

4. Basic Elastomers

Table 3A-1

Elastomer ASTM	NBR Nitrile	EPM EPR	CR Neoprene	VMQ Silicone	FVMQ Fluoro silicone	EU Urethane	FKM Fluoro carbon	FFKM Perfluoro carbon	PTFE-FEP encapsu- lated
GENERAL									
Hardness (Shore "A")	20/ 90	30/90	15/95	20/90	35/80	60/95	50/95	65/90	-
Temp. range °F/°C max.	230/110	266/130	248/120	446/230	446/230	176/80	410/210	620/326	400/205
Temp. range °F/°C min.	-30/-35	-67/-55	-49/-45	-67/-55	-76/-60	-22/-30	5/-15	-58/504	-76/-605

NOTE : The temperature range is strongly dependent by the specific compound

Compression Set	B	C	C	A	B	E	C	B	E
Wear Resistance	C	C	C	E	E	A	C	C	E
Gas Permeability	C	C	C	E	E	B	C	C	E

NOTE : The compression set value for Kalrez® is relative to temperature. In low temperature applications this value is reasonable, in high temperatures this value is good to very good.

Air	E	B	C	A	B	C	B	A	+
Alcohol	B	A	B	B	B	U	E	A	+
Aldehydes	U	B	U	C	U	U	U	Bfi	+
Aliphatic Hydrocarbons	C	U	E	E	A	C	A	A	+
Alkalis	B	A	C	B	B	B	C	A	+
Amines	B1	B1	B1	E1	B1	U	U	Bfi	+
Animal Fats	B	U	C	C	A	C	B	A	+
Aromatic Hydrocarbons	D	U	D	U	B	D	A	A	+
Esters, Alkyl Phosphate (Skydrol)	U	B	U	C	U	U	U	A	+
Esters, Aryl Phosphate	U	A	U	C	B	U	A	A	+
Esters, Silicate	C	U	E	U	B	U	A	A	+
Ethers	U	E	U	U	E	E	U	A	+
Halogenated hydrocarbons	U	U	U	U	B	E	A	A	+
Inorganic Acids	E	C	B	B	B	U	A	A	+
Ketones	U	A	A	C	A	U	U	B	+
Mineral Oil, high analine fats	B	U	C	C	B	A	A	A	+
Mineral Oil, low analine fats	B	U	U	E	B	B	A	A	+
Organic Acids	C	C	C	B	B	U	C	A	+
Silicone Oils	A	A2	A	E	E	A	A	A	+
Vegetable Oils	A	U	C	B	B	E	A	A	+
Water / Steam	C	A	E	E	E	U	B/	C4	+

A Good	1	See the list "compound selection for chemicals and fluids"
B Satisfactory	2	EPDM/EPR may shrink
C Fair	3	Depending on FKM type
D Doubtful	4	Depending on compound
E Poor	5	Depending on elastomer core
U Unsatisfactory	+	in general "A" because the encapsulation is FEP

This information is intended only as a guideline. Chemical compatibility lists should be consulted. ERIKS will provide this on request. Whenever possible the fluid compatibility of the O-ring compound should be rated "A". For a static seal application a rating "B" is usually acceptable, but it should be tested.

Where a "B" rated compound must be used, do not expect to re-use it after disassembly. It may have swollen enough that it cannot be reassembled. When a compound rated "C" is to be tried, be sure it is first tested under the full range of operating conditions.

It is also particularly important to test seal compounds under service conditions when a strong acid is to be sealed at elevated temperatures because the rate of degradation of rubber at elevated temperatures is many times greater than the rate of degradation at room temperature.