

## P-3703

UDEL P-3703 polysulfone is a tough, rigid, high-strength thermoplastic that maintains its properties at temperatures from -150°F to 300°F (-101°C to 149°C). The heat deflection temperature at 264 psi (1.8 MPa) is 345°F (174°C). For most purposes, this resin is suitable for continuous use up to 300°F (149°C).

UDEL P-3703 resin is resistant to oxidation and hydrolysis and withstands prolonged exposure to high temperatures and repeated sterilization. UDEL P-3703 polysulfone is highly resistant to mineral acids, alkali and salt solutions. The resistance to detergents and hydrocarbon oils is

good, but it will be attacked by polar solvents such as ketones, chlorinated hydrocarbons, and aromatic hydrocarbons.

Electrical properties of UDEL P-3703 polysulfone are stable over a wide temperature range and after immersion in water or exposure to high humidity.

Compared to UDEL P-1700 resin, P-3703 resin has higher flow and a slightly greater tendency to stress crack in some aggressive environments.

### Typical Properties OF UDEL P-3703 Resin

Property	ASTM Test Method	Typical Values <sup>(1)</sup>			
		U.S. Customary units		SI units	
		Value	Units	Value	Units
<b>Mechanical</b>					
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 <sup>2</sup>	420	kJ/m <sup>2</sup>
Impact Strength- Notched Izod	D 256	1.3	ft-lb/in	69	J/m
<b>Thermal</b>					
Heat 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
<b>Electrical</b>					
Dielectric Strength	D 149	425	V/mil	17	kV/mm
Dielectric Constant	D 150				
at 60 Hz		3.03		3.03	
at 10 <sup>3</sup> Hz		3.04		3.04	
at 10 <sup>6</sup> Hz		3.02		3.02	
Dissipation Factor	D 150				
at 60 Hz		0.0011		0.0011	
at 10 <sup>3</sup> Hz		0.0013		0.0013	
at 10 <sup>6</sup> Hz		0.0050		0.0050	
Volume Resistivity	D 257	5 x 10 <sup>16</sup>	ohm-cm	5 x 10 <sup>16</sup>	ohm-cm
<b>General</b>					
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	17	g/10 min	17	g/10 min
Mold Shrinkage	D 955	0.007	in/in	0.007	mm/mm

<sup>(1)</sup> Actual properties of individual batches will vary within specification limits.

### Drying

UDEL P-3703 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 3.5 hours at 275°F to 325°F (135°C 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-3703 resin 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-3703 resin has 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 cross sections, or where low residual stress levels are required, the mold temperatures should be 300°F to 325°F (149°C to 163°C).

Weld line strength of UDEL P-3703 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-3703 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-3703 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**

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