Product Comparison

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Technical Data

Product Description

DOW™ HDPE DMDA-8907 HEALTH+™	Dow HDPE DMDA-8907 HEALTH+™ is produced via UNIPOL™ Process Technology from Dow and is intended for use in injection molded medical device applications. This resin has been designed to provide excellent processability to molders and to meet the requirements of devices requiring impact strength and environmental stress crack resistance. Main Characteristics: • Good environmental crack resistance • Excellent toughness • Gamma stable • Low extractables Complies with: • U.S. FDA 21CFR 177.1520 (c) 3.2a • EU, No 10/2011 • Canadian HPFB, No Objection • USP XXIII Class VI • Drug Master File Listing Consult the regulations for complete details.
Generic HDPE	This data represents typical values that have been calculated from all products classified as: Generic HDPE This information is provided for comparative purposes only.

General	DOW™ HDPE DMDA-8907 HEALTH+™	Generic HDPE
Manufacturer / Supplier	• The Dow Chemical Company	• Generic
Generic Symbol	• HDPE	• HDPE
Material Status	• Commercial: Active	• Commercial: Active
Search for UL Yellow Card	• The Dow Chemical Company	--
Availability	• North America	• Africa & Middle East • Asia Pacific • Europe • Latin America • North America
Additive	• Antiblock: No • Processing Aid: No • Slip: No	--
Agency Ratings	• DMF • EU No 10/2011 • FDA 21 CFR 177.1520(c) 3.2a • HPFB (Canada) No Objection • USP 23	--
Forms	• Pellets	--
Processing Method	• Injection Molding	--

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Physical	DOW™ HDPE DMDA-8907 HEALTH+™	Generic HDPE	Unit	Test Method
Density / Specific Gravity				
--	0.952	0.940 to 24.7	g/cm³	ASTM D792
--	--	0.941 to 0.984	g/cm³	ISO 1183
--	--	0.942 to 0.988	g/cm³	ASTM D1505
--	--	0.945 to 0.963	g/cm³	ASTM D4883
Apparent (Bulk) Density				
--	--	0.55 to 0.61	g/cm³	ASTM D1895
--	--	0.46 to 0.56	g/cm³	ISO 60
Melt Mass-Flow Rate (MFR)				
190°C/2.16 kg	6.8	0.020 to 1.8	g/10 min	ASTM D1238
190°C/2.16 kg	--	0.027 to 9.0	g/10 min	ISO 1133
Spiral Flow	--	18.6 to 74.2	cm	
Molding Shrinkage				
Flow	--	2.0 to 3.1	%	ASTM D955
--	--	1.3 to 3.0	%	ISO 294-4
Water Absorption				
24 hr	--	0.010 to 0.10	%	ASTM D570
Equilibrium	--	0.010 to 0.011	%	ASTM D570
Equilibrium, 23°C, 50% RH	--	0.010 to 0.012	%	ISO 62
Environmental Stress-Cracking Resistance (ESCR)				ASTM D1693
--	--	0.700 to 1130	hr	
50°C, 100% Igepal, F50	12.0	--	hr	
Carbon Black Content	--	1.0 to 2.7	%	ASTM D1603

Mechanical	DOW™ HDPE DMDA-8907 HEALTH+™	Generic HDPE	Unit	Test Method
Tensile Modulus				
--	--	270 to 2020	MPa	ASTM D638
--	--	752 to 1360	MPa	ISO 527-1
Tensile Strength				
Yield	26.9	21.8 to 31.7	MPa	ASTM D638
Yield	--	19.9 to 31.1	MPa	ISO 527-2
Break	22.8	11.0 to 41.7	MPa	ASTM D638
Break	--	14.5 to 35.2	MPa	ISO 527-2
--	--	10.0 to 31.3	MPa	ASTM D638
--	--	11.3 to 27.3	MPa	ISO 527-2
Tensile Elongation				
Yield	7.0	1.0 to 33	%	ASTM D638
Yield	--	2.5 to 22	%	ISO 527-2
Break	1100	2.7 to 1000	%	ASTM D638
Break	--	6.0 to 1000	%	ISO 527-2
Nominal Tensile Strain at Break	--	390 to 510	%	ISO 527-2
Tensile Creep Modulus				ISO 899-1
1 hr	--	745	MPa	
1000 hr	--	330	MPa	
Apparent Bending Modulus	--	824 to 1090	MPa	ASTM D747

