

# Texin<sup>®</sup> 976D

## Characterization

Texin 976D resin is an aromatic polyether-based thermoplastic polyurethane. It can be processed by injection molding or extrusion.

## Properties / Applications

Texin 976D offers outstanding abrasion resistance, impact strength, toughness and flexibility. It also exhibits excellent hydrolytic stability and microbial resistance. Texin 976D natural color resin is listed under NSF standard 61 for use in potable water applications. Typical applications include industrial screens and casters, bushings, housings, agricultural equipment and marine equipment. As with any product, use of Texin 976D resin in a given application must be tested (including but not limited to field testing) in advance by the user to determine suitability.

## Storage and Drying

Texin thermoplastic polyurethane resins are hygroscopic and will absorb ambient moisture. The resins should remain in their sealed containers and stored in a dry area. Storage temperatures should not exceed 86°F (30°C). Unused resin from opened containers, or reground material that is not to be used immediately should also be stored in sealed containers under cool and dry conditions.

Prior to processing, Texin 976D resin must be thoroughly dried for a minimum of 4 hours in a desiccant dehumidifying hopper dryer to a moisture content of less than 0.03%. Hopper inlet air temperature should be 200-220°F (93-104°C), the inlet air dew point should be -20°F (-29°C) or lower.

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## Injection Molding and Extrusion Conditions

Typical starting conditions for injection molding, extrusion and blow molding are noted below. It is recommended that initial processing be done at the lower end of the suggested temperature ranges and increased as necessary. Actual processing conditions will depend on machine size, mold design, material residence time, shot size, part geometry, etc.

### Typical Injection Molding Conditions

Barrel Temperature: Rear	430°-450°F (221°-232°C)
Barrel Temperature: Middle	435°-455°F (224°-235°C)
Barrel Temperature: Front	435°-455°F (224°-235°C)
Barrel Temperature: Nozzle	440°-460°F (227°-238°C)
Melt Temperature	440°-460°F (227°-238°C)
Mold Temperature	70°-120°F (21°-49°C)
Injection Pressure	6,000 - 15,000 psi
Hold Pressure	60 - 80% of Injection Pressure
Back Pressure	800 psi max.
Screw Speed	40 - 80 rpm
Injection Speed	Moderate
Cushion	1/8 in max

### Extrusion Profile

#### Typical Temperature Profile for Extrusion

Rear (Feed)	410° - 440°F (210° - 227°C)
Middle (Transition)	415° - 440°F (213° - 227°C)
Front (Meter)	415° - 440°F (213° - 227°C)
Die	415° - 440°F (213° - 227°C)
Melt	415° - 440°F (213° - 227°C)

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## Typical Properties\* for Natural Resin

Property	ASTM Test Method (Other)	Texin 976D Resin U.S. Units	Texin 976D Resin S.I. Units
<b>General</b>			
Specific Gravity	D 792 (ISO 1183)	1.19	1.19
Shore Hardness	D 2240 (ISO 868)	76D	76D
Taber Abrasion: H-18, 1,000-g Load, 1,000 Cycles	D 3489 (ISO 4649)	54 mg Loss	54 mg Loss
Bayshore Resilience	D 2632	66%	66%
<b>Mechanical</b>			
Tensile Strength	D 412 (ISO 37)	6,600 lb/in <sup>2</sup>	45.5 MPa
Tensile Stress at 100% Elongation	D 412 (ISO 37)	4,250 lb/in <sup>2</sup>	29.3 MPa
Ultimate Elongation	D 412 (ISO 37)	300%	300%
Flexural Modulus: 73°F (23°C)	D 790 (ISO 178)	213,000 lb/in <sup>2</sup>	1467 MPa
Tear Strength, Die C	D 624 (ISO 34)	1,470 lbf/in	257.3 kN/m
<b>Thermal</b>			
Glass Transition Temperature (T <sub>g</sub> )	(DMA) <sup>b</sup>	113°C	45°C
Vicat Softening Temperature, Rate A	D 1525 (ISO 306)	241°F	116°C

\* These items are provided as general information only. They are approximate values and are not part of the product specifications.

*a* Postcured for 16 hours at 230°F (110°C).

*b* Dynamic Mechanical Analysis



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## Health and Safety Information

Appropriate literature has been assembled which provides information concerning the health and safety precautions that must be observed when handling this product. Before working with this product, you must read and become familiar with the available information on its risks, proper use, and handling. This cannot be overemphasized. Information is available in several forms, e.g., safety data sheets and product labels. For further information contact your Covestro LLC representative or the Product Safety and Regulatory Affairs Department in Pittsburgh, PA.

## Regulatory Compliance Information

Some of the end uses of the products described in this bulletin must comply with applicable regulations, such as the FDA, NSF, USDA, and CPSC. If you have any questions on the regulatory status of these products, contact your Covestro representative or Regulatory Affairs Manager in Pittsburgh, PA.

The manner in which you use and the purpose to which you put and utilize our products, technical assistance and information (whether verbal, written or by way of production evaluations), including any suggested formulations and recommendations, are beyond our control. Therefore, it is imperative that you test our products, technical assistance and information to determine to your own satisfaction whether our products, technical assistance and information are suitable for your intended uses and applications. This application-specific analysis must at least include testing to determine suitability from a technical as well as health, safety, and environmental standpoint. Such testing has not necessarily been done by us. Unless we otherwise agree in writing, all products are sold strictly pursuant to the terms of our standard conditions of sale which are available upon request. All information and technical assistance is given without warranty or guarantee and is subject to change without notice. It is expressly understood and agreed that you assume and hereby expressly release us from all liability, in tort, contract or otherwise, incurred in connection with the use of our products, technical assistance, and information. Any statement or recommendation not contained herein is unauthorized and shall not bind us. Nothing herein shall be construed as a recommendation to use any product in conflict with any claim of any patent relative to any material or its use. No license is implied or in fact granted under the claims of any patent.

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