Technical Data Sheet

DOW™ LDPE 690 HEALTH+™ Low Density Polyethylene Resin

Overview

DOW™ LDPE 690 HEALTH+™ Low Density Polyethylene Resin is a low density polyethylene barefoot resin designed for extrusion blow molding, injection blow molding, and blow-fill seal applications with good flexibility, moderate rigidity and good chemical resistance. It is also suitable for medical packaging films.

Main Characteristics:

- Good flexibility
- Good chemical resistance
- Good stiffness

Complies with:

- U.S. FDA 21CFR 177.1520 (c) 2.2
- USP Class VI
- Drug Master File Listing
- Canadian HPFB (No Objections)
- EU, No 10/2011
- Consult the regulations for complete details.

Additive

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

Properties

Physical	Nominal Value	Unit (English)	Nominal Value	Unit (SI)	Test Method[1]
Density	0.920	g/cm^3	0.920	g/cm^3	ASTM D792
Base Density[2]	0.920	g/cm^3	0.920	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 Thickness - Tested	2	mil	51	pm	
Film Puncture Resistance (2.0 mil (51 pm))	35.0	ft-lb/in^3	2.90	J/cm^3	Dow Method
Film Toughness					ASTM D882
MD : 2.0 mil (51 pm)	1920	ft-lb/in^3	159	J/cm^3	
TD : 2.0 mil (51 pm)	2230	ft-lb/in^3	185	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.)

Physical	Nominal Value	Unit (English)	Nominal Value	Unit (SI)	Test Method
Secant Modulus					ASTM D882
2% Secant, MD : 2.0 mil (51 pm)	26200	psi	181	MPa	
2% Secant, TD : 2.0 mil (51 pm)	30000	psi	185	MPa	
Tensile Strength					ASTM D882
MD : Yield, 2.0 mil (51 pm)	1790	psi	12.3	MPa	
TD : Yield, 2.0 mil (51 pm)	1760	psi	12.1	MPa	
MD : Break, 2.0 mil (51 pm)	3600	psi	24.8	MPa	
TD : Break, 2.0 mil (51 pm)	3330	psi	23.0	MPa	
Tensile Elongation					ASTM D882
MD : Break, 2.0 mil (51 pm)	420	%	420	%	
TD : Break, 2.0 mil (51 pm)	670	%	670	%	
Flexural Modulus - 2% Secant	34000	psi	234	MPa	ASTM D1709A
Dart Drop Impact (2.0 mil (51 pm))	150	g	150	g	ASTM D1922
Elmendorf Tear Strength[3]					
MD : 2.0 mil (51 pm)	500	g	500	g	
Hardness					
Durometer Hardness[4] (Shore D)	45		45		ASTM D2240
Thermal					
Vicat Softening Temperature	209	°F	98.3	°C	ASTM D1525
Melting Temperature (DSC)	233	°F	112	°C	Dow Method
Optical					
Gloss (45°, 2.00 mil (50.8 pm))	66		66		ASTM D2457
Haze (2.00 mil (50.8 pm))	7.60	%	7.60	%	ASTM D1003
Extrusion					
Melt Temperature	450	°F	232	°C	
Extrusion Notes					

Fabrication Conditions for Blown Film:

- Screw Size: 2.5 in. (63.5 mm); 30/1 ratio LID
- Screw Type: Single Flight Double Mix
- Die Gap: 40 mi1 (1.6 mm)
- Melt Temperature: 390°F (199°C)
- Output: 7 lb/hr/in. of die circumference
- Die Diameter: 6 in.
- Blow-up Ratio: 2.5 to 1
- Screw Speed: 60 rpm
- Frost Line Height: 25 in. (635 mm)

3. Method B
4. Plaque molded and tested in accordance with ASTM D4976

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