Chemical Resistance Data For Elastomers

This section has been complied to provide general chemical resistance guidance for listed O-ring and gasket elastomer sealing materials. This information is derived from commercially available industry and vendor sources. These recommendations should be used as a guideline only.

Disclaimer of Liability

All statements made herein are offered in good faith and believed to be accurate at the time of publication. The chemical resistance information provided is offered without any warranty, expressed or implied by Spears® Manufacturing Company . There are many variables regarding elastomer application in chemical service that are beyond our control. Compliance with all applicable federal, state and local laws and regulations is mandatory. Chemical recommendations are a guidelines only and are not a guarantee of chemical resistance. Final application suitability is the responsibility of the end-user.

Important: The following chemical resistance data is based primarily on elastomeric material test specimens that have been immersed in the chemical, and to a lesser degree, on field-experience. Detailed information on the test conditions (such as exposure time), and on test results (such as change in weight, change in volume, and change in strength) is not available.

In some cases, combinations of chemicals may have a synergistic effect on an elastomeric material where the individual chemicals do not. It cannot be assumed that an individual chemical's lack of effect (compatibility) would apply for combinations that include several chemicals in a miscible state. When the possible combined effect of several chemicals is unknown, the material should be tested in the complete chemical mixture(s) in question. **NOTE:** To ensure compatibility with a specific chemical not listed herein a field immersion test is recommended for the specific chemical.

The following information is required when specifying an elastomeric seal material in a given application:

- Identification of all fluids that will come in contact with the elastomeric seal.
- The mechanical pressure (dynamic, static) and temperature-time requirements.
- Generic name of the chemical being conveyed through the piping system. A Chemical Abstract Number (CAS#) is ideal.
- Concentration percentage (%) of the chemical in question.

Elastomer material types presented in this document

There are a variety of elastomeric materials available in industry. This guide lists the most common elastomers used in combination with Spears® PVC & CPVC thermoplastic products requiring a sealing material.

Elastomeric Material Types

Trade Name	Description	ASTM Code	Temperature Range
Buna-N (Nitrile)	Acrylonitrile	NBR	-65° F to 275° F (-54° C to 135° C)
EPDM	Ethylene Propylene Diene	EPDM	-65° F to 300° F (-65° C to 149° C)
FKM	Fluoroelastomer	FKM	-15° F to 400° F (-29° C to 204° C)
Neoprene	PolyChloroprene	CR	-50° F to 250° F (-46° C to 121° C)

Material Compatibility Key

COMPOUND COMPATIBILITY RATING

1 — Satisfactory
2 — Fair (usually OK for static seal)
3 — Doubtful (sometimes OK for static seal)
4 — Unsatisfactory
X — Insufficient Data

Chemical Resistance Data For Elastomers

CHEMICAL REAGENT	NBR (Buna-N)	EPDM	FKM	CR (Neoprene)
Acetaldehyde	3	2	4	3
Acetamide	1	1	3	1
Acetic Acid, 30%	X	1	X	X
Acetic Acid, 5%	2	1	1	1
Acetic Acid, Glacial	2	1	2	4
Acetic Anhydride	3	2	4	2
Aceoacetic Acid	3	1	3	1
Acetone	4	1	4	4
Acetyl Chloride	4	4	1	4
Acetylene	1	1	1	2
Acrylic Acid	2	4	1	4
Adipic Acid	1	2	X	X
Alkyl Acetone	3	1	3	1
Alkyl Benzene	2	4	1	4
Alums-NH_3 - Cr -K (aq)	1	1	4	1
Aluminum Acetate	2	1	4	2
Aluminum Bromide	1	1	1	1
Aluminum Chloride	1	1	1	1
Aluminum Fluoride	1	1	1	1
Aluminum Hydroxide	2	1	2	X
Aluminum Nitrate	1	1	1	1
Aluminum Sulfate	1	1	1	1
Amines Mixed	4	2	4	2
Ammonia (Gas, Cold)	1	1	4	1
Ammonia (Gas, Hot)	4	2	4	2
Ammonia, Liquid (Anhydrous)	2	1	4	1
Ammonium Acetate	3	1	3	1
Ammonium Benzoate	3	1	3	1
Ammonium Carbonate	4	1	1	1
Ammonium Chloride, 2N	1	1	1	1
Ammonium Dichromate	3	1	3	1
Ammonium Fluoride	1	1	1	1
Ammonium Formate	3	1	3	1
Ammonium Hydroxide, 3 Molar	1	1	3	1
Ammonium Hydroxide, Concentrated	4	1	4	1
Ammonium Nitrate, 2N	1	1	X	1
Ammonium Persulfate Solution	4	1	X	X
Ammonium Persulfate, 10%	4	1	X	1
Ammonium Phosphate	1	1	4	1
Ammonium Sulfate	1	1	4	1
Ammonium Sulfide	1	1	4	1
Ammonium Thiocyanate	3	1	3	1
Ammonium Thiosulfate	3	1	3	1
Amyl Acetate	1	3	4	4
Amyl Alcohol	2	1	2	2
Amyl Chloride	X	4	1	4
Aniline	4	2	3	4
Aniline Dyes	4	2	2	2
Aniline Hydrochloride	2	2	2	4
Antimony Pentachloride	1	4	1	2
Antimony Tribromide	1	4	1	2
Antimony Trichloride	1	4	1	2
Aqua Regia	4	3	2	4

