

Texin[®] 8280D

Characterization

Texin 8280D is an aliphatic polyester-based thermoplastic polyurethane of approximately 80D Shore hardness. It can be processed by injection molding or extrusion.

Properties / Applications

Texin 8280D resin is characterized by high rigidity, excellent clarity and low yellowing, as well as very good scratch, chemical and impact resistance. Typical applications of Texin 8280D include sight windows, lenses, screen protectors, graphic films and lighting covers. As with any product, use of Texin 8280D 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 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 8280D resin must be thoroughly dried for a minimum of 4 hours in a pre-heated desiccant dehumidifying hopper dryer to a moisture content of less than 0.03%. Hopper inlet air temperature should be 140-170°F (60-77°C). Temperatures above 170°F (76.7°C) should be avoided in order to prevent pellet agglomeration. 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. Finish parts containing regrind must be tested to ensure that end-use requirements are fully met.

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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 | 350°-380°F (177°-193°C) |
| Barrel Temperature: Middle | 355°-385°F (179°-196°C) |
| Barrel Temperature: Front | 355°-385°F (179°-196°C) |
| Barrel Temperature: Nozzle | 360°-390°F (182°-199°C) |
| Melt Temperature | 370-385°F (188-196°C) |
| Mold Temperature | 60°-100°F (16°-38°C) |
| Injection Pressure | 8,000 - 15,000 psi |
| Hold Pressure | 60 - 80% of Injection Pressure |
| Back Pressure | 800 psi max. |
| Screw Speed | 40 - 80 rpm |
| Injection Speed | Slow to Moderate |
| Cushion | 1/8 in max |

Extrusion and Blow Molding Profile

Typical Temperature Profile for Extrusion

| | |
|---------------------|-----------------------------|
| Rear (Feed) | 350° - 380°F (177° - 193°C) |
| Middle (Transition) | 355° - 385°F (179° - 196°C) |
| Front (Meter) | 355° - 385°F (179° - 186°C) |
| Die | 360° - 390°F (182° - 199°C) |
| Melt | 360-385°F (182-196°C) |

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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.

Processing instructions

Texin 8280D resin may be easily processed on commercially available equipment suitable for injection molding of thermoplastic polyurethane elastomers. General purpose screws are satisfactory for use with Texin 8280D resin. The recommended screw length-to-diameter (L/D) ratio is at least 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. To obtain good clarity in parts, Texin 3080D resin must be molded on tools with a highly polished chrome surface.

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Typical Properties* for Natural Resin

| Property | ASTM Test Method (Other) | Texin 8280D Resin U.S. Units | Texin 8280D Resin S.I. Units |
|---|-----------------------------|---------------------------------|---------------------------------|
| General | | | |
| Specific Gravity | D 792 (ISO 1183) | 1.146 | 1.146 |
| Shore Hardness | D 2240 (ISO 868) | 81D | 81D |
| Total Luminous Transmittance | D 1003 | 92% | 92% |
| Refractive Index, n_D | D 542 | 1.516 | 1.516 |
| Abbe Number | D 542 | 54 | 54 |
| Mechanical | | | |
| Tensile Modulus | D 638 | 265,000 lb/in ² | 1,825 MPa |
| Tensile Strength at Yield | D 638 | 8,750 lb/in ² | 60.3 MPa |
| Tensile Strength at Break | D 638 | 5,875 lb/in ² | 40.5 MPa |
| Elongation at Yield | D 638 | 5.9% | 5.9% |
| Elongation at Break | D 638 | 100% | 100% |
| Flexural Modulus: 73°F (23°C) | D 790 (ISO 178) | 275,000 lb/in ² | 1,900 MPa |
| Maximum Flexural Stress | D 790 | 12,000 lb/in ² | 83 MPa |
| Unnotched Izod Impact Resistance | D 4812 | 48.7 ft*lb/in | 2,600 J/m |
| Notched Izod Impact Resistance | D 256 | 0.84 ft*lb/in | 45 J/m |
| Thermal | | | |
| Glass Transition Temperature (T _g) | (DSC) ^a | 169°F | 76°C |
| Vicat Softening Temperature, Rate A | D 1525 (ISO 306) | 165°F | 74°C |

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

^a DSC – Differential Scanning Calorimetry



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Regulatory Compliance Information

Some of the end uses of the product described in this bulletin may require compliance with applicable regulations, such as EPA, FDA, USDA, or CPSC regulations. If you have any questions on the regulatory status of this product, contact your Covestro 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.

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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