



Rubber Material General Selection Guide

This information is meant as a general guide and indication of the suitability of various elastomers in use today for service in these chemicals and fluids. The ratings are based, for the most part, on published literature of various polymer suppliers and rubber manufacturers. We cannot guarantee their accuracy nor assume responsibility for use thereof. Several factors must always be considered in using a rubber part in service. The most important are:

1. *The Temperature of Service:* Higher temperatures increase the effect of all chemicals on polymers. The increase varies with the polymer and the chemical. A compound quite suitable at room temperature might fail miserably at elevated temperature.
2. *Conditions of Service:* A compound that swells badly might still function well as a static seal, yet fail in any dynamic application.
3. *The Grade of the Polymer:* Many types of polymers are available in different grades that vary greatly in chemical resistance.
4. *The Compound Itself:* Compounds designed for other outstanding properties may be poorer in performance than one designed especially for fluid resistance.

In light of the above factors, it is always best to test. If you have any questions, please give us a call. We will be glad to help with your selection!

Materials and Typical Properties	Natural rubber	SBR	Butyl	EPDM	Neoprene	Nitrile	Polyurethane	Silicone	Acrylic	Epichlorohydrin	Flourelastomer
Basic Properties											
Hardness (Shore A)	30-100	40-100	30-90	30-90	40-95	30-90	55-100	25-80	40-90	40-90	55-90
Max tensile strength (psi)	4000	2500	2000+	2000-3000	3000+	1000-3500	4000-8000	600-1500	1700+	2500	1500-3000
Max elongation (%)	500	450+	300-800	500	650-850	400-600	250-800	90-800	450	400	100-450
Specific Gravity	0.93	0.94	0.92	0.86	1.23	1.00	1.05	0.95	1.10	1.27 - 1.36	1.40 - 1.95
Average Cost per #	\$1.50	\$1.50	\$1.75	\$2.00	\$2.50	\$2.80	\$5.25	\$6.00	\$6.00	\$4.00	\$18.00+
Resilience / Rebound	O	O	F	G-E	E	F-G	G-E	P-E	G	F-G	G
Compression set	G	F-G	F-G	G-E	F-G	G	E	G-E	F-G	F	G-E
Electric Resistance	E	E	E	E	G	P-F	G	E	F		G
Gas Permeability	G	G	O	G	G	G	G	P-F	G	E	E

O=outstanding, E=excellent, G=good, F=fair, P=poor

Materials and Typical Properties	Natural rubber	SBR	Butyl	EPDM	Neoprene	Nitrile	Polyurethane	Silicone	Acrylic	Epichlorohydrin	Flouorelastomer
Mechanical Resistance Properties											
Flex Cracking	F	G	G	G	G	F	G-E	F-E	F	G	G
Impact	E	E	G	G	G	F	E	P-F	P	G	P-G
Abrasion	E	E	F	G	E	E	E	P-G	F-G	F-G	G
Tear	E	F-G	G	F	G	G	E	P-G	F	F-G	F-G
Cut Growth	E	G	E	G	G	G	F-E	P-G	G	G	F-G
Heat and Cold Resistance Properties											
Heat Aging at 212 F	F	G	G	E	G-E	G	G	E	E	G-E	O
Flame Resistance	P	P	P	P	G	P-F	P-F	F-G	P-F	F-G	E
Low Temp. Flexibility	G-E	G	F-G	G-E	F	F-G	G	E	P-F	F-E	F-G
Chemical and Environmental Resistance											
Weather	F	P-F	G-E	E	E	F	E	E	E	G-E	E
Sunlight	P-F	F	E	E	G-E	P-F	G-E	E	E	G-E	E
Oxidation	G	F	E	E	E	F-G	G	E	E	G-E	O
Ozone	P	P	E	E	E	P	E	E	G	E	E
Radiation	F-G	G	P	F-G	G	F-G	G	F-E	P-G	-	F-G
Water	E	E	E	E	G	E	P-G	G	F	G	G
Oil and Gas	P	P	P	P	F-G	G-E	G-E	P-F	G	G-E	E
Animal & Vegetable Oils	F	F	G-E	G	G	G-E	G	F-G	G-E	G-E	E
Acids	F-G	F-G	E	E	G-E	G	P-F	P-G	F	P-F	G-E
Alkalies	F-G	F-G	E	E	G-E	G	P-F	P-F	F	F-G	P-G
Aliphatic Hydrocarbons ¹	P	P	P	P	G	E	G	P-F	E	G-E	E
Aromatic Hydrocarbons ²	P	P	P-F	P-F	F	G	F	P	F	G	E
Halogenated Hydrocarbons ³	P	P	P	P	P	F-G	F-G	P-G	P	P-F	G
Alcohol	G	F-G	G-E	G	G	G	G	G	P-G	G	E
Other Properties											
Taste	F-G	F-G	F-G	G	F-G	F	G	G	F-G	F	F-G
Odor	F-G	G	G	G	F-G	G	G	G	F-G	F-G	G
Nonstaining	P-G	P-G	G	G	G-E	F	G	E	E	F	P-G
Bonding to rigid materials	E	E	F-E	P-F	E	F-G	F-G	F-G	G	F-G	P-G

¹=gasoline, kerosene, ²=benzol, toluol, ³=degreaser solvents