Bayer MaterialScience

Product Information

TEXIN® STX-LG-60

High Modulus, 60% Glass-Fiber-Reinforced Thermoplastic Polyurethane

Description and Applications

Texin STX-LG-60 resin is a high performance glass-reinforced thermoplastic polyurethane which possesses an excellent combination of rigidity and toughness. This resin exhibits excellent heat and chemical resistance along with ease of processing and good surface appearance. Other key attributes of Texin STX-LG-60 TPU include low moisture absorption, low mold shrinkage, a low coefficient of thermal expansion, and good abrasion resistance. Designed for injection molding, this grade contains a nominal 60% glass fiber reinforcement.

Typical uses may include housings, fasteners, caster hubs and metal replacement applications. As with any product, use of Texin STX-LG-60 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-LG-60 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.

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 Temperatures:	
Rear	465º-485ºF (241º-252ºC)
Middle	470º-490ºF (243º-254ºC)
Front	470º-490ºF (243º-254ºC)
Nozzle	470º-500ºF (243º-260ºC)
Melt Temperature	460º-490ºF (238º-254ºC)
Mold Temperature	110º-150ºF (43º-66ºC)
Injection Pressure	8,000-16,000 psi
Hold Pressure	60-80% of Injection Pressure
Back Pressure	800 psi max.
Screw Speed	40-80 rpm
Injection Speed	Moderate
Cushion	1/8 inch max

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

The purchaser/user agrees that Bayer MaterialScience LLC reserves the right to discontinue this product without prior notice.

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 Bayer MaterialScience representative or Bayer's Regulatory Affairs Manager in Pittsburgh, PA.

Health and Safety Information

Appropriate literature has been assembled which provides information concerning the health and safety precautions that must be observed when handling Texin STX-LG-60 resin. Before working with this product, you must read and become familiar with the available information on its hazards, proper use and handling. This cannot be overemphasized. Information is available in several forms, e.g., material safety data sheets and product labels. Consult your Bayer MaterialScience representative or contact Bayer's Product Safety and Regulatory Affairs Department in Pittsburgh, PA.

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Typical Properties* For Natural Resin	ASTM Test Method (Other)	Units		Texin STX-LG-60 TPU	
		U.S. Conventional	SI Metric	U.S. Conventional	SI Metric
General					
Specific Gravity	D 792 (ISO 1183)			1.75	
Rockwell Hardness	D 785	M Scale/R Scale		93/118	
Water Absorption, 73ºF (23ºC)	D 570 (ISO 62)				
24 Hours		%		0.10	
7 Days		%		0.24	
Mold Shrinkage at 100-mil Thickness:	D 955 (ISO 2577)				
Flow Direction		in/in (mm/mm)		0.002	
Mechanical					
Tensile Stress at Break	D 638	lb/in^2	MPa	30,450	210
Tensile Elongation at Break	D 638	%		2.0	
Tensile Modulus	D 638	lb/in^2	MPa	2,335,000	16,100
Flexural Modulus	D 790 (ISO 178)	lb/in^2	MPa	2,400,000	16,550
Flexural Stress (Maximum)	D 790 (ISO 178)	lb/in^2	MPa	52,250	360
Strain at Maximum Stress	D 790 (ISO 178)	%		2.5	
Un-notched Izod Impact Strength	D 4812				
73ºF (23ºC) 0.125 in thickness		ft•lb/in	J/m	21.7	1,160
Notched Izod Impact Strength	D 256				
Un-annealed (Annealed**)					
73ºF (23ºC) 0.125 in thickness		ft•lb/in	J/m	6.9 (7.5)	368 (401)
-22ºF (-30ºC) 0.125 in thickness		ft•lb/in	J/m	7.5	402
Thermal					
Heat Deflection Temperature,	D 648				
Un-annealed (Annealed**)					
264 psi (1.82 MPa) 0.250 in Thickness		ºF	ºC	249 (260)	121 (127)
66 psi (0.46 MPa) 0.250 in Thickness		ºF	ºC	387 (387)	197 (197)
Vicat Softening Temperature,	D 1525 (ISO 306)				
(10 N,50 ºC/hr), Un-annealed		ºF	ºC	407	209
Coefficient of Linear Thermal	D 696				
Expansion (CLTE)		in/in/ºF	mm/mm/ ºC	1.12E-5	2.02E-5

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*** Post-cured for 2 hours at 230ºF (110ºC).*

Note: The information contained in this bulletin is current as of March 2010. Please contact Bayer MaterialScience for additional information or to determine whether this publication has been revised.