CHEMICAL REAGENT	NBR (Buna-N)	EPDM	FKM	CR (Neoprene)
Arsenic Acid	1	1	1	1
Arsenic Trioxide	1	4	4	1
Barium Carbonate	3	1	3	1
Barium Chloride	1	1	1	1
Barium Hydroxide	1	1	1	1
Barium Nitrate	3	1	3	1
Barium Sulfate	1	1	1	1
Barium Sulfide	1	1	1	1
Beer	1	1	1	1
Beet Sugar Liquids	1	1	1	1
Benzaldehyde	4	1	4	4
Benzamide	2	4	1	4
Benzene	4	4	1	4
Benzoic Acid	4	4	1	4
Benzyl Alcohol	4	2	1	2
Benzyl Chloride	4	4	1	4
Bismuth Carbonate	3	1	3	1
Black Liquor	2	1	1	1
Bleach Solutions	X	1	1	X
Borax	2	1	1	4
Boric Acid	1	1	1	1
Brine	1	1	1	X
Bromic Acid	3	1	3	1
Bromine Liquid	4	4	1	4
Bromine Water	4	2	1	4
Bromobenzene	4	4	1	4
Butadiene Monomer	4	4	1	4
Butane	1	4	1	1
Butyl Alcohol	1	2	1	1
Butyl Benzoate	3	1	3	1
Butyl Acetate or n-Butyl Acetate	4	2	4	4
Butyl Carbitol	4	1	3	3
Butyl Mercaptan (Tertiary)	4	4	1	4
Butyl Stearate	2	4	1	4
Butylene	2	4	1	3
Butyl Cellosolve	3	1	4	1
Butyric Acid	4	2	2	4
Cadmium Acetate	2	1	4	1
Cadmium Chloride	3	1	3	1
Cadmium Cyanide	3	1	3	1
Cadmium Sulfate	3	1	3	1
Calcium Acetate	2	1	4	2
Calcium Bisulfide	3	1	3	1
Calcium Bisulfite	2	1	2	2
Calcium Carbonate	1	1	1	1
Calcium Chlorate	3	1	3	1
Calcium Chloride	1	1	1	1
Calcium Hydroxide	1	1	1	1
Calcium Hypochlorite	2	1	1	2
Calcium Nitrate	1	1	1	1
Calcium Oxide	1	1	1	1
Calcium Sulfate	3	1	3	1
Camphor (Crystals)	2	4	1	4

