



DOW™ HDPE DMDA-8904 HEALTH+ High Density Polyethylene Resin

Overview

DOW™ DMDA-8904 HEALTH+™ High Density Polyethylene Resin is a narrow molecular weight distribution high density homopolymer designed to offer excellent stiffness, low warpage, good toughness, and good moldability. This resin is ideally suited for injection molded medical devices such as IV kit components and respiratory care as well as caps and closures for pharmaceutical packaging.

- Excellent impact strength, stress crack resistance and processability
- Very narrow molecular weight distribution
- Complies with U.S. FDA 21 CFR 177.1520 (c)3.2a
- Complies with EU, No 10/2011
- Complies with Canadian HPFB No Objection
- Complies with USP XXIII Class VI
- Complies with Drug Master File Listing
- 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	0.952	g/cm ³	0.952	g/cm ³	ASTM D792
Base Density ²	0.952	g/cm ³	0.952	g/cm ³	Dow Method
Melt Index (190°C/2.16 kg)	4.4	g/10 min	4.4	g/10 min	ASTM D1238
Environmental Stress-Cracking Resistance (ESCR) ³ 122°F (50°C), 100% Igepal, F50	22.0	hr	22.0	hr	ASTM D1693

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.

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 Strength ³					ASTM D638
Yield	3900	psi	26.9	MPa	
Break	4500	psi	31.0	MPa	
Tensile Elongation ³					ASTM D638
Yield	9.0	%	9.0	%	
Break	1200	%	1200	%	
Flexural Modulus – 2 % Secant ³	160000	psi	1100	MPa	ASTM D790B
Films	Nominal Value	Unit (English)	Nominal Value	Unit (SI)	Test Method
Film Thickness - Tested	1		25	µm	
Film Puncture Resistance (1.0 mil (25 µm))	8.00	ft-lb/in ³	0.662	J/cm ³	Dow Method
Secant Modulus					ASTM D882
2% Secant, MD : 1.0 mil (25 µm), Cast Film	81300	psi	560	MPa	
2% Secant, TD : 1.0 mil (25 µm), Cast Film	91700	psi	632	MPa	
Tensile Strength					ASTM D882
MD : Yield, 1.0 mil (25 µm), Cast Film	3510	psi	24.2	MPa	
TD : Yield, 1.0 mil (25 µm), Cast Film	3010	psi	20.7	MPa	
MD : Break, 1.0 mil (25 µm), Cast Film	6630	psi	45.7	MPa	
TD : Break, 1.0 mil (25 µm), Cast Film	5640	psi	38.9	MPa	
Tensile Elongation					ASTM D882
MD : Break, 1.0 mil (25 µm), Cast Film	690	%	690	%	
TD : Break, 1.0 mil (25 µm), Cast Film	940	%	940	%	
Dart Drop Impact					ASTM D1709A
1.0 mil (25 µm), Cast Film	28	g	28	g	
Elmendorf Tear Strength					ASTM D1922
MD : 1.0 mil (25 µm), Cast Film	22	g	22	g	
TD : 1.0 mil (25 µm), Cast Film	160	g	160	g	
Impact	Nominal Value	Unit (English)	Nominal Value	Unit (SI)	Test Method
Tensile Impact Strength ^{3,4}	40.0	ft-lb/in ²	84.1	kJ/m ²	ASTM D1822
Hardness	Nominal Value	Unit (English)	Nominal Value	Unit (SI)	Test Method
Durometer Hardness ³ (Shore D)	59		59		ASTM D2240
Thermal	Nominal Value	Unit (English)	Nominal Value	Unit (SI)	Test Method
Deflection Temperature Under Load ³ 66 psi (0.45 MPa), Unannealed	162	°F	72.2	°C	ASTM D648
Brittleness Temperature ³	< -105	°F	< -76.1	°C	ASTM D746
Vicat Softening Temperature	264	°F	129	°C	ASTM D1525
Melting Temperature (DSC)	268	°F	131	°C	Dow Method
Peak Crystallization Temperature (DSC)	246	°F	119	°C	Dow Method
Optical	Nominal Value	Unit (English)	Nominal Value	Unit (SI)	Test Method
Gloss (45°, 1.00 mil (25.4 µm), Cast Film)	87		87		ASTM D2457
Haze (1.00 mil (25.4 µm), Cast Film)	3.00	%	3.00	%	ASTM D1003

3. Molded and tested in accordance with ASTM D4976.

4. Type S



Properties (Cont.)

Extrusion	Nominal Value	Unit (English)	Nominal Value	Unit (SI)	Test Method
Melt Temperature	525	°F	274	°C	

Extrusion Notes

Fabrication Conditions for Cast Film:

- EGAN/Davis-Standard 5 Layer Cast Line
- Melt Temperature: 525°F (261°C)
- Chill Roll (Primary/Secondary) Temperature: 70°F (21°C)
- Line Speed: 400 fpm (123 m/min)
- Output: 356 lb/hr
- Die Width: 36 in. (914 mm)
- Die Gap: 25 mil (.65 mm)
- Air Gap: 3 in. (76 mm)

