

Texin[®] STX

Characterization

Texin STX resin is an opaque, high performance thermoplastic polyurethane which possesses the stiffness and modulus of standard engineering thermoplastics.

Properties / Applications

Texin STX resin exhibits excellent heat and chemical resistance. Other key attributes of Texin STX TPU include good impact resistance, low moisture absorption, low mold shrinkage, a low coefficient of thermal expansion, and good heat and abrasion resistance. It can be processed by injection molding or extrusion. Typical applications include couplings, valves, fittings, sunglass frames, and housings for personal electronic devices. As with any product, use of Texin STX resin in a given application must be tested (including field testing, etc.) in advance by the user to determine suitability.

Storage, Drying and Regrind Usage

Texin thermoplastic resins are hygroscopic and will absorb ambient moisture. The presence of moisture can adversely affect processing characteristics and the quality of parts. Therefore, the resins should remain in their sealed containers and be stored under cool and dry conditions until used. Storage temperatures should not exceed 95°F (35°C). Unused resin from opened containers, or reground material that is not to be used immediately, should be stored in sealed containers.

Prior to processing, Texin STX resin must be thoroughly dried in a desiccant dehumidifying hopper dryer for a minimum of 4 hours. Hopper inlet air temperature should be 220 - 250°F (104-121°C). To achieve the recommended moisture content of less than 0.03%, the inlet air dew point should be -20°F(-29°C) or lower.

Where end-use requirements permit, up to 20% Texin resin regrind may be used with virgin material. Regrind material must be generated from properly molded/extruded parts, sprues, runners, trimmings, and/or films.

Degraded or discolored material may not be used for regrind. All regrind material must be free of contamination and thoroughly blended with virgin material prior to drying and processing. Finished parts containing regrind must be tested to ensure that end-use requirements are fully met.

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.





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Injection Molding and Extrusion Conditions

Typical starting conditions for injection molding and extrusion are noted below. 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	455°-475°F (235°-246°C)
Barrel Temperature: Middle	460°-480°F (238°-249°C)
Barrel Temperature: Front	460°-480°F (238°-249°C)
Barrel Temperature: Nozzle	470°-490°F (243°-254°C)
Melt Temperature	455°-482°F (235°-250°C)
Mold Temperature	110°-150°F (43°-66°C)
Injection Pressure	6,000 - 14,000 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 Conditions for Extrusion

Rear (Feed)	437° - 482°F (225° - 250°C)
Middle (Transition)	437° - 464°F (225° - 240°C)
Front (Meter)	437° - 464°F (225° - 240°C)
Die	446° - 464°F (230° - 240°C)
Melt	446°F (230°C)



Product Data





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Typical Properties* for Natural Resin

Property	ASTM Test Method (Other)	Texin STX TPU U.S. Units	Texin STX TPU S.I. Units
General			
Specific Gravity	D 792 (ISO 1183)	1.22	1.22
Rockwell Hardness	D 785	50M/110R	50M/110R
Water Absorption, 24 hrs.	D 570 (ISO 62)	0.23%	0.23%
Mold Shrinkage, 100-mil thickness; Flow Direction	D 955 (ISO 2577)	0.005 in/in (mm/mm)	0.005 in/in (mm/mm)
Mechanical			
Tensile Stress at Yield	D 638	8,900 lb/in ²	62 MPa
Tensile Stress at Break	D 638	6,800 lb/in ²	47 MPa
Tensile Elongation at Yield	D 638	7.3%	7.3%
Tensile Elongation at Break	D 638	85%	85%
Tensile Modulus	D 638	280,000 lb/in ²	1,9300 MPa
Flexural Modulus at 5% Strain	D 790 (ISO 178)	12,000 lb/in ²	83 MPa
Flexural Modulus	D 790 (ISO 178)	290,000 lb/in ²	2,000 MPa
Flexural Stress (maximum)	D 790 (ISO 178)	13,400 lb/in ²	930 MPa
Strain at Maximum Stress	D 790 (ISO 178)	6.8%	6.8%
Unnotched Izod Impact Strength 73°F (23°C) 0.125-in thickness	D 4812	62 ft•lb/in (no break)	3,300 J/m (no break)
Notched Izod Impact Strength 73°F (23°C) 0.125-in thickness -22°F (-30°C) 0.125-in thickness	D 256	16 ft•lb/in 3.5 ft•lb/in	850 J/m 187 J/m



Product Data





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Typical Properties* for Natural Resin (CONT'D.)

Property	ASTM Test Method (Other)	Texin STX TPU U.S. Units	Texin STX TPU S.I. Units
Thermal			
Heat Deflection Temperature 0.125-in thickness 264 psi (1.82 MPa) 66 psi (0.16 MPa)	D 648	163°F 190°F	73°C 88°C
Vicat Softening Temperature (10N, 50°C/hr)	D 1525 (ISO 306)	221°F	105°C
Coefficient of Linear Thermal Expansion (CLTE)	D 696	4.2 E-5 in/in/°F	7.54 E-5 mm/mm/°C

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

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.
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Note	<i>The purchaser/user agrees that Covestro LLC reserves the right to discontinue this product without prior notice.</i>
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Product Data