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CHEMICAL REAGENT	NBR (Buna-N)	EPDM	FKM	CR (Neoprene)
Cane Sugar Liquors	1	1	1	1
Caprolactam	1	4	1	2
Carbitol	2	2	2	2
Carbon Dioxide	1	1	1	1
Carbon Disulfide	4	4	1	4
Carbon Fluorides	2	4	1	4
Carbon Monoxide	1	1	1	2
Carbon Tetrachloride	2	4	1	4
Carbolic Acid (Phenol)	4	2	1	4
Carbonic Acid	2	1	1	1
Castor oil	1	2	1	1
Caustic Potash	3	1	3	1
Caustic Soda (Sodium Hydroxide)	3	1	3	1
Cellosolve	4	2	4	4
Cellosolve Acetate	4	2	4	4
Cellosolve Butyl	4	2	4	4
Chloric Acid	3	1	3	1
Chorinated Solvents, Dry	4	4	1	4
Chorinated Solvents, Wet	4	4	1	4
Chlorine Dry	2	4	1	4
Chlorine Water	3	2	1	4
Chlorinated Solvents, Wet	4	4	1	4
Chlorinated Water (Hypochlorite)	3	2	1	4
Chlorine (Dry)	2	4	1	4
Chlorine Dioxide 8% Cl as $NaOClO_2$ in solution	4	4	1	4
Chlorine Gas (Dry)	4	4	1	--
Chlorine Gas (Wet)	4	3	2	--
Chloroacetic Acid	4	2	4	4
Chloroacetone	4	1	4	4
Chlorobenzene	4	4	1	4
Chloroform	4	4	1	4
Chloropicrin	2	4	1	4
Chlorosulfonic Acid	4	4	4	4
Chlorox Bleach Solution	2	2	1	1
Chrome Alum	1	1	1	1
Chromic Acid	4	2	1	4
Chromic Oxide	4	2	1	4
Chromium Potassium Sulfate (Alum)	2	2	1	X
Citric Acid	1	1	1	1
Coconut Oil	1	3	1	3
Copper Acetate	2	2	1	4
Copper Carbonate	3	1	3	1
Copper Chloride	1	1	1	2
Copper Cyanide	1	1	1	1
Copper Nitrate	2	2	1	X
Copper Sulfate	1	1	1	1
Corn Oil	1	3	1	3
Cottonseed Oil	1	3	1	3
Creosote, Coal Tar	1	4	1	2
Cresylic Acid	4	4	1	4
Crotonaldehyde	2	4	1	4

CHEMICAL REAGENT	NBR (Buna-N)	EPDM	FKM	CR (Neoprene)
Crude Oil	2	4	1	4
Cumaldehyde	2	4	1	4
Cumene	2	4	1	4
Cupric Sulfate	2	2	1	X
Cutting Oil	1	4	1	2
Cyclohexane	1	4	1	3
Cyclohexanol	1	4	1	2
Cyclohexanone	4	2	4	4
Cyclohexene	2	4	1	4
Cyclohexylamine	1	4	1	2
Cyclohexylamine Laurate	1	4	1	2
Cyclopentadiene	2	4	1	4
Cyclopentane	1	4	1	3
Cyclopolyolefins	1	4	1	3
Cymene or p-Cymene	4	4	1	4
D.D.T. (Dichlorodiphenyltrichloroethane)	2	4	1	4
Denatured Alcohol	1	1	1	1
Detergents, Water Solution	1	1	1	2
Developing Solutions (Photo)	1	2	1	1
Dextrin	1	4	1	2
Dextrose	3	1	3	1
Deionized Water (DI)	2	1	2	1
Diacetone Alcohol	4	1	4	2
Dibutyl Phthalate	4	2	3	4
Dibutyl Sebacate	4	2	2	4
Dichlorobenzene or o-Dichlorobenzene	4	4	1	4
Dichloroethylene	2	4	1	4
Diesel Oil	1	4	1	3
Diethyl Ether	4	4	4	3
Diethylamine	2	1	4	1
Diethylene Glycol	1	1	1	1
Dimethyl Hydrazine	3	1	3	1
Dimethylamine (DMA)	2	1	4	2
Dimethylformamide	2	1	4	3
Dioctylphthalate	4	2	2	4
Dioxane	4	2	4	4
Dioxolane	4	2	4	4
Distilled Water	1	1	1	2
Dry Cleaning Fluids	3	4	1	4
Ethyl Ester (ethyl acrylate)	4	2	4	4
Epsom Salt	1	1	1	1
Ethane	1	4	1	2
Ethanol	3	1	3	1
Ethanol Amine	2	1	4	2
Ethers	4	3	3	4
Ethyl Acetate - Organic Ester	4	2	4	4
Ethyl Acrylate	4	2	4	4
Ethyl Alcohol	3	1	3	1
Ethyl Chloride	1	3	1	4
Ethyl Chlorocarbonate	4	2	1	4
Ethyl Ether	4	3	4	4

