



At DP Seals we pride ourselves on being able to provide specialist advice in selecting and developing exactly the right blend of materials to meet a vast range of performance requirements. We also maintain a large quantity and variety of quality raw materials in stock, enabling us to offer fast turnaround and provide for tight deadlines.

Unsure about what material might be best? Check out the article: "[*Mind the gap - a guide to custom rubber*](#)", published in Design Products and Applications, for ideas.

The information below is provided as a guide to the more common materials, describing briefly their primary characteristics and main uses, while the table following shows comparative performance characteristics, mechanical and general properties.

Click [here](#) for information on more specialised compounds, such as Carboxylated Nitrile, Chlorosulfonated Polythene, etc.

The relationship between material selection, product performance and blend options is complex and the information given here should be used only as a general guide. If in doubt, [contact us.](#)

NR - NATURAL

Good low temperature properties and long flex life. High resilience, elongation and tensile strength, and wide hardness range. Poor resistance to ozone, heat, oil and general weathering.

CR - NEOPRENE

Good heat, flame, ageing and weather resistance. Moderate chemical and oil resistance. Long flex life. Poor resistance to aromatic hydrocarbons.

NBR - NITRILE

Resistant to attack from mineral oils, petroleum solvents, fair resistance to heat and ageing. Relatively poor cold resistance. Cannot be used where weather resistance is required.

VMQ - SILICONE

Excellent electrical properties, resistant up to very high temperatures and flexible to very low temperatures. Poor tensile and abrasion resistance compared to other elastomers.

EPDM - ETHYLENE PROPYLENE

Excellent resistance to weather and ozone. High tensile strength. Good low temperature properties. Resistant to non-flammable hydraulic fluids (Skydrol). Non-resistant to mineral oils.

FKM - FLUOROELASTOMER

Excellent long term heat resistance and ageing. Excellent hot oil, aliphatic and aromatic hydrocarbon resistance. Not very elastic. High cost polymer.

MATERIAL GUIDELINES CHARTS

	NR Natural	NBR Nitrile	EPDM Ethylene Propylene	CR Neoprene	VMQ Silicone	FKM - Fluoro- Elastomer
MECHANICAL PROPERTIES						
Hardness (Shore A) (hint)	30-90	35-90	40-90	30-90	30-85	40-90
Tensile Strength (1000 psi)	3.5 - 4.5	1.0 - 3.5	0.5 - 3.5	0.5 - 3.5	1.5	2
Tear Resistance	Excellent	Good	Fair	Good	Fair	Good
Impact Resistance	Excellent	Good	Good	Good	Poor	Good
Compression set (Method B,%)	10 - 30	5 - 20	20 - 60 ^b	20 - 60 ^b	10	20 - 25 ^a
Electrical Resistance (ohm/cm ²)	-	3.5*10 ¹⁰	2* 10 ¹⁶	2* 10 ¹³	1*10 ¹⁴ - 1*10 ¹⁶	2* 10 ¹³
GENERAL PROPERTIES						
Low Temperature (°C)	-50	-40	-45	-50	-100	-15
Continuous High (°C)	80	125	130	100	250	250
Intermittent High (°C)	100	150	150	130	275	300
Ozone (protected)	Fair	Fair	Excellent	Good	Excellent	Excellent
Weather and Sunlight	Good	Fair	Excellent	Good	Excellent	Excellent
Gas Permeation	Fair	Good	Good	Good	Fair	Excellent
Water	Good	Fair	Excellent	Good	Excellent	Good
Acid/base Diluted	Good	Good	Excellent	Good	Excellent	Excellent
Acid/base conc.	Fair	Fair	Fair	Fair	Fair	Excellent
Solvent Aliphatic	Poor	Good	Poor	Good	Poor	Excellent
Solvent Aromatic	Poor	Good	Poor	Poor	Poor	Excellent
Oil and Gasoline	Poor	Excellent	Poor	Good	Poor	Excellent

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