Mechanical	DOW™ HDPE DMDA-8907 HEALTH+™	Generic HDPE	Unit	Test Method
Flexural Modulus				
--	--	1.24 to 1740	MPa	ASTM D790
2% Secant	1070	--	MPa	ASTM D790B
--	--	758 to 1540	MPa	ISO 178
Flexural Strength				
--	--	13.0 to 35.6	MPa	ASTM D790
--	--	14.0 to 32.0	MPa	ISO 178
Yield	--	26.1 to 30.1	MPa	ASTM D790
Coefficient of Friction	--	0.20 to 0.21		ASTM D1894
Films	**DOW™ HDPE DMDA-8907 HEALTH+™**	**Generic HDPE**	**Unit**	**Test Method**
Film Thickness - Tested	--	10 to 47	µm	
Film Puncture Resistance	--	2.83	J/cm³	
Secant Modulus				
MD	--	0.689 to 1020	MPa	ASTM D882
TD	--	0.703 to 1400	MPa	ASTM D882
--	--	400 to 580	MPa	ISO 527-3
Tensile Strength				
MD : Yield	--	19.8 to 40.9	MPa	ASTM D882
TD : Yield	--	21.9 to 31.9	MPa	ASTM D882
Yield	--	19.0 to 32.2	MPa	ISO 527-3
MD : Break	--	28.3 to 87.0	MPa	ASTM D882
TD : Break	--	17.7 to 55.7	MPa	ASTM D882
Break	--	29.6 to 66.0	MPa	ISO 527-3
--	--	49.1 to 75.1	MPa	ISO 527-3
Tensile Elongation				
MD : Yield	--	5.0 to 17	%	ASTM D882
Yield	--	10 to 12	%	ISO 527-3
TD : Yield	--	5.0 to 24	%	ASTM D882
MD : Break	--	220 to 710	%	ASTM D882
TD : Break	--	3.0 to 950	%	ASTM D882
Break	--	380 to 1100	%	ISO 527-3
Dart Drop Impact				
--	--	27 to 220	g	ASTM D1709
--	--	20 to 350	g	ISO 7765-1
Elmendorf Tear Strength				
MD	--	0.20 to 30	g	ASTM D1922
TD	--	0.80 to 140	g	ASTM D1922
--	--	0.065 to 3.8	N	ISO 6383-2
Seal Initiation Temperature	--	125	°C	
Oxygen Transmission Rate	--	0.10 to 1700	cm³/m²/24 hr	ASTM D3985
Water Vapor Transmission Rate	--	1.2 to 5.0	g/m²/24 hr	ASTM F1249
Impact	**DOW™ HDPE DMDA-8907 HEALTH+™**	**Generic HDPE**	**Unit**	**Test Method**
Charpy Notched Impact Strength	--	1.2 to 29	kJ/m²	ISO 179
Charpy Unnotched Impact Strength	--	2.0 to 98	kJ/m²	ISO 179

Impact	DOW™ HDPE DMDA-8907 HEALTH+™	Generic HDPE	Unit	Test Method
Notched Izod Impact				
--	--	1.0 to 510	J/m	ASTM D256
--	--	1.9 to 16	kJ/m²	ISO 180
Notched Izod Impact (Area)	--	3.07 to 45.4	kJ/m²	ASTM D256
Unnotched Izod Impact	--	7.0 to 1300	J/m	ASTM D4812
Tensile Impact Strength				
--	--	39.5 to 429	kJ/m²	ASTM D1822
-- [2]	84.1	--	kJ/m²	ASTM D1822
--	--	71.3 to 253	kJ/m²	ISO 8256
Drop Impact Resistance	--	170 to 210	J/cm	ASTM D4226
Impact Strength	--	27 to 259	J	ARM

