



# NORDEL™ EPDM

## Product Selection Guide

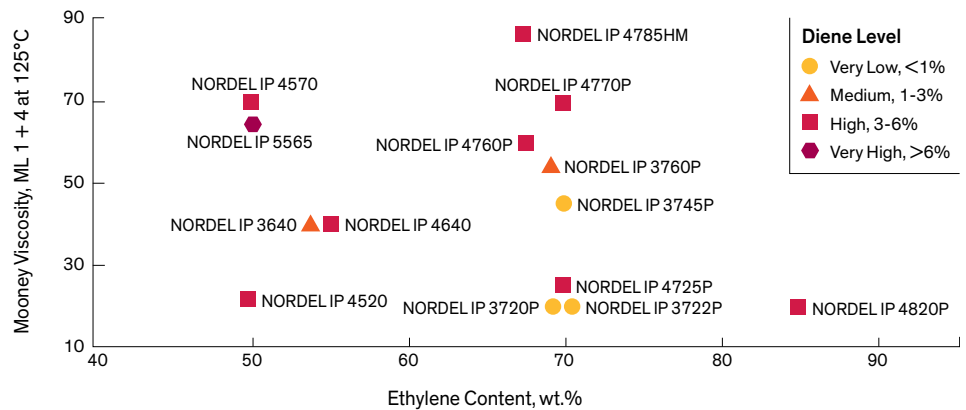
NORDEL™ EPDM products are members of Dow's family of ethylene propylene diene monomer polymers and feature the widest range of ethylene content available in the industry. These high-quality, ultra-low gel polymers provide improved yield, scrap reductions, and unparalleled polymer cleanliness. NORDEL™ EPDM polymers are sold in bale form, as well as free-flowing pellets.



NORDEL™ EPDM RESINS OFFER EXCEPTIONAL POLYMER CLEANLINESS

**NORDEL™**  
E • P • D • M

**Figure 1:** Property Ranges of NORDEL™ EPDM Products



Suffix designation: P or HM = sold only as pellets; No suffix = bale form

**Table 1:** Typical Properties and Applications of NORDEL™ EPDM<sup>(1)</sup>

Product Grade	Mooney Viscosity, ML 1+4 at 125°C (ASTM D1646)	Ethylene, Mass % (ASTM D3900)	ENB, Mass % (ASTM D6047)	MWD Characteristics (Dow Test Method)
NORDEL™ IP 3640	40	55	1.8	Medium
NORDEL™ IP 3720P	20	70	0.6	Broad
NORDEL™ IP 3722P	18	71	0.5	Medium
NORDEL™ IP 3745P	45	70	0.5	Narrow
NORDEL™ IP 3760P	63	67	2.2	Medium
NORDEL™ IP 4520	20	50	4.9	Medium
NORDEL™ IP 4570	70	50	4.9	Medium
NORDEL™ IP 4640	40	55	4.9	Medium
NORDEL™ IP 4725P	25	70	4.9	Broad
NORDEL™ IP 4760P	60	67	4.9	Medium
NORDEL™ IP 4770P	70	70	4.9	Medium
NORDEL™ IP 4785HM	85	68	4.9	Medium
NORDEL™ IP 4820P	20	85	4.9	Narrow
NORDEL™ IP 5565	65	50	7.5	Medium

<sup>(1)</sup>Data per tests conducted by Dow. Test protocols and additional information available upon request. Properties shown are typical, not to be construed as specifications.

(continued)



