Product Data

UDEL®
polysulfone

P-1700 NT11, NT06, & CL2611

Udel P-1700 polysulfones are tough, rigid, high-strength thermoplastics that are suitable for continuous use up to 300°F (149°C). The resins are resistant to oxidation and hydrolysis and withstand prolonged exposure to high temperatures and repeated sterilization. Udel P-1700 polysulfones are highly resistant to mineral acids, alkali and salt solutions. Their resistance to detergents and hydrocarbon oils is good, but they will be attacked by polar solvents such as ketones, chlorinated hydrocarbons, and aromatic hydrocarbons.

These resins are also highly resistant to degradation by gamma or electron beam radiation. Electrical properties of Udel P-1700 polysulfones are stable over a wide temperature range and after immersion in water or exposure to high humidity.

The resins comply with 21CFR 177.1655 and may be used in articles intended for repeated use in contact with foods. Additionally, they are approved by the NSF, by the Department of Agriculture for contact with meat and poultry, and by the 3-A Sanitary Standards of the Dairy Association.

In addition to the three color variants covered by this data sheet, Udel polysulfone is available in a variety of transparent and opaque colors.

Typical Properties of Udel P-1700 Resins

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	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	3.03		3.03	
Dielectric Constant @ 10^3 Hz		3.04		3.04	
Dielectric Constant @ 10^6 Hz		3.02		3.02	
Dissipation Factor @ 60 Hz	D 150	0.0007		0.0007	
Dissipation Factor @ 10^3 Hz		0.0010		0.0010	
Dissipation Factor @ 10^6 Hz		0.0060		0.0060	
Volume Resistivity	D 257	3 x 10^{16}	ohm-cm	3 x 10^{16}	ohm-cm
Color					
NT11 (Natural)	light amber				
NT 06 (Natural)	very light amber				
CL 2611 (Clear)	nearly water white				

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

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Drying

Udel P-1700 polysulfones must be dried before they are fabricated 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 3.5 hours at 275° to 325°F (135° to 163°C). 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 275° to 325°F (135° to 163°C) and a residence time of 3.5 hours.

Injection Molding

Udel P-1700 resins can be readily injection molded on standard screw injection equipment. Although it is recommended that the shot size be between 50 and 75% of machine capacity, Udel P-1700 resins have excellent thermal stability, and good results have been obtained with shot sizes as small as 10% of capacity. 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 crosssections, 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 resins 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 polysulfone resins are 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.

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