Product Information

Aug 2013

Ultramid® HPN 9350 HS
Polyamide 6

BASF The Chemical Company

Product Description

Ultramid HPN 9350 HS is a flexible, heat stabilized, impact modified PA6 extrusion grade resin. It possesses a balance of performance properties such as good flexibility, toughness and abrasion resistance. The addition of heat stabilizer system extends its retention of properties at elevated temperatures. Chemical resistance is excellent to greases, oils, and hydrocarbons.

Applications

Ultramid HPN 9350 HS is generally recommended for applications such as automotive under hood tubing, windshield washer tubing, cable jacketing, and other tubing.

PHYSICAL	ASTM Test Method	Property Value	
Specific Gravity	D-792	1.06	
Mold Shrinkage (1/8" bar, in/in)		0.013	
Moisture, %	D-570		
(50% RH)		1.9	
(Saturation)		6.8	
MECHANICAL	**ASTM Test Method**	**Dry**	**Conditioned**
Tensile Strength, Yield, MPa (psi)	D-638		
23C (73F)		50 (7,250)	-
Elongation, Yield, %	D-638		
23C (73F)		5	-
Elongation, Break, %	D-638		
23C (73F)		>100	-
Flexural Modulus, MPa (psi)	D-790		
-40C (-40F)		2,280 (331,000)	-
23C (73F)		1,730 (251,000)	520 (75,400)
65C (149F)		375 (54,400)	315 (45,700)
90C (194F)		220 (31,900)	240 (34,800)
121C (250F)		190 (27,600)	210 (30,400)
Flexural Strength, MPa (psi)	D-790		
-40C (-40F)		105 (15,200)	120 (17,400)
23C (73F)		69 (10,000)	25 (3,620)
65C (149F)		15 (2,170)	15 (2,170)
90C (194F)		10 (1,450)	10 (1,450)
121C (250F)		9.5 (1,380)	10 (1,450)
Rockwell Hardness, R Scale	D-785	80	-
IMPACT	**ASTM Test Method**	**Dry**	**Conditioned**
Notched Izod Impact, J/M (ft-lbs/in)	D-256		
23C (73F)		590 (11.0)	-
Drop Weight Impact, ft-lbs, 23C	BASF Drop Weight Impact Test	140	-
THERMAL	**ASTM Test Method**	**Dry**	**Conditioned**
Melting Point, C(F)	D-3418	220 (428)	-

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Heat Deflection @ 264 psi (1.8 MPa) C(F)	D-648	55 (131)	-

Processing Guidelines

Material Handling
Max. Water content: 0.1%
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
Melt Temperature 240-250 degC (464-482 degF)

Typical Barrel Profile (degC):

Rear 245-260 degC (473-500 degF)
Middle 240-255 degC (464-491 degF)
Front 240-250 degC (464-482 degF)

Head 225-245 degC (437-473 degF)
Flange 225-240 degC (437-464 degF)
Die 225-240 degC (437-464 degF)

Screw Parameters

Metering Section	40%
Transition Section	6 to 7 flights
Feed Section	balance of screw length
Compression Ratio	3.5:1 to 4.0:1
L/D Ratio	20:1 to 24:1

Tooling & Sizing
Die to Finished Tube dia. 1.5-2.0:1

Selection of pin and die size will be dependent on the material viscosity. In general, the ratio of die size to finished tube diameter is about 1.5-2.0:1. The mandrel (pin) size is determined the same way in relation to the inner tube diameter.

Free (open tank) extrusion is recommended when producing tube diameters 1 cm and below. For larger diameters, a differential pressure vacuum tank is recommended.

Tooling draw ratio is generally higher with free extrusion versus sizing, but will depend on melt viscosity. The vacuum sizer entrance should be about 3-9% larger than the finished tube outer diameter. Selection will depend on melt viscosity and die swell of the extrudate.

Quenching

For diameters less than or equal to 1 cm (.39") O.D., open tank quenching with normal tap water is suggested. Depending upon line speed, quenching distance can vary from 7.5 to 12 meters (24.6-39.4 feet). A short air gap (die to quench water) is recommended for both tubing and cable jacketing for best flexibility.

Note

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