Suitable for Oil-Free air handling to 25 psi, not for distribution of compressed air or gas

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CHEMICAL REAGENT	NBR (Buna-N)	EPDM	FKM	CR (Neoprene)
Ethylene Chloride	4	4	2	4
Ethylene Chlorohydrin	4	2	1	2
Ethylene Diamine	1	1	4	1
Ethylene Dichloride	4	3	1	4
Ethylene Glycol	1	1	1	1
Ethylene Oxide	4	3	4	4
Fatty Acids	2	3	1	2
Ferric Acetate	3	1	3	1
Ferric Chloride	1	1	1	2
Ferric Hydroxide	3	1	3	1
Ferric Nitrate	1	1	1	1
Ferric Sulfate	1	1	1	1
Ferric Chloride	1	1	1	2
Ferric Hydroxide	3	1	3	1
Ferric Nitrate	1	1	1	1
Ferric Sulfate	1	1	1	1
Fish Oil	2	4	1	4
Fluorinated Cyclic Ethers	X	1	X	X
Fluoroboric Acid	1	1	X	X
Fluorosilisic Acid	1	2	2	1
Formaldehyde	3	2	4	3
Formic Acid	X	1	4	1
Freon 11	4	4	2	4
Freon 113	1	4	2	1
Freon 114	1	1	1	1
Freon 12	2	3	3	1
Freon 21	4	4	4	3
Freon 22 (Chlorodifluoroethane)	4	3	4	1
Freon 31	4	1	4	1
Freon 32	1	1	4	1
Freon 502	2	1	2	1
Gallic Acid	2	2	1	2
Gasoline	1	4	1	4
Gelatin	1	1	1	1
Girling Brake Fluid	3	1	4	2
Gluconic Acid	3	1	3	1
Glucose	1	1	1	1
Glycerine (Glycerol)	1	1	1	1
Glycolic Acid	3	1	3	1
Glycols	1	1	1	1
Glycoxylic Acid	3	1	3	1
Green Sulfate Liquor	2	1	1	2
Halowax Oil	4	4	1	4
Heptane or n-Heptane	1	4	1	2
Heptanoic Acid	1	4	1	2
Hexane or n-Hexane	1	4	1	2
Hexyl Alcohol	1	3	1	2
Hydrazine	2	1	4	2
Hydrochloric Acid	4	1	1	2
Hydrochloric Acid 40%	4	1	1	2
Hydrochloric Acid Concentrated (Room Temp)	2	2	1	X

