

ELASTOMERIC COMPOUNDS

Seal & Design offers a wide range of rubber compounds also known as elastomers. These compounds are typically used for o-rings but gaskets can also be fabricated from elastomeric sheet material.



Elastomers consist of both synthetic and natural materials, and are formulated to have a wide array of physical properties. Different compounds are better suited for a variety of applications, depending primarily on the compound's exposure to fluids, heat, and pressure.

Standard Compounds		Special Grades
Aflas FEPM	Perfluoroelastomer FFKM	Pharmaceutical Grade
Buna-S SBR	Nitrile / Buna-N NBR	Semi-conductor Grade
Butyl	Hydrogenated Nitrile HNBR	
Fluorosilicone FVMQ	Silicone VMQ	
Neoprene CR	Hypalon CSM	
Polyacrylate ACM	Ethylene Acrylic VAMAC	
EPDM	Polyurethane AU / EU	
PTFE	PTFE Encapsulated PFA, FEP	
Viton FKM		

COMPOUND INFORMATION CHARTS

Physical Properties of Compounds

Reference chart showing materials and how well they exhibit different physical properties.

Fluid Compatibility of

Reference chart showing materials and how well they




Compounds

perform in different fluids.

Temperature Ranges of Elastomers

Chart showing temperature ranges of o-ring compound materials.

ELASTOMERIC COMPOUND LIST

Type	Info	Related Links
 Aflas FEPM	Excellent resistance to a wide variety of aggressive chemicals. Aflas is known for its use in oil field applications and its electrical resistance properties.	Aflas Main
 Butyl	Butyl rubber is produced by many companies in different types and varies widely in isoprene content. Isoprene is necessary for proper vulcanization. Butyl has a very low permeability rate and good electrical properties. Heat resistance. Butyl Rubber is used in many acid, and brake applications. The material has a wide temperature range from 250°F down to -75°F.	Butyl Main
	SBR probably is better known under its old names Buna S and GRS (government rubber styrene.) SBR was first produced under government control between 1930 and 1950 as a replacement for natural rubber. The basic monomers are	Buna-SBR Main

Buna-SBR

butadiene and styrene, with styrene content approximately 23.5%. About one third of the world output of SBR is used in tire production. SBR is mostly used in seals for non-mineral oil based brake fluid applications.



EPDM

EPDM is a copolymer of ethylene and propylene. Ethylenepropylene-diene rubber (EPDM) is produced using a third monomer and is particularly useful when sealing phosphate-ester hydraulic fluids and in brake systems that use fluids having a glycol base. Also called: EPR, EPM

EPDM Main



**Fluorosilicone
FVMQ**

Fluorosilicone rubber contains trifluoropropyl groups next to the methyl groups. The mechanical and physical properties are very similar to silicone rubber. However, fluorosilicone offers improved fuel and mineral oil resistance but poor hot air resistance when compared with silicone.

FVMQ Main



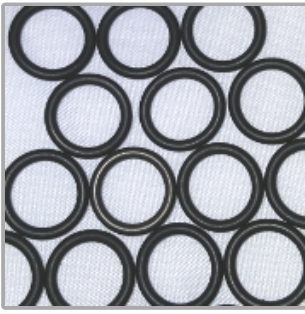
Hypalon Material

Excellent resistance to a wide variety media especially corrosive and oxidizing chemicals.

Hypalon Main

Neoprene was the first synthetic rubber developed commercially and exhibits generally good ozone, aging and chemical resistance. It has good

Neoprene Main



Neoprene Material

mechanical properties over a wide temperature range. Improved ozone, weathering and aging resistance compared with nitrile rubber.

Also called: Chloroprene



Nitrile Material

Nitrile rubber is the general term for acrylonitrile butadiene terpolymer. The acrylonitrile content of nitrile sealing compounds varies considerably (18% to 50%) and influences the physical properties of the finished material.

