Texin® 8990AE

Characterization

Texin 8990AE resin is an aliphatic polyether-based thermoplastic polyurethane; it can be processed by injection molding or extrusion.

Properties / Applications

Texin 8990AE resin exhibits better color stability towards UV (ultraviolet) exposure (i.e. yellowing) than aromatic thermoplastic polyurethane resins. Texin 8990AE also exhibits inherent resistance to hydrolysis, as well as outstanding clarity and flexibility. Texin 8990AE resin was primarily designed for photovoltaic applications, but can be used for applications such as coated fabrics, tarps and rain gear, optical lenses, flexible windows and outdoor signage. Exposure to UV irradiation can affect the mechanical properties of thermoplastic polyurethane resin. As with any product, use of Texin 8990AE resin in a given application must be tested (including but not limited to field testing) 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 8990AE 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 150°-180°F (66°-82°C), 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.

Document contains important information and must be read in its entirety.

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Injection Molding and Extrusion Conditions

Typical starting conditions for injection molding, extrusion, and blow molding 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	325°–340°F (163°–171°C)
Barrel Temperature: Middle	330°–345°F (166°–174°C)
Barrel Temperature: Front	330°–345°F (166°–174°C)
Barrel Temperature: Nozzle	335°–350°F (168°–177°C)
Melt Temperature	335-350°F (168-177°C)
Mold Temperature	50°–85°F (10°–295°C)
Injection Pressure	6,000 - 12,000 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 and Blow Molding

Rear (Feed)	310-325°F (154-163°C)
Middle (Transition)	315-330°F (157-166°C)
Front (Meter)	315-330°F (157-166°C)
Die	315-330°F (157-166°C)
Melt	320-330°F (160-166°C)

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Typical Properties* for Natural Resin

Property	ASTM Test Method (Other)	Texin 8990AE Resin U.S. Units	Texin 8990AE Resin S.I. Units
General			
Specific Gravity	D 792 (ISO 1183)	1.08	1.08
Shore Hardness	D 2240 (ISO 868)	85A	85A
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)
Water Absorption	D 570 (ISO 62)	1.3%	1.3%
Light Transmission (350 - 1050 nm)	D 1003 (ISO 3538)	92.8 %	92.8 %
Refractive Index	D 542 (ISO 489)	1.503	1.503
Mechanical			
Tensile Strength	D 882	4,100 lb/in^2	28.3 MPa
Ultimate Elongation	D 882	370%	370%
Tear Strength, Die C	D 1004	440 lbf/in	95 kN/m
Thermal			
Glass Transition Temperature (Tg)	(DMA)[a]	-40°F	-40°C
Softening Temperature	(TMA)[b]	228°F	109°C

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

a DMA – Dynamic Mechanical Analysis.

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

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