CHEMICAL REAGENT	NBR (Buna-N)	EPDM	FKM	CR (Neoprene)
Hydrochloric Acid to 158° F	2	2	1	X
Hydrocyanic Acid	2	1	1	2
Hydrofluoric Acid (conc.) Hot	4	4	3	X
Hydrofluoric Acid (conc.) Cold	4	3	1	4
Hydrofluoric Acid (Anhydrous)	4	3	4	4
Hydrofluorsilicic Acid	2	1	1	2
Hydrogen Fluoride (Anhydrous)	4	1	4	X
Hydrogen Peroxide	2	1	1	1
Hydrogen Peroxide 90%	4	3	1	4
Hydrogen Sulfide, Dry, Cold	1	1	4	1
Hydrogen Sulfide, Dry, Hot	4	1	4	2
Hydrogen Sulfide, Wet, Cold	4	1	4	1
Hydrogen Sulfide, Wet, Hot	4	1	4	2
Hydroquinone	3	2	2	4
Hypochlorous Acid	4	2	1	4
Iodine	2	2	1	4
Isopropanol	2	1	1	2
Isopropyl Acetate	4	2	4	4
Kerosene (Similar to RP-1 and JP-1)	1	4	1	2
Lactic Acid Cold	1	1	1	1
Lactic Acid Hot	4	4	1	4
Lard Animal Fat	1	2	1	2
Lauric Acid	1	4	1	2
Lavender Oil	2	4	1	4
Lead Acetate	2	1	4	2
Lead Chloride	3	1	3	1
Lead Nitrate	1	1	X	1
Lead Sulfamate	2	1	1	1
Lindol, Hydraulic Fluid (Phosphate ester type)	4	1	2	4
Linoleic Acid	2	4	2	2
Linseed Oil	1	3	1	3
Liquid Petroleum Gas (LPG)	1	4	1	2
Liquimoly	1	4	1	2
Lithium Bromide (Brine)	3	1	3	1
Lithium Carbonate	3	1	3	1
Lithium Chloride	3	1	3	1
Lithium Hydroxide	3	1	3	1
Lithium Salicylate	3	1	3	1
Lubricating Oils, (Crude & Refined)	2	4	1	3
Lubricating Oils, (Synthetic Base)	X	X	1	4
Lubricating Oils, Di-Ester	2	4	1	3
Lye Solutions	2	1	2	2
Magnesium Chloride	1	1	1	1
Magnesium Hydroxide	2	1	1	2
Magnesium Salts	1	1	1	1
Magnesium Sulfite and Sulfate	1	1	1	1
Malathion	2	4	1	X
Maleic Acid	4	4	1	4
Manganese Chloride	3	1	3	1
Manganese Sulfate	3	1	3	1
Mercuric Acetate	3	1	3	1

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CHEMICAL REAGENT	NBR (Buna-N)	EPDM	FKM	CR (Neoprene)
Mercuric Chloride	1	1	1	1
Mercuric Cyanide	3	1	3	1
Mercuric Sulfate	3	1	3	1
Mercurous Nitrate	3	1	3	1
Mercury	1	1	1	1
Mercury Chloride	3	1	3	1
Methane	1	4	1	2
Methanol	4	1	4	1
Methoxyethanol (DGMMA)	3	1	3	1
Methyl Acetate	4	2	4	2
Methyl Chloride	4	3	1	4
Methyl Ethyl Ketone (MEK)	4	1	4	4
Methyl Formate	4	2	X	2
Methyl Iso-Butyl Ketone (MIBK)	4	3	4	4
Methyl Methacrylate	4	4	4	4
Methyl Salicylate	4	2	X	4
Methylamine	3	1	3	1
Methylene Bromide	X	X	1	4
Napthalene	4	4	1	4
Naptha	2	4	1	4
Nickel Acetate	2	1	4	2
Nickel Ammonium Sulfate	3	1	3	1
Nickel Chloride	1	1	1	2
Nickel Cyanide	3	1	3	1
Nickel Nitrate	3	1	3	1
Nickel Sulfate	1	1	1	1
Nitric Acid, Red Fuming	4	4	2	4
Nitric Acid (0 – 50%)	4	2	1	X
Nitric Acid (50 – 100%)	4	4	3	X
Nitrous Acid	3	1	3	1
Octyl Acetate	3	1	3	1
Oleic Acid	3	4	2	4
Oleum (Fuming Sulfuric Acid)	4	4	1	4
Olive Oil	1	2	1	2
Ozonated Deionized Water	3	1	3	1
Ozone	4	1	1	2
Petroleum Oils (Crude)	1	4	1	2
Phenol	4	4	1	4
Phenylhydrazine	4	2	1	4
Phenylhydrazine Hydrochloride	3	1	3	1
Phenylmercuric Acetate	3	1	3	1
Phorone	4	3	4	4
Phosphoric Acid, Concentrated Room Temp	2	1	1	2
Phosphoric Acid Concentrated to 158° F	4	1	1	3
Phosphorous Trichloride	4	1	1	4
Phosphorous Trichloride Acid	4	1	1	4
Phthalic Acid	3	1	3	1
Phthalic Anhydride	3	1	3	1
Pickling Solution	4	3	2	4
Picric Acid (aq)	1	1	1	1
Pine Oil	4	4	1	4

