General Chemical Resistance of Elastomers

ASTM	Material	Chemical Group	Generally Resistant to	Generally Attacked by
NR, IR	Natural rubber, Isoprene	Polyisoprene	Most moderate wet or dry chemicals, organic acids, alcohols, ketones, aldehydes -40 to +90 °C	Ozone, strong acids, fats, oils, greases, most hydrocarbons
SBR, BR	Butadiene, Styrene butadiene	Styrene, Butadiene Copolymer, Polybutadiene	Similar to natural rubber -40 to +90 °C	Similar to natural rubber
IIR	Butyl	Isobutylene, Isoprene, Polymer	Water and steam -40 to +140 °C	Petroleum solvents, coal, tar, solvents, aromatic hydrocarbons
EPM, EPDM	Ethylene propylene	Ethylene Propylene copolymer and terpolymer	UV- and weather resistant, Water, steam and brake Fluids -40 to +150 °C	Mineral oils and solvents, aromatic hydrocarbons
NBR	Nitrile	Butadiene, Acrylonitrile copolymer	Many hydrocarbons, fats, oils, greases, hydraulic fluids, chemicals -40 to +130 °C	Ozone, ketones, esters, aldehydes, chlorinated and nitro hydrocarbons
HNBR	Hydrogenated nitrile	Butadiene, Acrylonitrile copolymer	Similar to NBR but with improved chemical Resistance and higher service temperature	Ozone, ketones, esters, aldehydes, chlorinated and nitro hydrocarbons
CO, ECO	Epichlorohydrin	Epichlorohydrin Polymer and copolymer	Similar to nitrile with ozone resistance -40 to +145 °C	Ketones, esters, aldehydes, chlorinated and nitro hydrocarbons
CR	Neoprene	Chloroprene Polymer	Moderate chemicals and acids, ozone, oils, fats, greases, many oils, and solvents -30 to +120 °C	Strong oxidizing acids, esters, ketones, chlorinated, aromatic and nitro hydrocarbons
CSM	Hypalon®	Chlorosulfonated polyethylene	Similar to Neoprene with improved acid and ozone resistance -40 to +130 °C	Concentrated oxidizing acids, esters, ketones, chlorinated, aromatic and nitro hydrocarbons
CM, CPE	Tyrin®	Chlorinated polyethylene	Similar to Neoprene with improved acid and ozone resistance	Concentrated oxidizing acids, esters, ketones, chlorinated, aromatic and nitro hydrocarbons

ASTM	Material	Chemical Group	Generally Resistant to	Generally Attacked by
AU, EU	Urethane	Urethane polymer	Ozone, hydrocarbons, moderate chemicals, fats, oils, greases -20 to +120 °C	Concentrated acids, ketones, esters, chlorinated and nitro hydrocarbons
SI, VMQ	Silicone	Organic silicone polymer	Moderate or oxidizing chemicals, ozone, -80 to +200 °C	Many solvents, oils, concentrated acids, sodium hydroxide, fuel
FSI, FVMQ	Fluorosilicone	Fluorinated organic silicone polymer	Moderate or oxidizing chemicals, ozone, aromatic chlorinated solvents, bases -80 to +200 °C	Brake fluids, hydrazine, ketones
TFE/P	Tetrafluoro-ethylene-propylene	Fluorinated copoly-mer	Steam, amines and amine corrosion inhibitors, caustics, high pH media, wet sour gas, oil -190 to + 260	Aromatic hydrocarbons, chlorinated solvents, ethers, limited in low temperatures
ACM	Polyacrylate	Copolymer of acrylic ester and acrylic halide	Ozone, extreme pressure, lubricants, hot oils, petroleum solvents, animal and vegetable fats -20 to +160 °C	Water, alcohols, glycols alkali, esters, aromatic hydrocarbons, halogenated hydrocarbons, phenol
FKM #1	Fluoroelastomer	Standard fluorocarbon dipolymer 66% fluorine	All aliphatic, aromatic and halogenated Hydrocarbons, acids, animal and vegetable Oils -20 to +200 °C	Ketones, low molecular weight esters and alcohols and nitro-containing compounds
FKM #2	Fluoroelastomer	Standard or specialty type fluorocarbon. Typically, >66% fluorine	Same as FKM#1 Greater chemical Resistance -25 to +220 °C	Ketones, low molecular weight esters and nitro-containing compounds
PUR	Polyurethane	Polyether type	UV and weather resistant. Fuel, oil, and fat. -35 to + 80 °C	Acids, caustic solutions, hot water

Information above is intended as general guideline only, always test suitability for your application before use. Compounds regularly do not meet both upper and lower temperature limits. Temperature limits do not apply for dynamic applications.

The foregoing chemical resistance evaluation of various elastomers has been assembled by Jaeger Umwelt-Technik GmbH based largely on information from The Los Angeles Rubber Group, Inc. and the published literature of various polymer suppliers, compounders, and rubber manufacturers.

The criteria used for the ratings were primarily volume swell resistance, compression set resistance, and in addition, aging resistance. For the most part the ratings were arrived from specific data or general agreement of the above sources. When no data or agreement was found, the ratings were arrived at by theory and analogy. In some cases they are the considered opinion of experienced compounders. We cannot guarantee their accuracy nor assume responsibility for their use.

Several factors must always be considered when using a rubber part in service. The most important as we see them are:

- **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 temperatures.
- **Conditions of service**. A compound that swells badly might still function well as a static seal yet fail in a dynamic application.
- **The grade of polymer.** Many types of polymers are available in different grades that vary greatly in chemical resistance.
- **The compound itself.** Compounds designed for other outstanding properties may be poorer in performance in a chemical than one designed especially for fluid resistance.

In light of these factors, it is always best to test! For additional information contact us at +49-5121-9138-900 or refer to www.jaeger-envirotech.com