. It is generally recommended that the press used should have a barrel capacity such that the shot size will be between 50 and 75% of capacity to minimize residence time in the barrel. Udel P-1700 HC resin has excellent thermal stability and good results have been obtained with shot sizes as small as 25% of capacity. The risk of the resin discoloration will be increased by long residence times. Stock temperature will generally range from 625° to 725°F (330° to 385°C), depending on mold design and the type of equipment being used.

Mold temperatures of at least 250°F (121°C) are recommended. In the case of complex parts requiring long flow lengths or having thin cross sections, or where low residual stress levels are required, the mold temperatures should be 300° to 325°F (149° to 163°C).

Weld line strength of Udel P-1700 HC resin is generally excellent, but it is good design practice to avoid weld lines in areas known to be subject to high stress.

Standard Packaging and Labeling

Udel P-1700 HC 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 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