Texin® 570D

Characterization	Texin 570D resin is a blend of polyester-based polyurethane and polycarbonate. This aromatic grade has a Shore hardness of approximately 70D*. It can be processed by injection molding, extrusion, or blow molding.
Properties / Applications	Texin 570D resin offers high impact strength, and high stiffness, as well as excellent low-temperature properties. Typical applications include automotive cladding, fascia, bumpers, and a wide variety of injection molded and extruded articles. As with any product, use of Texin 570D0 resin in a given application must be tested (including but not limited to field testing) in advance by the user to determine suitability.
Storage	Texin thermoplastic polyurethane 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 temperature should not exceed 86°F (30°C). Unused resin from opened containers, or reground material that is not to be used immediately, should be stored in sealed containers.
Drying	Prior to processing, Texin 570D resin must be thoroughly dried in a desiccant dehumidifying hopper dryer. Hopper inlet air temperature should be 230° –250°F (110° –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. The hopper capacity should be sufficient to provide a minimum residence time of 4 hours. Additional information on drying procedures is available in the brochure - General Drying Guide.

Texin® 570D

Injection Molding

Texin 570D resin may be easily processed on commercially available equipment suitable for injection molding of thermoplastic polyurethane elastomers. The recommended screw length-to-diameter (L/D) ratio is 20:1 with a compression ratio of 2.5 –3:1. Screws with a compression ratio greater than 4:1 should be avoided. Recommended shot weight is 40 –80% of rated barrel capacity. Typical starting conditions are noted below. Actual processing conditions will depend on machine size, mold design, material residence time, shot size, etc.

Typical Injection Molding Conditions

Barrel Temperature: Rear	430°–450°F (221°–232°C)
Barrel Temperature: Middle	440°–460°F (227°–238°C)
Barrel Temperature: Front	440°–460°F (227°–238°C)
Barrel Temperature: Nozzle	440°–465°F (227°–241°C)
Melt Temperature	450°–460°F (232°–238°C)
Mold Temperature	90°–120°F (32°–49°C)
Injection Pressure	10,000 - 15,000 psi
Screw Speed	40–80 rpm
Injection Speed	Slow to Moderate
Cushion	1/8 inch max
Clamp	3 - 5 ton/in^2

Mold Shrinkage

Typical values for mold shrinkage are given below. For treatments such as postcuring, an additional 1 to 1.5 mil per inch should be added.

Cross Section	Mold Shrinkage*
Less than 1/8 inch	7 - 10 mils per inch
1/8 to 1/4 inch	10 - 15 mils per inch
Over 1/4 inch	15 - 20 mils per inch

Additional Injection Molding Information

Additional information on injection molding may be obtained by consulting the publication - Texin and Desmopan Thermoplastic Polyurethanes — A Processing Guide for Injection Molding and by contacting a Covestro technical service representative.

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Extrusion

Texin 570D resin possesses a satisfactory melt strength and can be controlled over a wide range of temperature conditions to produce tubing, sheet, and extruded profiles. Typical starting conditions are noted below. Actual processing conditions vary and are dependent on size of extruders, extrusion rate, part geometry, etc.

Typical Temperature Profile for Extrusion

Die	430°–470°F (221°–243°C)
Zone 1 (Feed)	410°–440°F (210°–227°C)
Zone 2 (Transition)	420°–450°F (216°–232°C)
Zone 3 (Meter)	420°–460°F (216°–238°C)
Melt	450°–470°F (232°–243°C)

Additional Extrusion Information

The preferred screw design should have a compression ratio of 3:1 and should feature a long, gradual transition zone and a long meter zone. The recommended length- to-diameter (L/D) ratio is at least 24:1. Typical recommendations for 3:1 compression ratio screws on various sizes of 24:1 L/D extruders are given in the table below. Additional information on extrusion may be obtained by consulting the publication Texin and Desmopan Thermoplastic Polyurethanes - A Processing Guide for Extrusion and by contacting a Covestro technical service representative.

