



# NORDEL™ EPDM

## Product selection guide

Dow's NORDEL™ ethylene propylene diene terpolymers (EPDM) product family features one of the widest range of ethylene content available in the industry. These high-quality, virtually gel-free polymers enable improved yields, reduced scrap rates, and unparalleled polymer cleanliness. NORDEL™ EPDM is made using Dow's proprietary advanced molecular catalyst (AMC) technology in a solution process, and is sold both as bales and as free-flowing pellets.



NORDEL™ EPDM offers exceptional polymer cleanliness.

Figure 1: Property ranges of NORDEL™ EPDM products<sup>(1,2)</sup>



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

Users should confirm results by their own tests.

<sup>(2)</sup>Suffix designations: XFC = extra fast cure; XFM = extra fast mixing; OE = oil extended; P or HM = pellet form; no suffix = bale form.

<sup>(3)</sup>Polymer Mooney Viscosity before oil extension is at 115, while finished product Mooney Viscosity is at 55.

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

Product grade	Mooney viscosity, ML 1+4 at 125°C (ASTM D1646)	Oil, phr <sup>(1)</sup>	Ethylene, mass % (ASTM D3900)	ENB, mass % (ASTM D6047)	MWD <sup>(2)</sup> characteristics <sup>(1)</sup>
NORDEL™ 3640	40	—	55	1.8	Medium
NORDEL™ 3720P	20	—	70	0.6	Medium
NORDEL™ 3722P	18	—	71	0.5	Medium
NORDEL™ 3745P	45	—	70	0.5	Narrow
NORDEL™ 3760P	63	—	67	2.2	Medium
NORDEL™ 4520	20	—	50	4.9	Medium
NORDEL™ 4570	70	—	50	4.9	Medium
NORDEL™ 4572 XFM	70	—	50	4.9	Medium
NORDEL™ 4640	40	—	55	4.9	Medium
NORDEL™ 4725P	25	—	70	4.9	Medium
NORDEL™ 4760P	60	—	67	4.9	Medium
NORDEL™ 4770P	70	—	70	4.9	Medium
NORDEL™ 4785HM	85	—	68	4.9	Medium
NORDEL™ 4820P	20	—	85	4.9	Narrow
NORDEL™ 5565	65	—	50	7.5	Medium
NORDEL™ 6530 XFC	30	—	55	8.5	Broad
NORDEL™ 6555 OE	55	23	53	8.5	Medium
NORDEL™ 6565 XFC	65	—	55	8.5	Broad

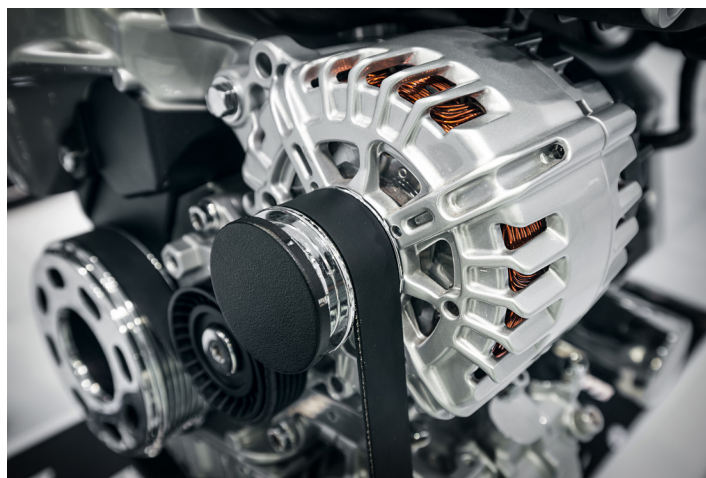
<sup>(1)</sup>Data per tests conducted by Dow. Additional information available upon request. Properties shown are typical, not to be construed as specifications. Users should confirm results by their own tests.

<sup>(2)</sup>Molecular Weight Distribution

(continued)



Durable products for weatherstripping, seals, and gaskets.



High-heat products for automotive belts.

