



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 | <ul style="list-style-type: none"> • 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 | <ul style="list-style-type: none"> • 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 | <ul style="list-style-type: none"> • Appliance Components • Appliances • Automotive Electronics • Dental Applications • Electrical Parts • Electrical/Electronic Applications • Food Service Applications • Hospital Goods | <ul style="list-style-type: none"> • Industrial Parts • Medical Devices • Medical/Healthcare Applications • Microwave Cookware • Piping • Plumbing Parts • Surgical Instruments • Valves/Valve Parts |
| Agency Ratings | <ul style="list-style-type: none"> • FDA 21 CFR 177.1655 • ISO 10993 | <ul style="list-style-type: none"> • NSF STD-51 ¹ • NSF STD-61 ² |
| RoHS Compliance | • RoHS Compliant | |

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General

| | | |
|---------------------------|--|--|
| 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 | 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 ² | 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 | | |

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| 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 | |
| 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.

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)

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