Hardness	DOW™ HDPE DMDA-8907 HEALTH+™	Generic HDPE	Unit	Test Method
Rockwell Hardness	--	45 to 60		ASTM D785
Durometer Hardness				
--	--	59 to 71		ASTM D2240
Shore D	59	--		ASTM D2240
--	--	57 to 68		ISO 868
Ball Indentation Hardness	--	39.6 to 58.5	MPa	ISO 2039-1

Thermal	DOW™ HDPE DMDA-8907 HEALTH+™	Generic HDPE	Unit	Test Method
Deflection Temperature Under Load				
0.45 MPa, Unannealed	72.8	61.4 to 84.1	°C	ASTM D648
0.45 MPa, Unannealed	--	61.2 to 81.9	°C	ISO 75-2/B
1.8 MPa, Unannealed	--	36.7 to 70.0	°C	ASTM D648
1.8 MPa, Unannealed	--	40.0 to 68.2	°C	ISO 75-2/A
Brittleness Temperature				
--	< -76.1	-83.0 to -67.9	°C	ASTM D746
--	--	-76.0 to -40.0	°C	ISO 974
Vicat Softening Temperature				
--	128	118 to 133	°C	ASTM D1525
--	--	65.5 to 129	°C	ISO 306
Melting Temperature				
--	--	127 to 134	°C	
--	--	129 to 130	°C	DSC
--	--	125 to 135	°C	ISO 11357-3
--	--	129 to 135	°C	ASTM D3418
--	--	127 to 135	°C	ISO 3146
--	131	--	°C	Internal Method
Peak Crystallization Temperature (DSC)				
--	118	--	°C	Internal Method
--	--	113 to 132	°C	ASTM D3418
--	--	117 to 134	°C	ISO 3146

Thermal	DOW™ HDPE DMDA-8907 HEALTH+™	Generic HDPE	Unit	Test Method
CLTE - Flow				
--	--	7.2E-5 to 1.8E-4	cm/cm/°C	ASTM D696
--	--	1.9E-4	cm/cm/°C	ISO 11359-2
Specific Heat	--	1900 to 1910	J/kg/°C	ASTM C351
Thermal Conductivity				
--	--	0.48 to 0.49	W/m/K	ASTM C177
--	--	0.40	W/m/K	ISO 8302

Electrical	DOW™ HDPE DMDA-8907 HEALTH+™	Generic HDPE	Unit	Test Method
Surface Resistivity				
--	--	1.0E+2 to 2.5E+16	ohms	ASTM D257
--	--	1.0E+4 to 1.6E+16	ohms	IEC 60093
--	--	9.9E+13 to 1.0E+14	ohms	IEC 62631-3-2
Volume Resistivity				
--	--	1.0 to 2.5E+18	ohms·cm	ASTM D257
--	--	1.0E+3 to 1.3E+16	ohms·cm	IEC 60093
--	--	1.0E+3 to 2.5E+12	ohms·m	IEC 62631-3-1
Dielectric Strength				
--	--	20 to 28	kV/mm	ASTM D149
--	--	20 to 150	kV/mm	IEC 60243-1
Dielectric Constant				
--	--	2.28 to 2.36		ASTM D150
--	--	2.32 to 2.57		ASTM D1531
--	--	2.32 to 2.50		IEC 60250
Dissipation Factor				
--	--	2.0E-5 to 5.2E-4		ASTM D150
--	--	4.0E-5 to 4.1E-4		ASTM D1531
--	--	5.0E-5 to 4.1E-4		IEC 60250

Optical	DOW™ HDPE DMDA-8907 HEALTH+™	Generic HDPE	Unit	Test Method
Gloss	--	4 to 120		ASTM D2457
Haze	--	3.00 to 89.0	%	ASTM D1003