DURABLE PRODUCTS FOR WEATHERSTRIPPING, SEALS, AND GASKETS



PLIABLE AND WEATHER-RESISTANT FORMULATIONS FOR RESIDENTIAL AND INDUSTRIAL HOSES

**Table 1:** Typical Properties and Applications of NORDEL™ EPDM, continued<sup>(1)</sup>

Product Grade	Density, g/cm <sup>3</sup> (ASTM D297)	Crystallinity, Mass%, DSC, 10°C/min (Dow Test Method)	T <sub>c</sub> , °C PQ-E-005 (Dow Test Method)	Form	Applications
NORDEL™ IP 3640	0.86	4	-10	Bales	Blends with butyl rubber in inner tubes, peroxide-cured belts
NORDEL™ IP 3720P	0.88	14	43	Pellets	Thermoplastic modification, electrical insulation, molded connectors, belts, rolls (peroxide-cured)
NORDEL™ IP 3722P	0.88	15	46	Pellets	Thermoplastic modification, electrical insulation, molded connectors (peroxide-cured)
NORDEL™ IP 3745P	0.88	12	34	Pellets	Thermoplastic modification, cable bedding, sound insulation
NORDEL™ IP 3760P	0.88	12	18	Pellets	Roofing, belts
NORDEL™ IP 4520	0.86	<1	–	Bales	Molded seals, brake diaphragms, gaskets, sealants, weatherstrip corner molding
NORDEL™ IP 4570	0.86	<1	–	Bales	Extrusions, automotive and general purpose hose, profile gaskets, weatherstripping
NORDEL™ IP 4640	0.86	4	-10	Bales	Molded automotive and industrial parts, hose and tubing, weatherstrip, belts
NORDEL™ IP 4725P	0.88	12	36	Pellets	Rolls, high hardness compounds, gaskets, extruded profiles
NORDEL™ IP 4760P	0.88	10	35	Pellets	Extrusions, automotive and general purpose hose, profile gaskets, weatherstripping
NORDEL™ IP 4770P	0.88	13	34	Pellets	Automotive and general purpose hose, extruded profiles, glass run channel, low voltage wire and cable
NORDEL™ IP 4785HM	0.88	8	29	Pellets	Weatherstripping, extrusions, profiles
NORDEL™ IP 4820P	0.91	28	79	Pellets	Property modification of thermoplastic polyolefin and thermoset rubber formulations – high hardness, weatherstrip, molded goods
NORDEL™ IP 5565	0.86	<1	–	Bales	Weatherstripping, cellular profiles

<sup>(1)</sup>Data per tests conducted by Dow. Test protocols and additional information available upon request. Properties shown are typical, not to be construed as specifications.

**Table 2:** Comparison of NORDEL™ EPDM Grades in Peroxide-cure Test Recipe<sup>(1, 2, 3)</sup>

Property	NORDEL™ EPDM Grades						
	IP 3640	IP 3720P	IP 3722P	IP 3745P	IP 4520	IP 4570	IP 4640
Mooney Viscosity, ML 1 + 4, 100°C	50	25	27	59	32	72	50
Mooney Scorch at 125°C, Minutes to 5 pt. rise	>30	>30	>30	>30	>30	13	20
MDR at 175°C, 0.5° Arc, 30 min cht							
ML, dN.m	1.4	0.8	0.8	1.5	1.0	1.9	1.3
MH, dN.m	8.5	7.5	8.1	11.3	10.4	17.9	15.4
ts1, min	0.6	0.6	0.58	0.51	0.82	0.38	0.41
tc90, min	6.0	7.0	7.5	5.8	7.6	6.8	7.2
<b>Vulcanizate Properties, Physical Properties at R.T. Press-cured: tc95+3 min at 175°C</b>							
Tensile Strength, MPa	8.1	8.0	8.1	12.2	8.5	12.5	11.1
Elongation, %	300	324	275	307	253	245	230
Modulus at 100% Elongation, MPa	1.9	3.0	3.3	3.4	2.7	3.0	3.4
Modulus at 200% Elongation, MPa	5.1	5.6	6.3	8.7	6.6	9.1	8.9
Hardness, Shore A	53	72	71	67	58	57	61
Compression Set, Method B Pellets Cured							
MDR tc95+15 min							
22 hr at -10°C	66	91	93	98	40	28	42
22 hr at 70°C	17	30	29	21	9	8	8
22 hr at 100°C	12	20	20	19	9	7	8
70 hr at 150°C	21	30	29	27	18	16	17
Temperature Retraction, °C							
TR-10	-39	-14	-13	-18	-43	-45	-30
TR-20	-31	-1	1	-6	-36	-38	-20
TR-50	-17	14	15	9	-24	-29	23
<b>Change in Properties Aged in Air 70 Hours at 150°C</b>							
Tensile Strength, MPa	7.9	7.7	8.1	11.4	8.3	11.0	11.9
Elongation, %	292	314	301	341	250	237	244
Elongation Change, %	2.9	-2.9	9.3	11.3	-1.3	-3.2	6.3
Modulus at 100% Elongation, MPa	2.2	3.3	3.4	3.4	2.6	3.4	3.3
Modulus Change, %	16.1	10.1	4.9	1.5	-0.8	11.7	-1.5
Hardness, Shore A	59	75	75	70	60	64	64
Hardness Change, pts	6	3	4	3	2	7	3

