Technical Data Sheet

TUFLIN™ XHS-7032 NT 7 Experimental Linear Low Density Polyethylene Resin

Overview

- 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™ XHS-7032 NT 7 Experimental Linear Low Density Polyethylene Resin is an ethylene-hexene-1 copolymer designed for cast stretch film applications such as industrial pallet wrap. This resin is formulated with an additive package that does not contain any intentionally added TNPP (TrisnonylphenylPhosphite). Films containing TUFLIN™ XHS-7032 NT 7 Experimental Linear Low Density Polyethylene Resin offer outstanding puncture, toughness and load holding properties.

Additive

- Antiblock: No
- Slip: No
- Processing aid: No

Properties

Physical	Nominal Value	Unit (English)	Nominal Value	Unit (SI)	Test Method[1]
Density	0.918	g/cm^3	0.918	g/cm^3	ASTM D792
Base Density[2]	0.918	g/cm^3	0.918	g/cm^3	Dow Method
Melt Index (190°C/2.16 kg)	2.0	g/10 min	2.0	g/10 min	ASTM D1238
Films					
Film Puncture Energy					Dow Method
0.80 mil (20 pm)	38.0	in•lb	4.29	J	
2.0 mil (51 pm)	78.0	in•lb	8.81	J	
Film Puncture Force					Dow Method
0.80 mil (20 pm)	10.0	lbf	44.5	N	
2.0 mil (51 pm)	20.0	lbf	89.0	N	
Film Puncture Resistance					Dow Method
0.80 mil (20 pm)	372	ft-lb/in^3	30.8	J/cm^3	
2.0 mil (51 pm)	290	ft-lb/in^3	24.0	J/cm^3	

1. ASTM: American Society for Testing and Materials
2. Base density is estimated using the assumption that every 1000 ppm of antiblock in the finished product raises the density of the polymer by 0.0006 g/cm^3. Base density is the estimated density of the polymer if it did not contain any antiblock.

These are typical properties only and are not to be construed as specifications. Users should confirm results by their own tests.

Properties (Cont.)

Films	Nominal Value	Unit (English)	Nominal Value	Unit (SI)	Test Method
Film Toughness					ASTM D882
MD : 0.80 mil (20 pm)	2450	ft-lb/in^3	203	J/cm^3	
MD : 2.0 mil (51 pm)	2720	ft-lb/in^3	225	J/cm^3	
TD : 0.80 mil (20 pm)	4320	ft-lb/in^3	358	J/cm^3	
TD : 2.0 mil (51 pm)	3160	ft-lb/in^3	262	J/cm^3	
Secant Modulus					ASTM D882
2% Secant, MD : 0.80 mil (20 pm)	20600	psi	142	MPa	
2% Secant, MD : 2.0 mil (51 pm)	20000	psi	138	MPa	
2% Secant, TD : 0.80 mil (20 pm)	21800	psi	150	MPa	
2% Secant, TD : 2.0 mil (51 pm)	19900	psi	138	MPa	
Tensile Strength					ASTM D882
MD : Yield, 0.80 mil (20 pm)	1540	psi	10.6	MPa	
MD : Yield, 2.0 mil (51 pm)	1420	psi	9.82	MPa	
TD : Yield, 0.80 mil (20 pm)	1640	psi	11.3	MPa	
TD : Yield, 2.0 mil (51 pm)	1500	psi	10.3	MPa	
MD : Break, 0.80 mil (20 pm)	8070	psi	55.7	MPa	
MD : Break, 2.0 mil (51 pm)	5560	psi	38.4	MPa	
TD : Break, 0.80 mil (20 pm)	6850	psi	47.2	MPa	
TD : Break, 2.0 mil (51 pm)	5450	psi	37.5	MPa	
Tensile Elongation					ASTM D882
MD : Break, 0.80 mil (20 pm)	480	%	480	%	
MD : Break, 2.0 mil (51 pm)	700	%	700	%	
TD : Break, 0.80 mil (20 pm)	890	%	890	%	
TD : Break, 2.0 mil (51 pm)	800	%	800	%	
Dart Drop Impact					
0.80 mil (20 pm)	130	g	130	g	ASTM D1709A
0.80 mil (20 pm)	< 100	g	< 100	g	ASTM D1709B
2.0 mil (51 pm)	330	g	330	g	ASTM D1709A
2.0 mil (51 pm)	210	g	210	g	ASTM D1709B
Elmendorf Tear Strength[3]					ASTM D1922
MD : 0.80 mil (20 pm)	220	g	220	g	
MD : 2.0 mil (51 pm)	790	g	790	g	
TD : 0.80 mil (20 pm)	640	g	640	g	
TD : 2.0 mil (51 pm)	1100	g	1100	g	
Ultimate Stretch[4]					Dow Method
0.8 mil (20.3 pm)	300	%	300	%	
2.0 mil (50.8 pm)	470	%	470	%	
Unstretched Cling					ASTM D5458
0.8 mil (20.3 pm)	220	g	220	g	
2.0 mil (50.8 pm)	310	g	310	g	
Thermal					
Vicat Softening Temperature	210	°F	98.9	°C	ASTM D1525
Melting Temperature (DSC)	253	°F	123	°C	Dow Method

3. Method B
4. On-Pallet Testing; Highlight Industries Inc. test method.

Properties (Cont.)

Optical	Nominal Value	Unit (English)	Nominal Value	Unit (SI)	Test Method
Gloss					ASTM D2457
20°, 0.800 mil (20.3 pm)	157		157		
20°, 2.00 mil (50.8 pm)	149		149		
45°, 0.800 mil (20.3 pm)	95		95		
45°, 2.00 mil (50.8 pm)	91		91		
Haze					ASTM D1003
0.800 mil (20.3 pm)	1.00	%	1.00	%	
2.00 mil (50.8 pm)	3.00	%	3.00	%	
Extrusion					
Melt Temperature	525	°F	274	°C	

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)