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Udel® P-3500 LCD

polysulfone

Udel® P-3500 LCD is a very high molecular weight grade of polysulfone, and therefore offers the greatest toughness and chemical resistance of the available grades. It is well-suited for extrusion.

The advantages of Udel® P-3500 LCD are attributed to the lower level of cyclic dimer present in the polymer.

Polysulfone is a tough, rigid and transparent high-strength thermoplastic that is suitable for long-term use up to 300°F (149°C). It is resistant to oxidation and hydrolysis and withstands prolonged exposure to high temperatures and repeated sterilization.

Polysulfone is resistant to mineral acids, alkali, salt solutions, detergents and hydrocarbon oils. Contact with polar solvents such as ketones, chlorinated hydrocarbons and aromatic hydrocarbons should be avoided, as these types of chemical compounds can cause stress cracking or solvate polysulfone resin.

Polysulfone is highly resistant to degradation by gamma or electron beam radiation but can be adversely affected by long term exposure to ultraviolet. Electrical properties of the polymer are very stable over a wide range of temperatures and after immersion in water or exposure to high humidity.

The resin is very safe for food contact uses. It complies with FDA 21 CFR 177, 1655 and may be used in articles intended for repeated use in contact with foods. Additionally, it is approved by the NSF, by the Department of Agriculture for contact with meat and poultry and the 3-A Sanitary Standards of the Dairy Association.

- Transparent: Udel P-3500 NT LCD

General

Material Status	• Commercial: Active	
Availability	• Asia Pacific • Europe	• Latin America • North America
Features	• Acid Resistant • Alcohol Resistant • Alkali Resistant • Chemical Resistant • Detergent Resistant • Good Dimensional Stability • Good Sterilizability	• Good Surface Finish • Good Toughness • High Heat Resistance • Hydrocarbon Resistant • Hydrolytically Stable • Steam Sterilizable
Uses	• Membranes	
Agency Ratings	• FDA 21 CFR 177.1655 • ISO 10993	• NSF STD-61 [1]
RoHS Compliance	• RoHS Compliant	
Appearance	• Natural Color	
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
Specific Gravity	1.24		ASTM D792
Melt Mass-Flow Rate (MFR) (343°C/2.16 kg)	3.0 to 5.0	g/10 min	ASTM D1238
Molding Shrinkage - Flow	0.70	%	ASTM D955
Water Absorption (24 hr)	0.30	%	ASTM D570

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Mechanical	Typical Value	Unit	Test method
Tensile Modulus	2480	MPa	ASTM D638
Tensile Strength (Break)	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/m²	ASTM D1822

Thermal	Typical Value	Unit	Test method
Deflection Temperature Under Load			ASTM D648
1.8 MPa, Unannealed	174	°C	
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-3		
1 kHz	1.0E-3		
1 MHz	6.0E-3		

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Injection Notes

UDEL P-3500 polysulfones may be dried before preparing solutions. Pellets can be dried in a circulating hot air oven, by spreading the pellets on trays to a 1-2 inch depth and drying for 3.5 hours at 257 to 325°F (135 to 163°C).

Extrusion	Typical Value	Unit
Drying Temperature	135 to 163	°C
Drying Time	3.5	hr
Cylinder Zone 1 Temp.	302	°C
Cylinder Zone 5 Temp.	316 to 338	°C
Melt Temperature	316 to 371	°C

Notes

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

[1] Tested at 82 °C (180 °F) (Commercial Hot)

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