



A Product of DuPont Dow Elastomers

Nordel® IP 4640

Description

Nordel® IP 4640 is an amorphous EPDM grade designed for molded and extruded applications. It is ideally suited for general-purpose gaskets and moldings, extruded profiles and hoses. The combination of medium viscosity and low crystallinity allows for good balance of processibility, low temperature properties and product performance.

Storage and Handling

The quality of EPDM products may be affected by exposure to artificial or natural light. This product should be stored indoors in its original packaging and out of direct sunlight.

Typical Polymer Properties*

Property	Value	Test Method
Mooney Viscosity ML 1 + 4 at 125°C	40	ASTM D-1646
Composition		
Ethylene, mass%	55	ASTM D-3900
Propylene, mass%	40	ASTM D-3900
ENB, mass%	5.0	ASTM D-6047
Molecular Weight Distribution	Medium	DuPont Dow PQ-E-034 and 036
Product Density, g/cc	0.86	ASTM D-297
Residual Transition Metal, ppm	10 max.	DuPont Dow
Ash Content, mass%	0.1 max.	ASTM D-5667
Total Volatiles, mass%	0.4 max.	DuPont Dow PQ-E-007
Product Form	bale	

*These data are provided for description only and are not intended to serve as sales specifications.

Nordel® IP 4640
Typical Application Recipes

	Molded Golf Grips 0640-03-04	Low Cost General Purpose Hose 0640-03-5	Dense Extruded Profile 0822A34-06	Molded Brake Cup 0640-03-03	General Purpose Compound 0822A34-02
Nordel® IP 4640	100	100	100	100	100
N-650 Black	—	—	100	—	—
N-550 Black	20	200	—	50	80
N762 Black	—	—	100	—	—
Naphthenic Oil	—	140	—	—	—
Precipitated Silica	45	—	—	—	—
Paraffin Wax	—	5	—	—	—
Paraffinic Oil	55	—	115	10	50
ZnDBC	1.5	1.5	2	—	2
TETD	—	1	—	—	—
Tetrone® A	—	1	—	—	—
MBT	2.5	—	1	—	1
TMTD	1.3	1	0.8	—	0.5
TMTM	—	1	—	—	—
TMQ	—	—	—	1	—
DPTT	—	—	—	—	—
DCP-40% Active	—	—	—	7	—
Stearic Acid	1	1	1	—	1
Zinc Oxide	3	5	5	—	5
Sulfur	1.5	0.5	1.5	—	1.5
Calcium Oxide	—	—	8	—	—
TeDEC	—	—	0.5	—	—
Total	230.75	457	434.8	168	241
Product Density, g/cc	1.057	1.157	1.185	1.046	1.083
Compound Properties					
Mooney Viscosity, ML 1+4, 100°C	49	37	37	76	46
Mooney Scorch at 125°C					
Minimum Viscosity	18	14	14	25	15
5 pt rise, min	7.6	19.7	7.2	7.6	10.3
10 pt rise, min	8.5	24.1	8.1	8.5	11.8
MDR at 160°C, 0.5° Arc, 30 min chart					
M _L , dN·m	1.8	1.1	1.3	1.6	1.2
M _H , dN·m	14.9	8.4	11.7	20.5	19.7
T _s 1, min	1.0	3.3	1.0	0.4	1.2
T _s 2, min	1.2	4.3	1.2	0.5	1.5
T _c 50, min	2.7	5.5	1.7	1.3	3.7
T _c 90, min	14.4	10.3	5.7	3.3	12.1
T _c 95, min	18.7	12.6	9.6	4.2	15.8
Tan delta at M _L	1.062	1.150	1.088	1.037	1.042
Tan delta at M _H	0.250	0.273	0.245	0.064	0.095
Vulcanizate Properties					
Original Physical Properties at RT					
Press Cured, T_c95 +3 min at 160°C					
Modulus at 100% Elongation, MPa	1.7	2.6	3.1	2.5	3.3
Modulus at 200% Elongation, MPa	2.6	5.2	6.7	6.6	—
Modulus at 300% Elongation, MPa	3.7	6.4	8.0	11.6	9.0
Tensile Strength, MPa	15.0	7.2	8.3	17.4	10.1
Elongation, %	657	423	330	383	340
Hardness, Shore A	58	64	61	64	63
Tear Strength, die C, kN·m	27.8	29.6	31.6	31.7	28.1

(continued)

Nordel® IP 4640 (continued)
Typical Application Recipes

	Molded Golf Grips 0640-03-04	Low Cost General Purpose Hose 0640-03-5	Dense Extruded Profile 0822A34-06	Molded Brake Cup 0640-03-03	General Purpose Compound 0822A34-02
Compression Set, Method B, Pellets Cured MDR T_c95 + 15 min at 160°C					
22 hr at -25°C	76	93	84	79	67
22 hr at 100°C	59	36	78	10	42
70 hr at 125°C	88	64	90	20	72
Temperature Retraction					
TR-10, °C	-41	-36	-38	-40	-43
Change in Properties After Aging Aged in Air, 70 hr at 125°C					
Modulus at 100% Elongation, MPa	3.6	5.71	8.0	2.59	6.0
Modulus Change, %	114	119	154	4	82
Tensile Strength, MPa	9.4	7.8	11.5	18.3	11.2
Tensile Change, %	-37	9	39	5	11
Elongation, %	296	173	160	385	195
Elongation Change, %	-55	-59	-52	1	-43
Hardness, Shore A	70	80	73	65	70
Hardness Change, pt	12	16	12	1	7

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