Bayer MaterialScience

Product Information

DESMOPAN® 5377A

Thermoplastic Polyurethane

Aromatic Polyether/Polyester-Based Grade

Description and Applications

Desmopan 5377A resin is an aromatic polyether/polyester-based thermoplastic polyurethane; it can be processed by injection molding or extrusion. Desmopan 5377A resin is characterized by good hydrolysis and microbe resistance and good low temperature flexibility and impact resistance.

Applications include cable sheathing, fabric coating, grips, watch straps and various molded articles. As with any product, use of Desmopan 5377A 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

Desmopan thermoplastic polyurethane resins are hygroscopic and will absorb ambient moisture. The resins should remain in their sealed containers and be 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, Desmopan 5377A resin must be thoroughly dried for a minimum of 4 hours in a desiccant dehumidifying hopper dryer to a moisture content of less than 0.03%. Hopper inlet air temperature should be 180-200°F (82 - 93°C), the inlet air dew point should be 0°F(-20°C) or lower.

Where end-use requirements permit, up to 20% Desmopan 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, Extrusion and Blow Molding 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 Temperatures:	
Rear	370º-390ºF (188º-199ºC)
Middle	370º-400ºF (188º-204ºC)
Front	375º-410ºF (191º-210ºC)
Nozzle	375º-410ºF (191º-210ºC)
Melt Temperature	375º-410ºF (191º-210ºC)
Mold Temperature	60º-100ºF (15º-40ºC)
Injection Pressure	6,000-15,000 psi
Hold Pressure	60-80% of Injection Pressure
Back Pressure	200 psi max.
Screw Speed	40-80 rpm
Injection Speed	Slow to Moderate
Cushion	1/8 inch max

Typical Temperature Profile for Extrusion and Blow Molding	
Rear (Feed)	360º - 390ºF (182º - 199ºC)
Middle (Transition)	360º - 400ºF (182º - 204ºC)
Front (Meter)	360º - 410ºF (182º - 210ºC)
Die	370º - 410ºF (188º - 210ºC)
Melt	375º - 400ºF (191º - 204ºC)

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

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 Material Science 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 Desmopan 5377A 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 Material Science 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 U.S. Conventional	Units SI Metric	Desmopan 5377A U.S. Conventional	Desmopan 5377A SI Metric
General					
Specific Gravity	D 792 (ISO 1183)			1.14	
Shore Hardness	D 2240 (ISO 868)	A Scale		77A	
Taber Abrasion	D 3489 (ISO 4649)				
H-18 wheel, 1000-g load, 1000 cycles		mg Loss		30	
Bayshore Resilience	D 2632	%		38	
Mold Shrinkage at 100-mil Thickness:	D 955 (ISO 2577)				
Flow Direction		in/in (mm/mm)		0.008	
Cross-Flow Direction		in/in (mm/mm)		0.008	
Mechanical					
Tensile Strength	D 412 (ISO 37)	lb/in^2	MPa	2,230	15.4
Tensile Stress at 100 % Elongation	D 412 (ISO 37)	lb/in^2	MPa	620	4.3
Tensile Stress at 300 % Elongation	D 412 (ISO 37)	lb/in^2	MPa	922	6.4
Ultimate Elongation	D 412 (ISO 37)	%		670	
Tear Strength, Die "C"	D 624 (ISO 34)	lbf/in	kN/m	370	64.9
Flexural Modulus	D 790 (ISO 178)				
158ºF (70ºC)		lb/in^2	MPa	1,650	11.4
73ºF (23ºC)		lb/in^2	MPa	2,800	19.3
-22ºF (-30ºC)		lb/in^2	MPa	22,310	153.9
Compression Set (Post-cured**):	D 395B (ISO 815)				
22 hours at 158ºF (70ºC)		%		36	
22 hours at 73ºF (23ºC)		%		16	
Thermal					
Glass Transition Temperature (Tg)	(DMA)[a]	ºF	ºC	-40	-40
Vicat Softening Temperature (Rate A)	D 1525 (ISO 306)	ºF	ºC	140	60

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**Post-cured for 16 hours at 230ºF (110ºC).
[a]DMA – Dynamic Mechanical Analysis

Note: The information contained in this bulletin is current as of December 2006. Please contact Bayer MaterialScience at 1-800-662-2927 to determine whether this publication has been revised.

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