

# Udel® P-1700

## polysulfone

Udel® P-1700 polysulfone (PSU) is a tough, rigid, high-strength thermoplastics suitable for continuous use up to 300°F (149°C). It is resistant to oxidation and hydrolysis and withstand prolonged exposure to high temperatures and repeated sterilization. Udel® P-1700 polysulfone is highly resistant to mineral acids, alkali and salt solutions. Resistance to detergents and hydrocarbon oils is good, but the resin may 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 FDA 21 CFR 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.

- Transparent: Udel® P-1700 CL 2611 CMP
- Transparent: Udel® P-1700 NT 06
- Transparent: Udel® P-1700 NT 11
- Opaque Black : Udel® P-1700 BK 937
- Opaque White: Udel® P-1700 WH 6417
- Opaque White: Udel® P-1700 WH 7407
- Opaque Gray: Udel® P-1700 GY 8057

### General

Material Status	<ul style="list-style-type: none"> <li>• Commercial: Active</li> </ul>	
Availability	<ul style="list-style-type: none"> <li>• Asia Pacific</li> <li>• Europe</li> </ul>	<ul style="list-style-type: none"> <li>• Latin America</li> <li>• North America</li> </ul>
Features	<ul style="list-style-type: none"> <li>• Acid Resistant</li> <li>• Alcohol Resistant</li> <li>• Alkali Resistant</li> <li>• Autoclave Sterilizable</li> <li>• Biocompatible</li> <li>• Chemical Resistant</li> <li>• Detergent Resistant</li> <li>• E-beam Sterilizable</li> <li>• Ethylene Oxide Sterilizable</li> <li>• Food Contact Acceptable</li> <li>• Good Dimensional Stability</li> <li>• Good Sterilizability</li> </ul>	<ul style="list-style-type: none"> <li>• Good Surface Finish</li> <li>• Good Toughness</li> <li>• Heat Sterilizable</li> <li>• High Heat Resistance</li> <li>• Hydrocarbon Resistant</li> <li>• Hydrolytically Stable</li> <li>• Radiation (Gamma) Resistant</li> <li>• Radiation Sterilizable</li> <li>• Radiotranslucent</li> <li>• Steam Resistant</li> <li>• Steam Sterilizable</li> </ul>
Uses	<ul style="list-style-type: none"> <li>• Appliance Components</li> <li>• Appliances</li> <li>• Automotive Electronics</li> <li>• Dental Applications</li> <li>• Electrical Parts</li> <li>• Electrical/Electronic Applications</li> <li>• Food Service Applications</li> <li>• Hospital Goods</li> </ul>	<ul style="list-style-type: none"> <li>• Industrial Parts</li> <li>• Medical Devices</li> <li>• Medical/Healthcare Applications</li> <li>• Microwave Cookware</li> <li>• Piping</li> <li>• Plumbing Parts</li> <li>• Surgical Instruments</li> <li>• Valves/Valve Parts</li> </ul>
Agency Ratings	<ul style="list-style-type: none"> <li>• FDA 21 CFR 177.1655</li> <li>• ISO 10993</li> </ul>	<ul style="list-style-type: none"> <li>• NSF STD-51 <sup>1</sup></li> <li>• NSF STD-61 <sup>2</sup></li> </ul>
RoHS Compliance	<ul style="list-style-type: none"> <li>• RoHS Compliant</li> </ul>	
Automotive Specifications	<ul style="list-style-type: none"> <li>• ASTM D6394 SP0112</li> </ul>	<ul style="list-style-type: none"> <li>• BMW GS 93016</li> </ul>
Appearance	<ul style="list-style-type: none"> <li>• Colors Available</li> </ul>	<ul style="list-style-type: none"> <li>• Transparent - Slight Yellow</li> </ul>
Forms	<ul style="list-style-type: none"> <li>• Pellets</li> </ul>	

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### General

Processing Method	<ul style="list-style-type: none"><li>• Extrusion</li><li>• Extrusion Blow Molding</li><li>• Film Extrusion</li><li>• Injection Blow Molding</li><li>• Injection Molding</li></ul>	<ul style="list-style-type: none"><li>• Machining</li><li>• Pipe Extrusion</li><li>• Profile Extrusion</li><li>• Sheet Extrusion</li><li>• Thermoforming</li></ul>
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### Physical

	Typical Value	Unit	Test method
Specific Gravity	1.24		ASTM D792
Melt Mass-Flow Rate (MFR) (343°C/2.16 kg)	6.5	g/10 min	ASTM D1238
Molding Shrinkage - Flow	0.70	%	ASTM D955
Water Absorption (24 hr)	0.30	%	ASTM D570

### Mechanical

	Typical Value	Unit	Test method
Tensile Modulus	2480	MPa	ASTM D638
Tensile Strength	70.3	MPa	ASTM D638
Tensile Elongation (Break)	50 to 100	%	ASTM D638
Flexural Modulus	2690	MPa	ASTM D790
Flexural Strength	106	MPa	ASTM D790

### Impact

	Typical Value	Unit	Test method
Notched Izod Impact	69	J/m	ASTM D256
Tensile Impact Strength	420	kJ/m <sup>2</sup>	ASTM D1822

### Thermal

	Typical Value	Unit	Test method
Deflection Temperature Under Load 1.8 MPa, Unannealed	174	°C	ASTM D648
CLTE - Flow	5.6E-5	cm/cm/°C	ASTM D696

### Electrical

	Typical Value	Unit	Test method
Volume Resistivity	3.0E+16	ohms·cm	ASTM D257
Dielectric Strength	17	kV/mm	ASTM D149
Dielectric Constant			ASTM D150
60 Hz	3.03		
1 kHz	3.04		
1 MHz	3.02		
Dissipation Factor			ASTM D150
60 Hz	7.0E-4		
1 kHz	1.0E-3		
1 MHz	6.0E-3		

### Flammability

	Typical Value	Unit	Test method
Flame Rating			UL 94
1.5 mm, ALL	HB		
4.5 mm, NC	V-0		
Glow Wire Flammability Index			IEC 60695-2-12
0.8 mm	850	°C	
1.6 to 6.0 mm	960	°C	

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Flammability	Typical Value	Unit	Test method
Glow Wire Ignition Temperature			IEC 60695-2-13
0.8 mm	875	°C	
1.6 to 6.0 mm	850	°C	

Injection	Typical Value	Unit
Drying Temperature	135 to 163	°C
Drying Time	3.5	hr
Suggested Shot Size	50 to 75	%
Processing (Melt) Temp	329 to 385	°C
Mold Temperature	121 to 163	°C

## Notes

Typical properties: these are not to be construed as specifications.

<sup>1</sup> Only Udel P-1700 NT 06 and Udel P-1700 NT 11 are NSF 51 listed. Maximum Temperature of Use: 149°C (300°F)

<sup>2</sup> Only Udel P-1700 NT 11, Udel P-1700 BK 937, Udel P-1700 WH 6417 and Udel P-1700 WH 7407 are NSF 61 listed. Tested at 82 °C (180 °F) (Commercial Hot)



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