		Depth ("h") in inches		
Section	**Number of Diameters**	**2 1/2-in Extruder**	**3 1/2-in Extruder**	**4 1/2-in Extruder**
Feed	5	0.375	0.450	0.525
Transition	7 - 13			
Meter	6 - 12	0.125	0.150	0.175

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Regrind Usage

Where end-use requirements permit, up to 20% Texin resin regrind may be used with virgin material, provided that the material is kept free of contamination and is properly dried (see section on Drying). Any regrind used must be generated from properly molded/extruded parts, sprues, runners, trimmings, and/or films. All regrind used must be clean, uncontaminated, and thoroughly blended with virgin resin prior to drying and processing. Under no circumstances should degraded, discolored, or contaminated material be used for regrind. Materials of this type should be properly discarded.

Improperly mixed and/or dried regrind may diminish the desired properties of Texin resin. It is critical that you test finished parts produced with any amount of regrind to ensure that your end-use performance requirements are fully met. Regulatory or testing organizations (e.g., Underwriter's Laboratories) may have specific requirements limiting the allowable amount of regrind. Because third party regrind generally does not have a traceable heat history or offer any assurance that proper temperatures, conditions, and/or materials were used in processing, extreme caution must be exercised in buying and using regrind from third parties.

The use of regrind material should be avoided entirely in those applications where resin properties equivalent to virgin material are required, including but not limited to color quality, impact strength, resin purity, and/or load-bearing performance.

Regulatory Compliance Information

Some of the end uses of the products described in this bulletin must comply with applicable regulations, such as 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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Typical Properties* for Natural Resin

Property	ASTM Test Method (Other)	Texin 570D Resin U.S. Units	Texin 570D Resin S.I. Units
General			
Specific Gravity	D 792 (ISO 1183)	1.21	1.21
Shore Hardness	D 2240 (ISO 868)	70D	70D
Taber Abrasion: H-18, 1,000-g Load, 1,000 Cycles	D 3489 (ISO 4649)	65 mg Loss	65 mg Loss
Bayshore Resilience	D 2632	45%	45%
Mold Shrinkage, 100-mil thickness	D 955 (ISO 2577)		
Flow Direction		0.008 in/in (mm/mm)	0.008 in/in (mm/mm)
Cross-Flow Direction		0.008 in/in (mm/mm)	0.008 in/in (mm/mm)
Mechanical			
Tensile Strength	D 412 (ISO 37)	5,800 lb/in^2	40.0 MPa
Ultimate Elongation	D 412 (ISO 37)	130%	130%
Flexural Modulus: 73°F (23°C)	D 790 (ISO 178)	100,000 lb/in^2	0.7 GPa
Tear Strength, Die C	D 624 (ISO 34)	900 lbf/in	158 kN/m
Compressive Load:	D 575		
2% Deflection		500 lb/in^2	3.4 MPa
5% Deflection		2,000 lb/in^2	13.8 MPa
10% Deflection		4,600 lb/in^2	31.7 MPa
15% Deflection		6,000 lb/in^2	41.4 MPa
20% Deflection		8,200 lb/in^2	56.5 MPa
25% Deflection		10,000 lb/in^2	69.0 MPa
50% Deflection		18,900 lb/in^2	130.3 MPa

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

Property	ASTM Test Method (Other)	Texin 570D Resin U.S. Units	Texin 570D Resin S.I. Units
Mechanical (cont'd.)			
Impact Strength, Notched Izod 0.125-in Thickness, 73°F (23°C) 0.125-in Thickness, -22°F (-30°C)	D 256 (ISO 180)	 16 ft•lb/in 1 ft•lb/in	 853 J/m 53 J/m
Thermal			
Deflection Temperature Under Load 264 psi 66 psi	D 648 (ISO 75)	 139°F 208°F	 59°C 98°C
Coefficient of Linear Thermal Expansion	D 696	5.7 E-05 in/in/°F	10.2 E-05 mm/mm/°C
Low Temperature Brittle Point	D 746 (ISO 974)	< -90°F	< -68°C
Glass Transition Temperature (Tg)	(DMA)[a]	-31°F	-35°C
Vicat Softening Temperature, Rate A	D 1525 (ISO 306)	282°F	139°C

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.
Note	***The purchaser/user agrees that Covestro LLC reserves the right to discontinue this product without prior notice.***

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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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