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 CL 2611 CMP MR
- Transparent: Udel® P-1700 NT 06
- Transparent: Udel® P-1700 NT 11
- Transparent: Udel® P-1700 NT 11 MR
- 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	• Commercial: Active	
Availability	• Asia Pacific • Europe	• Latin America • North America
Features	• Acid Resistant • Alcohol Resistant • Alkali Resistant • Autoclave Sterilizable • Biocompatible • Chemical Resistant • Detergent Resistant • E-beam Sterilizable • Ethylene Oxide Sterilizable • Food Contact Acceptable • Good Dimensional Stability • Good Sterilizability	• Good Surface Finish • Good Toughness • Heat Sterilizable • High Heat Resistance • Hydrocarbon Resistant • Hydrolytically Stable • Radiation (Gamma) Resistant • Radiation Sterilizable • Radiotranslucent • Steam Resistant • Steam Sterilizable
Uses	• Appliance Components • Appliances • Automotive Electronics • Dental Applications • Electrical Parts • Electrical/Electronic Applications • Food Service Applications • Hospital Goods	• Industrial Parts • Medical Devices • Medical/Healthcare Applications • Microwave Cookware • Piping • Plumbing Parts • Surgical Instruments • Valves/Valve Parts

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General		
Agency Ratings	• FDA 21 CFR 177.1655 • ISO 10993	• NSF STD-51 [1] • NSF STD-61 [2]
RoHS Compliance	• RoHS Compliant	
Automotive Specifications	• ASTM D6394 SP0112 [3]	• BMW GS 93016
Appearance	• Colors Available	• Transparent - Slight Yellow
Forms	• Pellets	
Processing Method	• Extrusion • Extrusion Blow Molding • Film Extrusion • Injection Blow Molding • Injection Molding	• Machining • Pipe Extrusion • Profile Extrusion • Sheet Extrusion • Thermoforming

Physical	Typical Value	Unit	Test method
Density / Specific Gravity	1.24		ASTM D792
Melt Mass-Flow Rate (MFR) (343°C/2.16 kg)	7.0	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 (Yield)	70.3	MPa	ASTM D638
Tensile Elongation			ASTM D638
Yield	5.5	%	
Break	50 to 100	%	
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/m²	ASTM D1822

Thermal	Typical Value	Unit	Test method
Deflection Temperature Under Load			ASTM D648
1.8 MPa, Unannealed	174	°C	
CLTE			ASTM D696
Flow	5.7E-5	cm/cm/°C	
Transverse	5.7E-5	cm/cm/°C	

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 to 3.0 mm, ALL	HB		
4.5 to 6.0 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	
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 - Desiccant Dryer	135 to 163	°C
Drying Time - Desiccant Dryer	2.0 to 4.0	hr
Suggested Max Moisture	< 0.050	%
Processing (Melt) Temp	350 to 380	°C
Mold Temperature	138 to 160	°C
Injection Rate	Slow-Moderate	
Back Pressure	1.50 to 3.00	MPa
Screw Compression Ratio	1.8:1.0 to 2.6:1.0	

Extrusion	Typical Value	Unit
Drying Temperature	135 to 163	°C
Drying Time	4.0 to 8.0	hr
Suggested Max Moisture	< 0.010	%
Melt Temperature	315 to 370	°C

Notes

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

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

[2] 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)

[3] Latest version of the standard applies. Note this product also meets the requirements of ASTM F702 (PSU for medical applications).
Udel P1700 NT 11 meets ASTM D6394 SP0110S2 (which is equivalent as well to Mil P 46120B Type I Class 2 as indicated in ASTM D6394)

Safety Data Sheets (SDS) are available by emailing us or contacting your sales representative. Always consult the appropriate SDS before using any of our products.

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