Also called: Buna,

Nitrile Main



Hydrogenated Nitrile Material

Hydrogenated Nitrile is made via selective hydrogenation of the NBR butadiene groups which improves the temperature and ozone resistance considerably.

Also called: HNBR

Hydrogenated Nitrile Main



**Perfluoroelastomer
FFKM**

Chemically inert material. Often used with aggressive chemical applications, mechanical seals, and applications where microcontamination is a problem.

These are the major FFKM brands: Chemraz, Simriz, Perlast, GPlast, and Kalrez.

FFKM Main

Product Lines:

Chemraz

Perlast

GPlast

Simriz

Kalrez

ACM or simply acrylate rubber consists of a polymerized ester and a curing monomer. Ethyl acrylate rubber has a good resistance to heat and mineral oil;

Polyacrylate Main



**Polyacrylate
Material**

on the other hand butyl acrylate has a better cold flexibility. Polyacrylate has a good resistance to mineral oil, oxygen and ozone even at high temperatures. The water compatibility and cold flexibility of ACM are significantly worse than with NBR.



**Polyurethane AU /
EU**

One must differentiate between polyester urethane (AU) and polyether urethane (EU). AU type urethanes exhibit better resistance to hydraulic fluids. Polyurethane elastomers, as a class, have excellent wear resistance, high tensile strength and high elasticity in comparison with any other elastomers. Permeability is good and comparable with butyl rubber.

Polyurethane Main



Silicone Material

The term silicone covers a large group of materials in which vinyl-methyl-silicone (VMQ) is often the central ingredient. Silicone elastomers as a group have relatively low tensile strength, poor tear and wear resistance. However, they have many useful properties as well. Silicones have good heat resistance and good cold flexibility. They also have good ozone and weather resistance as well as good insulating and physiologically neutral properties.

Silicone Main

Fluorocarbon rubber has excellent resistance to high temperatures, ozone, oxygen, mineral oil, synthetic hydraulic

Viton Main

Offerings
Viton O-Rings



Viton Material

fluids, fuels, aromatics and many organic solvents and chemicals. Low temperature resistance is normally not favorable and for static applications is limited, although in certain situations it is suitable down to -40°F (-40°C).

Under dynamic conditions, the lowest service temperature is between 5°F and 0°F (-15°C and -18°C). Gas permeability is very low and similar to that of butyl rubber. Special fluorocarbon compounds exhibit an improved resistance to acids, fuels, water and steam.

Also called: Fluorocarbon

Viton Gaskets



Ethylene Acrylic (VAMAC) Material

Developed as a lower temperature version of polyacrylate.

Ethylene Acrylic (VAMAC) Material Main

NON-ELASTOMERIC COMPOUND LIST

Type

Info

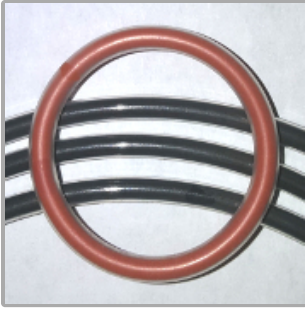
Related Links



O-rings created from PTFE.

PTFE Main Virgin PTFE Properties

PTFE



PTFE Encapsulated

Silicone or Viton Material can be encapsulated inside PFA or FEP to allow equipment to perform in a broad range of hostile service environments and temperatures while still maintaining excellent sealing ability.

PTFE Encapsulated Main

Seal & Design Able Division

5533 Steeles Avenue West, Unit 11
Toronto, Ontario M9L 1S7
Ph: (416) 741-0750
Gasket@AbleSealAndDesign.com

Seal & Design Corporate Headquarters

4015 Casilio Parkway
Clarence, NY 14031
Ph: (716) 759-2222
Info@SealAndDesign.com

Seal & Design Higbee Division

6741 Thompson Rd N
Syracuse, NY 13221
Ph: (315) 432-8021
Sales@Higbee-Inc.com