<sup>(1)</sup>Data per tests conducted by Dow. Test protocols and additional information available upon request. Properties shown are typical, not to be construed as specifications.<sup>(2)</sup>Test Recipe: Polymer – 100 phr, N-650 Black – 115 phr, Paraffinic Oil – 70 phr, DCP-40% – 8 phr, TMQ – 1 phr, HVA #2 – 1 phr.<sup>(3)</sup>All components tested per standard ASTM Method.

(continued)

**Table 2:** Comparison of NORDEL™ EPDM Grades in Peroxide-cure Test Recipe<sup>(1,2,3)</sup>, continued

Property	NORDEL™ EPDM Grades					
	IP 4725P	IP 4760P	IP 4770P	IP 4785HM	IP 4820P	IP 5565
Mooney Viscosity, ML 1 + 4, 100°C	31	65	72	84	22	67
Mooney Scorch at 125°C, Minutes to 5 pt. rise	26	14	11	12	29	10
MDR at 175°C, 0.5° Arc, 30 min cht						
ML, dN.m	0.9	1.6	2.2	2.0	0.3	2.0
MH, dN.m	12.8	18.2	19.6	16.0	18.9	16.4
ts1, min	0.48	0.38	0.36	0.4	0.39	0.4
tc90, min	8.2	6.7	6.6	2.6	9.0	7.1
<b>Vulcanizate Properties, Physical Properties at R.T. Press-cured: tc95+3 min at 175°C</b>						
Tensile Strength, MPa	12.7	15.0	16.6	13.8	17.1	13.3
Elongation, %	247	254	238	296	184	214
Modulus at 100% Elongation, MPa	4.1	4.2	5.2	4.4	9.3	4.2
Modulus at 200% Elongation, MPa	9.6	11.0	13.8	9.7	–	12.7
Hardness, Shore A	72	67	71	73	90	59
Compression Set, Method B Pellets Cured						
MDR tc95+15 min						
22 hr at -10°C	99	80	83	–	99	21
22 hr at 70°C	15	9	8	9	77	6
22 hr at 100°C	11	8	6	9	8	5
70 hr at 150°C	21	16	15	21	16	15
Temperature Retraction,°C						
TR-10	-20	-12	-4	–	–	-42
TR-20	-7	2	9	–	–	-38
TR-50	10	23	23	–	–	-28
<b>Change in Properties Aged in Air 70 Hours at 150°C</b>						
Tensile Strength, MPa	12.3	15.5	16.6	12.7	16.5	12.9
Elongation, %	247	254	235	260	181	211
Elongation Change, %	0.0	-0.1	-1.3	-12.37	-1.4	-1.3
Modulus at 100% Elongation, MPa	4.5	4.3	5.2	4.6	10.2	4.0
Modulus Change, %	8.7	2.6	1.2	4.9	9.9	-4.5
Hardness, Shore A	74	69	72	77	93	62
Hardness Change, pts	2	2	1	3	3	3

<sup>(1)</sup>Data per tests conducted by Dow. Test protocols and additional information available upon request. Properties shown are typical, not to be construed as specifications.

<sup>(2)</sup>Test Recipe: Polymer – 100 phr, N-650 Black – 115 phr, Paraffinic Oil – 70 phr, DCP-40% – 8 phr, TMO – 1 phr, HVA #2 – 1 phr.

<sup>(3)</sup>All components tested per standard ASTM Method.

