Technical Data Sheet

DOW™ HDPE DMDA-8007 NT 7 High Density Polyethylene Resin

Overview

DOW™ DMDA-8007 NT 7 High Density Polyethylene (HDPE) Resin is a narrow molecular weight distribution high density homopolymer designed to offer excellent stiffness, low warpage, good/acceptable toughness, and good moldability. This resin is ideally suited for injection molded crates, cases, trays, tote bins, and other objects requiring high rigidity. This resin is also suitable for cast film extrusion processing.

Benefits

- Excellent stiffness/modulus
- Excellent warp resistance
- Molded parts have high gloss, low odor
- For injection molded crates, cases, totes, and other parts needing high modulus
- Complies with U.S. FDA 21 CFR 177.1520 (c)2.2
- Complies with Canadian HPFB No Objection
- Complies with EU, No 10/2011

Consult the regulations for complete details.

Additives

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

Properties

Physical	Nominal Value	Unit (English)	Nominal Value	Unit (SI)	Test Method[1]
Density	0.965	g/cm³	0.965	g/cm³	ASTM D792
Base Density[2]	0.965	g/cm³	0.965	g/cm³	Dow Method
Melt Index					ASTM D1238
190°C/2.16 kg	8.3	g/10 min	8.3	g/10 min	
190°C/21.6 kg	180	g/10 min	180	g/10 min	
Environmental Stress-Cracking Resistance (ESCR)[3]					ASTM D1693
122°F (50°C), 100% Igepal, F50	2.00	hr	2.00	hr	
Mechanical					
Tensile Strength[3]					ASTM D638
Yield	4500	psi	31.0	MPa	
Break	2600	psi	17.9	MPa	

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/cm³. Base density is the estimated density of the polymer if it did not contain any antiblock.
3. Molded and tested in accordance with ASTM D4976.

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

Properties (Cont.)

Mechanical	Nominal Value	Unit (English)	Nominal Value	Unit (SI)	Test Method
Tensile Elongation[3]					ASTM D638
Yield	6.0	%	6.0	%	
Break	350	%	350	%	
Flexural Modulus - 2% Secant[3]	205000	psi	1410	MPa	ASTM D790B
Films					
Film Thickness - Tested	1	mil	25	µm	
Film Puncture Resistance (1.0 mil (25 µm))	7.00	ft·lb/in^3	0.579	J/cm^3	Dow Method
Secant Modulus					ASTM D882
2% Secant, MD: 1.0 mil (25 µm), Cast Film	116000	psi	798	MPa	
2% Secant, TD: 1.0 mil (25 µm), Cast Film	136000	psi	935	MPa	
Tensile Strength					ASTM D882
MD: Yield, 1.0 mil (25 µm), Cast Film	2950	psi	20.4	MPa	
TD: Yield, 1.0 mil (25 µm), Cast Film	3240	psi	22.4	MPa	
Tensile Elongation					ASTM D882
MD: Break, 1.0 mil (25 µm), Cast Film	670	%	670	%	
TD: Break, 1.0 mil (25 µm), Cast Film	490	%	490	%	
Dart Drop Impact					ASTM D1709A
1.0 mil (25 µm), Cast Film	24	g	24	g	
Elmendorf Tear Strength					ASTM D1922
MD: 1.0 mil (25 µm), Cast Film	36	g	36	g	
TD: 1.0 mil (25 µm), Cast Film	160	g	160	g	
Impact					
Tensile Impact Strength[3,4]	80.0	ft-lb/in^2	168	kJ/m^2	ASTM D1822
Hardness					
Durometer Hardness[3] (Shore D)	61		61		ASTM D2240
Thermal					
Deflection Temperature Under Load[3]					ASTM D648
66 psi (0.45 MPa), Unannealed	183	°F	83.9	°C	
Brittleness Temperature[3]	< -105	°F	< -76.1	°C	ASTM D746
Vicat Softening Temperature	268	°F	131	°C	ASTM D1525
Melting Temperature (DSC)	271	°F	133	°C	Dow Method
Peak Crystallization Temperature (DSC)	248	°F	120	°C	Dow Method
Optical					
Gloss (45°, 1.00 mil (25.4 µm))	75		75		ASTM D2457
Haze (1.00 mil (25.4 µm))	8.00	%	8.00	%	ASTM D1003
Extrusion					
Melt Temperature	500	°F	260	°C	

4. Type S

Properties (Cont.)

Extrusion Notes	Nominal Value	Unit (English)	Nominal Value	Unit (SI)	Test Method

Fabrication Conditions for Cast Film:
• Screw A, Size: 2 in. (51 mm); 30:1 L/D
  o Screw Speed: 39 rpm
• Screw B, Size: 2.5 in. (63.5 mm); 30:1 L/D
  o Screw Speed: 39 rpm
• Screw C, Size: 2.5 in. (63.5 mm); 30:1 L/D
  o Screw Speed: 39 rpm
• Screw D, Size: 2.5 in. (63.5 mm); 30:1 UD
  o Screw Speed: 39 rpm
• Screw E, Size: 2 in. (51 mm); 30:1 L/D
  o Screw Speed: 39 rpm
• Screw Type: DSB II
• Melt Temperature: 500°F (261°C)
• Chill Roll Temperature: 70°F (21°C)
• Line Speed: 400 fpm (123 m/min)
• Output: 426 lb/hr
• Die width: 36 in. (914 mm)
• Die gap: 25 mil (0.6 mm)					