Product Information

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Ultramid® 8281 HS
Polyamide 6

BASF The Chemical Company

Product Description

Ultramid 8281 HS is an unreinforced, plasticized, heat stabilized nylon 6 rotomolding resin. Developed for applications requiring increased flexibility. It is also available in natural, black and can be painted. It exhibits excellent balance of engineering properties including strength, flexibility, and toughness combined with excellent abrasion resistance and self-lubricating properties associated with PA6. In addition, the heat stabilizer system extends its retention of properties at elevated temperatures. Chemical resistance is excellent to gasoline, diesel fuels, greases and oils. All data is from injection molded specimens with the exception of Drop Weight Impact.

Applications

Ultramid 8281 HS is generally recommended for applications such as fuel tanks, chemical storage tanks, hydraulic oil reservoirs, cyclones, heat resistance containers, and air ducts.

PHYSICAL	ASTM Test Method	Property Value	
Specific Gravity	D-792	1.13	
Moisture, %	D-570		
(50% RH)		2.7	
(Saturation)		9.5	
MECHANICAL	**ASTM Test Method**	**Dry**	**Conditioned**
Tensile Strength, Yield, MPa (psi)	D-638		
23C (73F)		48 (6,960)	-
Elongation, Break, %	D-638		
23C (73F)		60	-
Flexural Modulus, MPa (psi)	D-790		
-40C (-40F)		3,700 (536,000)	-
23C (73F)		1,040 (151,000)	-
65C (149F)		320 (46,400)	-
90C (194F)		240 (34,800)	-
121C (250F)		225 (32,600)	-
Flexural Strength, MPa (psi)	D-790		
-40C (-40F)		175 (25,400)	-
23C (73F)		45 (6,520)	-
65C (149F)		20 (2,900)	-
90C (194F)		15 (2,170)	-
121C (250F)		15 (2,170)	-
IMPACT	**ASTM Test Method**	**Dry**	**Conditioned**
Notched Izod Impact, J/M (ft-lbs/in)	D-256		
23C (73F)		80 (1.5)	-
Drop Weight Impact, ft-lbs, 23C	BASF Drop Weight Impact Test	95	-
THERMAL	**ASTM Test Method**	**Dry**	**Conditioned**
Melting Point, C(F)	D-3418	220 (428)	-
Heat Deflection @ 264 psi (1.8 MPa) C(F)	D-648	57 (134)	-
UL RATINGS	**UL Test Method**	**Property Value**	

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Flammability Rating, 1.5mm	UL94	HB
Relative Temperature Index, 1.5mm	UL746B	
Mechanical w/o Impact, C		65
Mechanical w/ Impact, C		65
Electrical, C		65

Processing Guidelines

Material Handling
Max. Water content: 0.2%
Product is supplied in sealed containers and drying prior to molding is not required. If drying becomes necessary, a dehumidifying or desiccant dryer operating at 80 degC (176 degF) is recommended. Drying time is dependent on moisture level, but 2-4 hours is generally sufficient. Further information concerning safe handling procedures can be obtained from the Material Safety Data Sheet. Alternatively, please contact your BASF representative.

Typical Profile
Mold Preparation
Mold Construction: Cast Aluminum, Sheet Aluminum, Sheet Steel, Stainless Steel, or Electroformed Nickel.
Preparation of the mold surface is critical in order to achieve optimum impact performance and in minimizing potential pitting on the surface of the molded part. Proper preparation of the mold requires only a minimum amount of mold release and after baking the coating the mold surface usually must be dry or wet sanded utilizing 100-200 grit emery cloth or equivalent to prevent premature release from the mold during cooling of the part.

Oven Temperature
An oven temperature of 300-355 degC (572-671 degF) is recommended for most applications. Although this product can be molded without an inert atmosphere, it is recommended to prevent some discoloration and to provide optimum properties. This is most conveniently achieved by utilizing a nitrogen or carbon dioxide purge during the heating cycle.

Heating Cycle
The table below illustrates minimum heating cycles versus wall thickness in a mold constructed of 6.35mm aluminum plate. Machines with more efficient heating systems will permit shorter heating cycles. Pellet/powder blends will also result in shorter heating cycles.

Part Thickness Minimum Heating Cycle
Oven Temp. 343 degC (650 degF)
2.5mm 15.5 minutes
3.8mm 19.0 minutes
5.1mm 22.0 minutes
6.4mm 25.5 minutes
7.6mm 29.0 minutes
8.9mm 32.0 minutes
10mm 35.5 minutes

Cooling Cycle

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Good contact with the mold during cooling is required for optimum property performance and surface aesthetics. This can be achieved by sanding the mold during preparation or by introducing some pressure (.15-.3 bar) into the mold by nitrogen or air injection during the cooling operation. Cooling cycles are comprised of a 5-10 minute air cool followed by a 5-10 minutes water cool. If internal mold pressure is used the air cool time should be reduced to 1-2 minutes and immediately followed by water cooling to optimize the impact strength of the molded part.

Rotation

The speed of rotation, rotation ratio, venting and other techniques are the same as when rotomolding polyethylenes. Continuous rotation immediately after the heating cycle is necessary to prevent wall sagging especially for thick walled parts.

Note

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