ELASTOMERIC COMPOUNDS

Seal & Design offers a wide range of rubber compounds also know 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

Aflas FEPM	Perfluoroelastomer FFKM
Buna-S SBR	Nitrile / Buna-N NBR
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	

Special Grades

Pharmaceutical Grade

Semi-conductor Grade

COMPOUND INFORMATION CHARTS

Physical Properties of Compounds	Reference chart showing materials and how well they exhibit different physical properties.

Fluid Compatibility of Compounds	Reference chart showing materials and how well they 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. Alfas 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 â€“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.	

Buna-SBR

The basic monomers are 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.

Buna-SBR Main

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 roups 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.

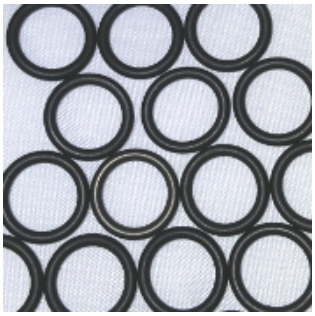
FVMQ Main

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



Neoprene Material

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

Also called: Chloroprene

Neoprene Main

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

Perflouroelastomer FFKM

Chemically inert material. Often used with aggressive chemical applications, mechanical seals, and appliations 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

Polyacrylate Material

resistance to heat and mineral oil; 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.

Polyacrylate Main

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,

Viton Material	mineral oil, synthetic hydraulic 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 â€“40°F (â€“40°C). Under dynamic conditions, the lowest service temperature is between 5°F and 0°F (â€“15°C and â€“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 Main** Offerings **Viton O-Rings** **Viton Gaskets**
 **Etheylene Acrylic (VAMAC) Material**	Developed as a lower temperature version of polyacrylate.	**Etheylene Acrylic (VAMAC) Material Main**

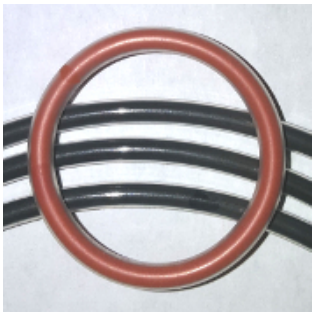
NON-ELASTOMERIC COMPOUND LIST

Type	Info	Related Links

PTFE

O-rings created from PTFE.

PTFE Main
Virgin PTFE
Properties



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

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