Additional Information	DOW™ HDPE DMDA-8907 HEALTH+™	Generic HDPE	Unit	Test Method
Carbon Footprint - IPCC 2021 - climate change				ISO 14067
EU - biogenic emissions - GWP100 [3]	--	0.2	kg CO2 eq.	
EU - biogenic emissions - GWP100 [4]	--	0.2	kg CO2 eq.	
EU - biogenic removal - GWP100 [3]	--	-0.3	kg CO2 eq.	
EU - biogenic removal - GWP100 [4]	--	-0.3	kg CO2 eq.	
EU - fossil - GWP100 [3]	--	3	kg CO2 eq.	
EU - fossil - GWP100 [4]	--	2	kg CO2 eq.	
EU - global warming potential (GWP100) [3]	--	3	kg CO2 eq.	
EU - global warming potential (GWP100) [4]	--	2	kg CO2 eq.	
EU - land use - GWP100 [3]	--	0.1	kg CO2 eq.	
EU - land use - GWP100 [4]	--	0.1	kg CO2 eq.	

DOW™ HDPE DMDA-8907 HEALTH+™	Plaque molded and tested in accordance with ASTM D4976.

Injection	DOW™ HDPE DMDA-8907 HEALTH+™	Generic HDPE	Unit
Drying Temperature	--	69 to 81	°C
Drying Time	--	1.9 to 3.1	hr
Suggested Max Moisture	--	0.050 to 0.21	%
Rear Temperature	--	194 to 236	°C
Middle Temperature	--	209 to 245	°C
Front Temperature	--	209 to 248	°C
Nozzle Temperature	--	186 to 246	°C
Processing (Melt) Temp	--	130 to 253	°C
Mold Temperature	--	13 to 45	°C
Injection Pressure	--	84.2 to 86.2	MPa
Back Pressure	--	0.259 to 0.746	MPa
Screw Speed	--	50 to 55	rpm

Injection Notes

Generic HDPE	This data represents typical values that have been calculated from all products classified as: Generic HDPE This information is provided for comparative purposes only.

Extrusion	DOW™ HDPE DMDA-8907 HEALTH+™	Generic HDPE	Unit
Drying Temperature	--	70 to 91	°C
Drying Time	--	1.5 to 3.1	hr
Cylinder Zone 1 Temp.	--	130 to 210	°C
Cylinder Zone 2 Temp.	--	167 to 210	°C
Cylinder Zone 3 Temp.	--	178 to 221	°C
Cylinder Zone 4 Temp.	--	174 to 223	°C
Cylinder Zone 5 Temp.	--	157 to 231	°C
Adapter Temperature	--	138 to 253	°C
Melt Temperature	--	185 to 225	°C
Die Temperature	--	172 to 259	°C

Extrusion Notes

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Notes

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

[2] Type S

[3] The direct addition of ethylene and acetic acid produces the main product ethyl acetate. For this purpose, the process consumes acetic acid and ethylene. Utilities consumed comprise electricity, steam, and cooling water. Additionally, the process produces thermal energy as a utility by-product. The multifunctionality problem for the utility by-product is solved by system expansion via the avoided burden approach. Background modeling: The data set represents a cradle to gate inventory, including all relevant process steps / technologies over the supply chain. The data set is based on different types of data: Process data is obtained from detailed process simulations. International trade volumes and regional production capacities are mainly based on primary data and complemented by secondary data where necessary. Electricity is modeled according to the individual country-specific situations, including national electricity grid mixes and imported electricity. Steam and thermal energy supplies take into account the country-specific situation, wherever possible. Otherwise, larger regional averages are used. The production of crude oil, naphtha, and natural gas is represented by either fully country-specific data or by partly representative data for a fully overlapping but not identical region (e.g., European average for a specific European country).

[4] The production mix for n-butanol (EU-27 Member States) is based on 100% oxo-reaction of propylene and syngas (natural gas-based) to n-butanol. Background modeling: The data set represents a cradle to gate inventory, including all relevant process steps / technologies over the supply chain. The data set is based on different types of data: Process data is obtained from detailed process simulations. International trade volumes and regional production capacities are mainly based on primary data and complemented by secondary data where necessary. Electricity is modeled according to the individual country-specific situations, including national electricity grid mixes and imported electricity. Steam and thermal energy supplies take into account the country-specific situation, wherever possible. Otherwise, larger regional averages are used. The production of crude oil, naphtha, and natural gas is represented by either fully country-specific data or by partly representative data for a fully overlapping but not identical region (e.g., European average for a specific European country).