CHEMICAL REAGENT	NBR (Buna-N)	EPDM	FKM	CR (Neoprene)
Plating Solutions: Copper	1	1	1	X
Plating Solutions: Gold	1	1	1	X
Plating Solutions: Indium	1	1	1	X
Plating Solutions: Lead	1	1	1	X
Plating Solutions: Nickel	1	1	1	X
Plating Solutions: Silver	1	1	1	X
Plating Solutions: Tin	1	1	1	X
Plating Solutions: Zinc	1	1	1	X
Polyethylene Glycol	2	1	3	2
Polyglycerol	3	1	3	1
Potassium Acetate	2	1	4	2
Potassium Alum	3	1	3	1
Potassium Aluminum Sulfate	3	1	3	1
Potassium Bicarbonate	3	1	3	1
Potassium Bichromate	3	1	3	1
Potassium Bisulfate	3	1	3	1
Potassium Bisulfite	3	1	3	1
Potassium Bitartrate	3	1	3	1
Potassium Bromide	3	1	3	1
Potassium Carbonate	3	1	3	1
Potassium Chlorate	3	1	3	1
Potassium Chloride	1	1	1	1
Potassium Chromate	3	1	3	1
Potassium Cyanate	3	1	3	1
Potassium Cyanide	1	1	1	1
Potassium Dichromate	1	1	1	1
Potassium Diphosphate	3	1	3	1
Potassium Ferricyanide	3	1	3	1
Potassium Fluoride	3	1	3	1
Potassium Glucocyanate	3	1	3	1
Potassium Hydroxide 50%	2	1	4	2
Potassium Hypochlorite	3	1	3	1
Potassium Iodide	3	1	3	1
Potassium Nitrate	1	1	1	1
Potassium Nitrite	3	1	3	1
Potassium Perchlorate	3	1	3	1
Potassium Permanganate	3	1	3	1
Potassium Persulfate	3	1	3	1
Potassium Phosphate (Acid)	3	1	3	1
Potassium Stearate	3	1	3	1
Potassium Sulfate	1	1	1	1
Potassium Sulfide	3	1	3	1
Potassium Sulfite	3	1	3	1
Potassium Tartrate	3	1	3	1
Propane	1	4	1	2
Propionaldehyde	3	1	3	1
Propionic Acid	3	1	3	1
Propyl Acetate	4	2	4	4
Propyl Alcohol	1	1	1	1
Propionic Acid	3	1	3	1
Propylene Chloride	X	X	1	4

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CHEMICAL REAGENT	NBR (Buna-N)	EPDM	FKM	CR (Neoprene)
Propylene Dichloride	X	X	1	4
Propylene Glycol	3	1	3	1
Propylene Imine	X	X	1	4
Propylene Oxide	4	2	4	4
Pyridine	4	2	1	4
Pyrogallic Acid	2	4	1	4
Salicylic Acid	2	1	1	X
Selenic Acid	3	1	3	1
Sea (Salt) Water	1	1	1	2
Selenic Acid	3	1	3	1
Sewage	1	1	1	2
Silicone Grease	1	1	1	1
Silicone Oil	1	1	1	1
Silver Chloride	3	1	3	1
Silver Cyanide	3	1	3	1
Silver Nitrate	2	1	1	1
Silver Sulfate	3	1	3	1
Soap Solutions	1	1	1	2
Sodium Acetate	2	1	4	2
Sodium Aluminate	3	1	3	1
Sodium Arsenate	3	1	3	1
Sodium Benzoate	3	1	3	1
Sodium Bicarbonate (Baking Soda)	1	1	1	1
Sodium Bichromate	3	1	3	1
Sodium Bisulfate	1	1	1	1
Sodium Bisulfite	1	1	1	1
Sodium Borate	1	1	1	1
Sodium Bromide	3	1	3	1
Sodium Carbonate (Soda Ash)	1	1	1	1
Sodium Chlorate	3	1	3	1
Sodium Chloride	1	1	1	1
Sodium Chlorite	3	1	3	1
Sodium Chromate	3	1	3	1
Sodium Cyanide	1	1	X	1
Sodium Ferricyanide	3	1	3	1
Sodium Fluoride	3	1	3	1
Sodium Fluorosilicate	3	1	3	1
Sodium Hydroxide 3 Molar	2	1	2	2
Sodium Hypochlorite	2	1	1	2
Sodium Hypophosphate	3	1	3	1
Sodium Iodide	3	1	3	1
Sodium Metaphosphate	1	1	1	2
Sodium Nitrate	2	1	X	2
Sodium Perborate	2	1	1	2
Sodium Perchlorate	3	1	3	1
Sodium Peroxide	2	1	1	2
Sodium Silicate	1	1	1	1
Sodium Sulfate	1	1	1	1
Sodium Sulfide	1	1	1	1
Sodium Sulfite	1	1	1	1
Sodium Thiosulfate	2	1	1	1

