Technical Information

DOW™ LDPE 5004I
Low Density Polyethylene Resin

Overview

Dow LDPE 5004I is used for fresh milk cartons, liquid/juice containers, dry foods packaging, snack foods packaging, moist foods packaging, and medical packaging. Dow LDPE extrusion coating resins provide optimal neck-in and draw-down performance with minimal taste/odor contribution.

- A low melt index coating resin for demanding packaging applications

Complies with:

- U.S. FDA 21 CFR 177.1520 (c) 2.2
- U.S. FDA -DMF
- Canadian HPFB No Objection (With Limitations)
- EU, No 10/2011
- Japan Hygienic Olefin and Styrene Plastics Association

Consult the regulations for complete details.

Additive

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

Physical	Nominal Value	(English)	Nominal Value	(SI)	Test Method
Density	0.924	g/cm³	0.924	g/cm³	ASTM D792
Base Density [1]	0.924	g/cm³	0.924	g/cm³	Dow Method
Melt Index (190°C/2.16 kg)	4.2	g/10 min	4.2	g/10 min	ASTM D1238
Mechanical	**Nominal Value**	**(English)**	**Nominal Value**	**(SI)**	**Test Method**
Coefficient of Friction [2]					ASTM D1894
vs. Itself - Dynamic, Extrusion Coating	0.45		0.45		
Films	**Nominal Value**	**(English)**	**Nominal Value**	**(SI)**	**Test Method**
Film Thickness - Tested	1	mil	25	µm	
Film Puncture Resistance					Dow Method
1.0 mil (25 µm), Cast Film	28.0	ft·lb/in³	2.32	J/cm³	
Film Toughness					ASTM D882
MD : 1.0 mil (25 µm), Cast Film	1370	ft·lb/in³	114	J/cm³	
TD : 1.0 mil (25 µm), Cast Film	1750	ft·lb/in³	145	J/cm³	
Tensile Strength					ASTM D882
MD : Yield, 1.0 mil (25 µm), Cast Film	2140	psi	14.8	MPa	
TD : Yield, 1.0 mil (25 µm), Cast Film	1580	psi	10.9	MPa	
MD : Break, 1.0 mil (25 µm), Cast Film	4500	psi	31.0	MPa	
TD : Break, 1.0 mil (25 µm), Cast Film	2470	psi	17.0	MPa	
Tensile Elongation					ASTM D882
MD : Break, 1.0 mil (25 µm), Cast Film	220	%	220	%	
TD : Break, 1.0 mil (25 µm), Cast Film	610	%	610	%	
Dart Drop Impact					ASTM D1709A
1.0 mil (25 µm), Cast Film	27	g	27	g	
Elmendorf Tear Strength					ASTM D1922
MD : 1.0 mil (25 µm), Cast Film	310	g	310	g	
TD : 1.0 mil (25 µm), Cast Film	80	g	80	g	
Seal Initiation Temperature [3]					
1.0 mil (25 µm), Extrusion Coating	221	°F	105	°C	
Water Vapor Transmission Rate [3]					ASTM F1249
1.0 mil (25 µm), Extrusion Coating	1.5	g·mil/100in²/atm/24 hr	0.59	g·mm/m²/atm/24 hr	
Thermal	**Nominal Value**	**(English)**	**Nominal Value**	**(SI)**	**Test Method**
Vicat Softening Temperature	203	°F	95.0	°C	ASTM D1525

Thermal	Nominal Value	(English)	Nominal Value	(SI)	Test Method
Melting Temperature (DSC)	234	°F	112	°C	Dow Method
Optical	**Nominal Value**	**(English)**	**Nominal Value**	**(SI)**	**Test Method**
Gloss (45°, 1.00 mil (25.4 µm), Cast Film)	51		51		ASTM D2457
Haze (1.00 mil (25.4 µm), Cast Film)	12.9	%	12.9	%	ASTM D1003

Extrusion	Nominal Value	(English)	Nominal Value	(SI)	Test Method
Melt Temperature	600 to 620	°F	316 to 327	°C	
Maximum Line Speed	25.0	ft/sec	7.6	m/sec	Dow Method
Minimum Coating Thickness	0.30	mil	7.6	µm	Dow Method
Minimum Coating Weight	4.4	lb/ream	7.2	g/m²	Dow Method
Neck-in (610°F (321°C), 1.0 mil (25.4 µm))	2.5	in	63.5	mm	Dow Method

Extrusion Notes

Fabrication Conditions For Cast Film:

- Screw A, Size: 2 in. (51 mm); 30:1 L/D
  - Melt Temperature: 502°F (261°C)
  - Screw Speed: 33 rpm
- Screw B, Size: 2.5 in. (63.5 mm); 30:1 L/D
  - Melt Temperature: 501°F (261°C)
  - Screw Speed: 33 rpm
- Screw C, Size: 2.5 in. (63.5 mm); 30:1 L/D
  - Melt Temperature: 499°F (259°C)
  - Screw Speed: 33 rpm
- Screw D, Size: 2.5 in. (63.5 mm); 30:1 L/D
  - Melt Temperature: 500°F (260°C)
  - Screw Speed: 33 rpm
- Screw E, Size: 2 in. (51 mm); 30:1 L/D
  - Melt Temperature: 501°F (261°C)
  - Screw Speed: 33 rpm
- Screw Type: DSB II
- Chill Roll Temperature: 70°F (21°C)
- Line Speed: 400 fpm (123 m/min)

Fabrication Conditions For Extrusion Coating Film:

- Screw Size: 3.5 in. (89 mm) 30:1 L/D
- Screw Type: Single Flight with Maddock Mixer
- Die Gap: 20 mil (0.508 mm)
- Melt Temperature: 625°F (329°C)
- Output: 250 lb/hr
- Screw Speed: 90 rpm
- Gauge: 1.0 mil (25 µm)

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] 1.0 mil (25µm) coating onto 50 lb Kraft paper.

[3] Coating onto 50# Kraft paper.