**Table 3:** Summary of FDA Compliance by NORDEL™ EPDM Grade<sup>(1)</sup>

Product Grade	21 CFR 177.2600	21 CFR 177.1520 <sup>(2)</sup>	21 CFR 175.105 <sup>(3)</sup>	21 CFR 177.1210
NORDEL™ IP 3640	Yes	Yes	Yes	Yes
NORDEL™ IP 3720P	Yes	No	Yes	No
NORDEL™ IP 3722P	Yes	No	Yes	No
NORDEL™ IP 3745P	Yes	Yes	Yes	Yes
NORDEL™ IP 3760P	–	–	–	–
NORDEL™ IP 4520	Yes	No	Yes	No
NORDEL™ IP 4570	Yes	Yes	Yes	Yes
NORDEL™ IP 4640	Yes	Yes	Yes	Yes
NORDEL™ IP 4725P	Yes	No	Yes	No
NORDEL™ IP 4760P	Yes	Yes	Yes	Yes
NORDEL™ IP 4770P	Yes	Yes	Yes	Yes
NORDEL™ IP 4785HM	Yes	Yes	Yes	Yes
NORDEL™ IP 4820P	Yes	Yes <sup>(4)</sup>	Yes	No
NORDEL™ IP 5565	No	No	Yes	No

<sup>(1)</sup> Review current Code of Federal Regulations for specific details pertaining to food contact requirements.

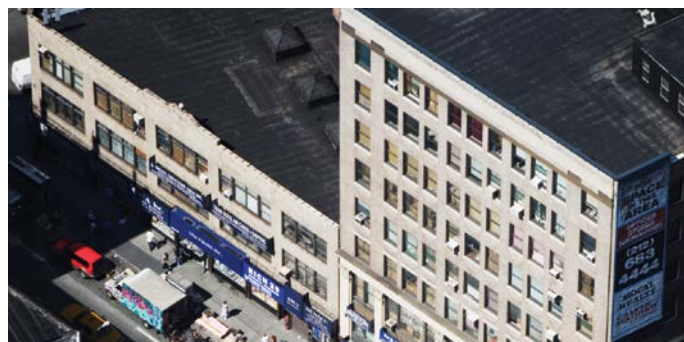
<sup>(2)</sup> Can be used in contact with all foods except water in oil emulsions, high or low fat, and low moisture fats and oil.

<sup>(3)</sup> Adhesives only.

<sup>(4)</sup> Compliant as a blend component in compliant polymers at levels up to 25% for conditions of use E through G.



HIGH-HEAT PRODUCTS FOR AUTOMOTIVE UNDERHOOD APPLICATIONS



PROTECTIVE COMPOUNDS FOR ROOFING MEMBRANES

**Table 4:** Package Types for NORDEL™ EPDM Product Grades

Product Grade	Inclusion Bag	Box		Flexible Intermediate Bulk Container
	25 kg	385 kg	408 kg	800 kg
NORDEL™ IP 3640	X	–	–	–
NORDEL™ IP 3720P	X	–	X	–
NORDEL™ IP 3722P	X	–	X	–
NORDEL™ IP 3745P	X	–	X	–
NORDEL™ IP 3760P	X	–	–	–
NORDEL™ IP 4520	X	–	–	–
NORDEL™ IP 4570	X	–	–	–
NORDEL™ IP 4640	X	–	–	–
NORDEL™ IP 4725P	X	–	–	–
NORDEL™ IP 4760P	X	–	–	X
NORDEL™ IP 4770P	X	X	–	X
NORDEL™ IP 4785HM	X	–	–	X
NORDEL™ IP 4820P	X	X	–	–
NORDEL™ IP 5565	X	–	–	X
Bag Melting Point, °C	87	–	–	–
Bag Material	EVA/PE	–	–	–

<b>North America</b>		<b>Europe/Middle East</b>	00 800 3694 6367	<b>dow.com</b>
U.S. & Canada	1 800 441 4369		00 31 115 672626	<b>dowelastomers.com</b>
	1 989 832 1426	Italy	800 783 825	
Mexico	+ 1 800 441 4369	<b>South Africa</b>	00 800 99 5078	
<b>Latin America</b>		<b>Asia Pacific</b>	+ 800 7776 7776	
Argentina	+ 54 11 4319 0100		+ 603 7965 5392	
Brazil	+ 55 11 5188 9000		+ 86 21 3851 4988	
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