CHEMICAL REAGENT	NBR (Buna-N)	EPDM	FKM	CR (Neoprene)
Sodium Triphosphate	3	1	3	1
Sour Crude Oil	3	4	1	4
Soybean Oil	1	3	1	3
Stannic Chloride	1	1	1	1
Stannous Chloride 15%	1	1	1	1
Stannous Sulfate	3	1	3	1
Stearic Acid	2	2	X	2
Stoddard Solvent	1	4	1	2
Styrene (Monomer)	4	4	2	4
Succinic Acid	3	1	3	1
Sucrose Solutions	1	1	1	2
Sulfamic Acid	3	1	3	1
Sulfur	4	1	1	1
Sulfur Dioxide Dry	4	1	4	4
Sulfur Dioxide Wet	4	1	4	2
Sulfur Trioxide, Dry	4	2	1	4
Sulfuric Acid 3 Molar to 158° F	2	1	1	2
Sulfuric Acid, Concentrated Room Temperature	4	3	1	4
Sulfuric Acid, Concentrated to 158° F	4	4	1	4
Sulfuric Acid (20% Oleum)	3	1	3	1
Sulfuric Chlorohydrin(Chlorosulfonic Acid)	3	1	3	1
Sulfuric Acid Diluted	3	2	1	2
Sulfurous Acid	2	2	1	2
Surfuryl Chloride	3	1	3	1
Tallow	1	4	1	2
Tannic Acid 10%	1	1	1	1
Tartaric Acid	1	2	1	2
Terpineol	2	3	1	4
Terpinyl Acetate	2	4	1	4
Teriary Butyl Mercaptin	4	4	1	X
Tetraethyl Lead	2	4	1	2
Thionyl Chloride	2	4	1	4
Titanium Tetrachloride	2	4	1	4
Toluol or Toluene	4	4	1	4
Transformer Oil	1	4	1	2
Tributyl Citrate	3	1	3	1
Tributyl Phosphate	4	1	4	4
Trichloroacetic Acid	2	2	3	4
Trichloroethylene	3	4	1	4
Trichloroethylene	3	4	1	4
Triethanolamine	3	3	X	3
Trimethyl Propane	2	X	2	2
Trimethylamine	3	1	3	1
Trisodium Phosphate	3	1	3	1
Turpentine	1	4	1	4
Urea	2	2	2	2
Uric Acid	3	1	3	1
Urine	1	1	1	X
Vaseline	2	X	2	X
Vegetable Oils	1	3	1	3
Vinegar	2	2	3	2

Chemical Resistance Data For Elastomers

CHEMICAL REAGENT	NBR (Buna-N)	EPDM	FKM	CR (Neoprene)
Vinyl Acetate	2	1	3	2
Water: Acid Mine	1	1	1	3
Water: Deionized	2	2	1	1
Water: Demineralized	1	1	1	1
Water: Distilled	1	1	1	1
Water: Salt	1	1	1	2
Water: Fresh	1	1	1	1
Water: Swimming Pool	X	1	X	X
Whiskey	2	1	1	1
White Liquor	1	1	1	1
Wines	1	1	1	1
Xylene	4	4	1	4
Xylol	4	4	1	4
Zinc Acetate	2	1	4	2
Zinc Carbonate	1	1	1	1
Zinc Chloride	1	1	1	1
Zinc Nitrate	1	1	1	X
Zinc Sulfate	1	1	1	1