Technical Information

TUFLIN™ HS-7046 NT 7
Linear Low Density Polyethylene Resin

Overview

- Hexene Linear Low Density Resin
- Slot Cast Extrusion
- Outstanding Drawdown Capability
- Complies with U.S. FDA 21 CFR 177.1520 (c) 3.1a
- Consult the regulations for complete details.

TUFLIN™ HS-7046 NT 7 Linear Low Density Polyethylene Resin is an ethylene-hexene copolymer, linear low density (LLDPE) resin designed for slot cast extrusion. This product is recommended for slot cast thin film applications requiring both clarity and superior toughness as the core layer in coextruded structures.

Additive

- Antiblock: No
- Slip: No
- Processing Aid: No

Physical	Nominal Value	(English)	Nominal Value	(SI)	Test Method
Density	0.919	g/cm³	0.919	g/cm³	ASTM D792
Base Density [1]	0.919	g/cm³	0.919	g/cm³	Dow Method
Melt Index (190°C/2.16 kg)	1.0	g/10 min	1.0	g/10 min	ASTM D1238
Films	**Nominal Value**	**(English)**	**Nominal Value**	**(SI)**	**Test Method**
Film Puncture Energy					Dow Method
0.80 mil (20 µm)	41.0	in·lb	4.63	J	
2.0 mil (51 µm)	60.0	in·lb	6.78	J	
Film Puncture Force					Dow Method
0.80 mil (20 µm)	12.0	lbf	53.4	N	
2.0 mil (51 µm)	19.0	lbf	84.5	N	
Film Puncture Resistance					Dow Method
0.80 mil (20 µm)	305	ft·lb/in³	25.2	J/cm³	
2.0 mil (51 µm)	216	ft·lb/in³	17.9	J/cm³	
Film Toughness					ASTM D882
MD : 0.80 mil (20 µm)	3670	ft·lb/in³	303	J/cm³	
MD : 2.0 mil (51 µm)	4000	ft·lb/in³	331	J/cm³	
TD : 0.80 mil (20 µm)	4270	ft·lb/in³	353	J/cm³	
TD : 2.0 mil (51 µm)	4360	ft·lb/in³	361	J/cm³	
Secant Modulus					ASTM D882
2% Secant, MD : 0.80 mil (20 µm)	28400	psi	196	MPa	
2% Secant, MD : 2.0 mil (51 µm)	28400	psi	196	MPa	
2% Secant, TD : 0.80 mil (20 µm)	32000	psi	221	MPa	
2% Secant, TD : 2.0 mil (51 µm)	31700	psi	219	MPa	
Tensile Strength					ASTM D882
MD : Yield, 0.80 mil (20 µm)	1790	psi	12.4	MPa	
MD : Yield, 2.0 mil (51 µm)	1710	psi	11.8	MPa	
TD : Yield, 0.80 mil (20 µm)	1880	psi	13.0	MPa	
TD : Yield, 2.0 mil (51 µm)	2090	psi	14.4	MPa	
MD : Break, 0.80 mil (20 µm)	9400	psi	64.8	MPa	
MD : Break, 2.0 mil (51 µm)	7870	psi	54.2	MPa	
TD : Break, 0.80 mil (20 µm)	7600	psi	52.4	MPa	
TD : Break, 2.0 mil (51 µm)	7780	psi	53.6	MPa	
Tensile Elongation					ASTM D882
MD : Break, 0.80 mil (20 µm)	610	%	610	%	
MD : Break, 2.0 mil (51 µm)	800	%	800	%	
TD : Break, 0.80 mil (20 µm)	860	%	860	%	
TD : Break, 2.0 mil (51 µm)	820	%	820	%	

Films	Nominal Value (English)		Nominal Value (SI)		Test Method
Dart Drop Impact					
0.80 mil (20 µm)	110	g	110	g	ASTM D1709A
0.80 mil (20 µm)	< 100	g	< 100	g	ASTM D1709B
2.0 mil (51 µm)	350	g	350	g	ASTM D1709A
2.0 mil (51 µm)	200	g	200	g	ASTM D1709B
Elmendorf Tear Strength [2]					ASTM D1922
MD : 0.80 mil (20 µm)	370	g	370	g	
MD : 2.0 mil (51 µm)	950	g	950	g	
TD : 0.80 mil (20 µm)	700	g	700	g	
TD : 2.0 mil (51 µm)	1300	g	1300	g	
Seal Initiation Temperature [3]					Dow Method
0.80 mil (20 µm)	230	°F	110	°C	
2.0 mil (51 µm)	248	°F	120	°C	

Thermal	Nominal Value (English)		Nominal Value (SI)		Test Method
Vicat Softening Temperature	219	°F	104	°C	ASTM D1525
Melting Temperature (DSC)	255	°F	124	°C	Dow Method

Optical	Nominal Value (English)		Nominal Value (SI)		Test Method
Gloss					ASTM D2457
20°, 0.800 mil (20.3 µm)	87		87		
20°, 2.00 mil (50.8 µm)	64		64		
45°, 0.800 mil (20.3 µm)	70		70		
45°, 2.00 mil (50.8 µm)	59		59		
Haze					ASTM D1003
0.800 mil (20.3 µm)	7.0	%	7.0	%	
2.00 mil (50.8 µm)	14	%	14	%	

Additional Information	Nominal Value (English)		Nominal Value (SI)		Test Method
Seal Strength [4]					Dow Method
266°F (130°C), 0.8 mil (20.3 µm)	1000	g	1000	g	
302°F (150°C), 2.0 mil (50.8 µm)	2100	g	2100	g	

Extrusion	Nominal Value (English)		Nominal Value (SI)	
Melt Temperature	451	°F	233	°C

Extrusion Notes

Fabrication Conditions For Blown Film:

- Screw Size: 2.5 in. (63.5 mm) 30:1 L/D
- Screw Type: DSBII
- Die Gap: 70 mil (1.8 mm)
- Melt Temperature: 451 °F (233 °C)
- Output: 6.6 lb/hr/in. of die circumference
- Die Diameter: 6 in.
- Blow-Up Ratio: 2.5 to 1
- Screw Speed: 48.1 rpm
- Frost Line Height: 25 in. (635 mm)

Notes

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

[1] 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/cm³. Base density is the estimated density of the polymer if it did not contain any antiblock.

[2] Method B

[3] Temperature at which 1 lb/in. (4.4 N/25.4 mm) heat seal strength is achieved.
Heat Seal Strengths, Topwave HT Tester 0.5 S dwell, 40 psi bar pressure, pull speed 10 (in./min.).

Seal Strengths, Topwave HT Tester 0.5 S dwell, 40 psi bar pressure, pull speed 10 (in./min.).