TUFLIN™ HS-7002 NT 7

The Dow Chemical Company - Linear Low Density Polyethylene Resin

Tuesday, November 5, 2019

General Information

Product Description

- Industrial pallet wrap stretch film applications
- Premium film packaging applications
- Complies with U.S. FDA 21 CFR 177.1520 (c) 3.1a
- Consult the regulations for complete details.

TUFLIN™ HS-7002 NT 7 Linear Low Density Polyethylene Resin is an ethylene-hexene-1 copolymer designed for cast stretch film applications such as industrial pallet wrap. Films containing HS-7002 offer outstanding puncture, toughness and load holding properties.

General			
Material Status	• Commercial: Active		
Availability	• North America		
Additive	• Antiblock: No	• Processing Aid: No	• Slip: No
Agency Ratings	• FDA 21 CFR 177.1520(c) 3.1a		
Forms	• Pellets		
Processing Method	• Cast Film		

ASTM & ISO Properties [1]

Physical	Nominal Value	Unit	Test Method
Density / Specific Gravity	0.920		ASTM D792
Melt Mass-Flow Rate (190°C/2.16 kg)	2.0	g/10 min	ASTM D1238
Films	**Nominal Value**	**Unit**	**Test Method**
Film Puncture Energy			Internal Method
0.80 mil	38.0	in·lb	
2.0 mil	78.0	in·lb	
Film Puncture Force			Internal Method
0.80 mil	10.0	lbf	
2.0 mil	20.0	lbf	
Film Puncture Resistance			Internal Method
0.80 mil	372	ft·lb/in³	
2.0 mil	290	ft·lb/in³	
Film Toughness - MD			ASTM D882
0.80 mil	2450	ft·lb/in³	
2.0 mil	2720	ft·lb/in³	
Film Toughness - TD			ASTM D882
0.80 mil	4320	ft·lb/in³	
2.0 mil	3160	ft·lb/in³	
Secant Modulus - 2% Secant, MD			ASTM D882
0.80 mil	20600	psi	
2.0 mil	20000	psi	
Secant Modulus - 2% Secant, TD			ASTM D882
0.80 mil	21800	psi	
2.0 mil	19900	psi	

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Films	Nominal Value	Unit	Test Method
Tensile Strength - MD			ASTM D882
Yield, 0.80 mil	1540	psi	
Yield, 2.0 mil	1420	psi	
Tensile Strength - TD			ASTM D882
Yield, 0.80 mil	1640	psi	
Yield, 2.0 mil	1500	psi	
Tensile Strength - MD			ASTM D882
Break, 0.80 mil	8070	psi	
Break, 2.0 mil	5560	psi	
Tensile Strength - TD			ASTM D882
Break, 0.80 mil	6850	psi	
Break, 2.0 mil	5450	psi	
Tensile Elongation - MD			ASTM D882
Break, 0.80 mil	480	%	
Break, 2.0 mil	700	%	
Tensile Elongation - TD			ASTM D882
Break, 0.80 mil	890	%	
Break, 2.0 mil	800	%	
Dart Drop Impact			
0.80 mil	130	g	ASTM D1709A
0.80 mil	< 100	g	ASTM D1709B
2.0 mil	330	g	ASTM D1709A
2.0 mil	210	g	ASTM D1709B
Elmendorf Tear Strength - MD [2]			ASTM D1922
0.80 mil	220	g	
2.0 mil	790	g	
Elmendorf Tear Strength - TD [2]			ASTM D1922
0.80 mil	640	g	
2.0 mil	1100	g	
Ultimate Stretch [3]			Internal Method
0.8 mil	300	%	
2.0 mil	470	%	
Unstretched Cling			ASTM D5458
0.8 mil	220	g	
2.0 mil	310	g	

Thermal	Nominal Value	Unit	Test Method
Vicat Softening Temperature	210	°F	ASTM D1525
Melting Temperature (DSC)	253	°F	Internal Method

Optical	Nominal Value	Unit	Test Method
Gloss			ASTM D2457
20°, 0.800 mil	157		
20°, 2.00 mil	149		
45°, 0.800 mil	95		
45°, 2.00 mil	91		
Haze			ASTM D1003
0.800 mil	1.00	%	
2.00 mil	3.00	%	

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Processing Information

Extrusion	Nominal Value	Unit
Melt Temperature	525	°F

Extrusion Notes

Fabrication Conditions For Cast Film:

- EGAN/Davis-Standard 5 layer cast line
- Melt Temperature: 525 °F (274 °C)
- Chill Roll (primary/secondary) Temperature: 70 °F (21°C)
- Line Speed: 0.8 mil = 600 fpm (183 m/min); 2.0 mil = 200 fpm (61 m/min)
- Output: 0.8 mil = 401 lb/hr; 2.0 mil = 340 lb/hr
- Die width: 36 in. (914 mm)
- Die gap: 25 mil (0.65 mm)
- Air gap: 3 in. (76 mm)

Notes

[1] Typical properties: these are not to be construed as specifications.

[2] Method B

[3] On-Pallet Testing; Highlight Industries Inc. test method.