DOW™ LDPE 5004I

The Dow Chemical Company - Low Density Polyethylene Resin

Tuesday, November 5, 2019

General Information

Product Description

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.

General			
Material Status	• Commercial: Active		
Availability	• Asia Pacific	• Latin America	• North America
Additive	• Antiblock: No	• Processing Aid: No	• Slip: No
Agency Ratings	• DMF Unspecified Rating • EU No 10/2011	• FDA 21 CFR 177.1520(c) 2.2 • HPFB (Canada) No Objection [1]	• JHOSPA Unspecified Rating
Forms	• Pellets		
Processing Method	• Cast Film	• Extrusion Coating	

ASTM & ISO Properties [2]

Physical	Nominal Value	Unit	Test Method
Density / Specific Gravity	0.926		ASTM D792
Melt Mass-Flow Rate (190°C/2.16 kg)	4.2	g/10 min	ASTM D1238
Mechanical	**Nominal Value**	**Unit**	**Test Method**
Coefficient of Friction [3]			ASTM D1894
vs. Itself - Dynamic, Extrusion Coating	0.45		
Films	**Nominal Value**	**Unit**	**Test Method**
Film Thickness - Tested	1	mil	
Film Puncture Resistance (1.0 mil, Cast Film)	28.0	ft·lb/in³	Internal Method
Film Toughness - MD (1.0 mil, Cast Film)	1370	ft·lb/in³	ASTM D882
Film Toughness - TD (1.0 mil, Cast Film)	1750	ft·lb/in³	ASTM D882
Tensile Strength - MD (Yield, 1.0 mil, Cast Film)	2140	psi	ASTM D882
Tensile Strength - TD (Yield, 1.0 mil, Cast Film)	1580	psi	ASTM D882
Tensile Strength - MD (Break, 1.0 mil, Cast Film)	4500	psi	ASTM D882
Tensile Strength - TD (Break, 1.0 mil, Cast Film)	2470	psi	ASTM D882
Tensile Elongation - MD (Break, 1.0 mil, Cast Film)	220	%	ASTM D882
Tensile Elongation - TD (Break, 1.0 mil, Cast Film)	610	%	ASTM D882
Dart Drop Impact (1.0 mil, Cast Film)	27	g	ASTM D1709A
Elmendorf Tear Strength - MD (1.0 mil, Cast Film)	310	g	ASTM D1922
Elmendorf Tear Strength - TD (1.0 mil, Cast Film)	80	g	ASTM D1922

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Films	Nominal Value	Unit	Test Method
Seal Initiation Temperature [4]			
1.0 mil, Extrusion Coating	221	°F	
Water Vapor Transmission Rate [4]			ASTM F1249
1.0 mil, Extrusion Coating	1.5	g·mil/100in²/atm/24 hr	

Thermal	Nominal Value	Unit	Test Method
Vicat Softening Temperature	203	°F	ASTM D1525
Melting Temperature (DSC)	234	°F	Internal Method

Optical	Nominal Value	Unit	Test Method
Gloss (45°, 1.00 mil, Cast Film)	51		ASTM D2457
Haze (1.00 mil, Cast Film)	12.9	%	ASTM D1003

Processing Information

Extrusion	Nominal Value	Unit	Test Method
Melt Temperature	600 to 620	°F	
Maximum Line Speed	25.0	ft/sec	Internal Method
Minimum Coating Thickness	0.30	mil	Internal Method
Minimum Coating Weight	4.4	lb/ream	Internal Method
Neck-in (610°F, 1.0 mil)	2.5	in	Internal 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)

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Notes

[1] With limitations

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

[3] 1.0 mil (25µm) coating onto 50 lb Kraft paper.

[4] Coating onto 50# Kraft paper.