**Table 1: Typical properties and applications of NORDEL™ EPDM (continued)<sup>(1)</sup>**

Product grade	Density, g/cc (ASTM D297)	Crystallinity, mass%, DSC, 10°C/min <sup>(1)</sup>	T <sub>c</sub> , °C PQ-E-005 <sup>(1)</sup>	Form	Applications
NORDEL™ 3640	0.86	4	-10	Bale	Blends with butyl rubber in inner tubes, peroxide-cured belts, molded goods, conveyor belts
NORDEL™ 3720P	0.88	14	43	Pellet	Thermoplastic modification, electrical insulation, molded connectors, belts, rolls (peroxide-cured)
NORDEL™ 3722P	0.88	15	46	Pellet	Thermoplastic modification, electrical insulation, molded connectors (peroxide-cured)
NORDEL™ 3745P	0.88	12	34	Pellet	Thermoplastic modification, cable bedding, sound insulation, belts
NORDEL™ 3760P	0.88	12	18	Pellet	Roofing, belts
NORDEL™ 4520	0.86	<1	—	Bale	Molded seals, brake hose, diaphragms, gaskets, sealants, weatherstrip corner molding
NORDEL™ 4570	0.86	<1	—	Bale	Extrusions, automotive and general purpose hose, profile gaskets, weatherstripping
NORDEL™ 4572 XFM	0.86	<1	—	Bale	Extrusions, automotive and general purpose hose, profile gaskets, weatherstripping
NORDEL™ 4640	0.86	4	-10	Bale	Molded automotive and industrial parts, hose and tubing, weatherstripping, belts
NORDEL™ 4725P	0.88	12	36	Pellet	Rolls, high hardness compounds, gaskets, extruded profiles
NORDEL™ 4760P	0.88	10	35	Pellet	Extrusions, automotive and general purpose hose, profile gaskets, weatherstripping, molding applications
NORDEL™ 4770P	0.88	13	34	Pellet	Automotive and general purpose hose, extruded profiles, glass run channel, low voltage wire and cable jacketing, thermoplastic vulcanizate (TPV)
NORDEL™ 4785HM	0.88	8	29	Pellet	Weatherstripping, extrusions, profiles, TPV, microdense
NORDEL™ 4820P	0.91	28	79	Pellet	Property modification of thermoplastic polyolefin and thermoset rubber formulations – high hardness, weatherstrip, molded goods
NORDEL™ 5565	0.86	<1	—	Bale	Weatherstripping, extruded profiles, metal carriers
NORDEL™ 6530 XFC	0.86	<1.5	—	Bale	Extra fast cure corner molding, high hardness rubber parts
NORDEL™ 6555 OE	0.86	<1.5	—	Bale	Weatherstripping, sponge profiles, microdense
NORDEL™ 6565 XFC	0.86	<1.5	—	Bale	Extra fast cure weatherstripping, dense sponge profiles, microdense

<sup>(1)</sup>Data per tests conducted by Dow. Additional information available upon request. Properties shown are typical, not to be construed as specifications. Users should confirm results by their own tests.

**Table 2: Comparison of NORDEL™ EPDM grades in peroxide-cure test recipe<sup>(1, 2, 3)</sup>**

Property	NORDEL™ EPDM grades						
	3640	3720P	3722P	3745P	4520	4570	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
Vulcanizate properties, physical properties at R.T. press-cured: tc95+3 min at 175°C							
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
Change in properties aged in air 70 hours at 150°C							
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. Additional information available upon request. Properties shown are typical, not to be construed as specifications. Users should confirm results by their own tests.

<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 (continued)<sup>(1, 2, 3)</sup>**

Property	NORDEL™ EPDM grades					
	4725P	4760P	4770P	4785HM	4820P	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. Additional information available upon request. Properties shown are typical, not to be construed as specifications. Users should confirm results by their own tests.

<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.

**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™ 3640	Yes	Yes	Yes	Yes
NORDEL™ 3720P	Yes	No	Yes	No
NORDEL™ 3722P	Yes	No	Yes	No
NORDEL™ 3745P	Yes	Yes	Yes	Yes
NORDEL™ 3760P	Yes	Yes	Yes	Yes
NORDEL™ 4520	Yes	No	Yes	No
NORDEL™ 4570	Yes	Yes	Yes	Yes
NORDEL™ 4572 XFM	No	No	Yes	No
NORDEL™ 4640	Yes	Yes	Yes	Yes
NORDEL™ 4725P	Yes	No	Yes	No
NORDEL™ 4760P	Yes	Yes	Yes	Yes
NORDEL™ 4770P	Yes	Yes	Yes	Yes
NORDEL™ 4785HM	Yes	Yes	Yes	Yes
NORDEL™ 4820P	Yes	Yes <sup>(4)</sup>	Yes	No
NORDEL™ 5565	No	No	Yes	No
NORDEL™ 6530 XFC	No	No	Yes	No
NORDEL™ 6555 OE	No	No	Yes	No
NORDEL™ 6565 XFC	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 hoses.



Protective compounds for roofing membranes.

**Table 4: Package types for NORDEL™ EPDM product grades**

Product grade	Inclusion bag <sup>(1)</sup>	Box		Flexible intermediate bulk container
	25 kg	385 kg*	408 kg	800 kg
NORDEL™ 3640	X	—	—	—
NORDEL™ 3720P	X	—	X	—
NORDEL™ 3722P	X	—	X	—
NORDEL™ 3745P	X	—	X	X
NORDEL™ 3760P	X	—	—	—
NORDEL™ 4520	X	—	—	—
NORDEL™ 4570	X	—	—	—
NORDEL™ 4572 XFM	X	—	—	—
NORDEL™ 4640	X	—	—	—
NORDEL™ 4725P	X	—	X	X
NORDEL™ 4760P	X	—	—	X
NORDEL™ 4770P	X	X	—	X
NORDEL™ 4785HM	X	—	—	X
NORDEL™ 4820P	X	X	—	—
NORDEL™ 5565	X	—	—	—
NORDEL™ 6530 XFC	X	—	—	—
NORDEL™ 6555 OE	X	—	—	—
NORDEL™ 6565 XFC	X	—	—	—

<sup>(1)</sup>NORDEL™ 6555 OE is packaged in polyolefin elastomer-based bags with a nominal melting temperature of 82°C. All other grades are packaged in ethylene vinyl acetate/polyethylene-based bags with a nominal melting temperature of 87°C.

\* Available only in certain regions.

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Form No. 265-11001-01-0425 S2D