CHEMICAL RESISTANCE GUIDE

INDUSTRIAL CHEMICALS

The following pages are offered as a general guide and indication of the suitability of various elastomers and plastics in use today with a wide range of industrial chemicals. The ratings are based, for the most part, on published literature of various polymer suppliers and rubber manufacturers but, in some cases, they are considered the opinion of experienced compounders. We cannot guarantee their accuracy nor assume responsibility for use thereof. Several factors must always be considered in using a rubber or plastic part in service. The most important as we see them are:

1. ***The Temperature of Service:*** Higher temperatures increase the effect of chemicals on polymers. The increase varies with the polymer and the chemical. A compound quite stable at room temperature might fail miserably at elevated temperature.

2. ***Conditions of Service:*** A compound that swells badly might still function well as a static seal yet fail in any dynamic application.

3. ***The Grade of Polymer:*** Many types of polymers are available in different grades that vary greatly in chemical resistance.

4. ***The Compound Itself:*** Compounds designed with certain outstanding properties may be poorer in performance with a chemical than one designed especially for fluid resistance.

5. ***Caution:*** It is not recommended that PULSAtron®, CHEM-TECH or Mec-O-Matic pumps be used to handle **flammable liquids**.

In light of the above factors, it is always best to test.

PULSAFEEDER®

A Unit of IDEX Corporation

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Fax: 941-575-4085

A - Excellent
B - Good
C - Good to 80° F
D - Moderate effect
Use under limited conditions
E - Not Recommended
F - Autocatalytic
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CHEMICAL	PVC	PVDF	GFPPL	Polyethylene	SAN	Teflon	316SS	Norprene	Ceramic	Hypalon	Viton
ACETIC ACID, 5%	B	A	A	A	A	A	A	A	A	A	E
ACETIC ACID, 80%	E	A	C	B	E	A	A	B	A	E	E
ACETIC ACID, GLACIAL	E	A	C	B	E	A	A	B	A	E	E
ACETIC ANHYDRIDE	E	E	A	X	E	A	D	A	A	A	E
ALUMINUM CHLORIDE	A	A	A	A	A	A	D	A	A	A	A
ALUMINUM FLOURIDE	A	A	A	X	A	A	C	A	X	A	A
ALUMINUM SULFATE	A	A	A	A	A	A	D	A	A	A	A
AMMONIA, 10%	A	A	A	B	A	A	A	A	A	A	A
AMMONIUM CHLORIDE	A	A	A	A	A	A	D	A	A	A	A
AMMONIUM NITRATE	A	A	A	X	A	A	A	A	A	A	A
AMMONIUM PERSULFATE	A	A	A	X	A	A	C	A	A	A	A
AMMONIUM PHOSPHATE	A	A	A	X	A	A	A	A	A	A	A
AMMONIUM SULFATE	A	A	A	A	A	A	B	A	A	B	B
AMYL ALCOHOL	B	A	X	X	E	A	A	E	A	B	B
ANILINE	E	A	C	D	E	A	A	E	A	B	A
AGUA REGIA	E	A	X	D	E	A	E	E	A	B	A
ARSENIC ACID	A	A	A	X	A	A	X	A	A	X	A
BARIUM CHLORIDE	A	A	A	X	A	A	C	A	A	B	B
BARIUM SULFATE	A	A	A	X	A	A	B	A	A	A	A
BEER	A	A	A	B	A	A	A	A	A	A	A
BENZALDEHYDE	E	A	C	X	E	A	A	E	A	E	E
BENZOIC ACID	A	A	A	A	C	A	B	B	A	E	A
BORAX (SODIUM BORATE)	A	A	A	D	X	A	A	A	A	B	B
BORIC ACID	A	A	A	A	A	A	A	A	A	B	B
BROMINE WATER	C	A	E	X	X	A	E	E	A	E	A
BUTYRIC ACID	D	A	A	X	D	A	B	B	A	E	D
CALCIUM BISULFITE	A	A	A	A	X	A	B	A	A	A	A
CALCIUM CHLORIDE	A	A	A	A	A	A	C	A	A	A	A
CALCIUM HYPOCHLORITE	A	A	C	A	A	A	D	A	A	A	D
CALCIUM SULFATE	A	A	A	X	A	A	B	A	A	A	A
CARBON TETRACHLORIDE	C	A	C	E	X	A	B	E	A	E	A
CARBONIC ACID	A	A	A	X	A	A	B	A	A	B	B
CHLOROACETIC ACID	A	A	D	X	E	A	E	B	A	A	A
CHLOROFORM	E	A	E	X	E	A	A	E	A	E	D
CHLOROSULFONIC ACID	C	E	E	E	E	A	D	E	A	X	E
CHROMIC ACID, 10%	A	A	A	A	A	A	B	A	A	A	A
CHROMIC ACID, 30%	A	A	A	A	A	A	B	D	A	A	A
CHROMIC ACID, 50%	E	A	A	B	D	A	C	D	A	A	A
CITRIC ACID	A	A	A	A	A	A	B	A	A	A	A
COPPER CHLORIDE	A	A	A	B	A	A	B	A	A	B	B
COPPER CYANIDE	A	A	A	X	A	A	A	A	A	X	B
COPPER NITRATE	A	A	A	X	A	A	A	A	A	B	B
COPPER SULFATE	A	A	A	A	A	A	B	D	A	B	B
CRESYLIC ACID	B	A	X	X	X	A	A	B	A	X	A
ETHYL CHLORIDE	E	A	E	X	E	A	A	C	A	D	A
ETHYLENE GLYCOL	A	A	A	X	A	A	B	A	A	B	B
FATTY ACIDS	A	A	A	E	D	A	A	C	A	X	B
FERRIC CHLORIDE	A	A	A	A	A	A	E	A	A	B	B

Material Code - PVC = Polyvinyl Chloride, SAN = Styrene-Acrylonitrile, GFPPL = Glass-filled Polypropylene, PVDF = polyvinylidene Flouride

A - Excellent
B - Good
C - Good to 80° F
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FERRIC NITRATE	A	A	A	E	A	A	B	A	A	B	B
FERRIC SULFATE	A	A	A	E	A	A	A	A	A	B	B
FERROUS CHLORIDE	A	A	A	A	A	A	E	A	A	B	B
FERROUS SULFATE	A	A	A	B	A	A	D	A	A	B	B
FLUOBORIC ACID	A	A	A	E	B	A	B	E	E	B	X
FLUOSILICIC ACID	A	A	A	A	B	A	B	A	E	X	B
FORMALDEHYDE, 40%	B	A	A	B	A	A	A	E	A	B	E
FORMIC ACID	C	A	A	B	E	A	B	B	A	B	E
FREON 12 (WET)	C	B	A	X	X	A	E	A	A	E	A
FURFURAL	E	B	E	X	X	A	B	E	A	X	E
GLYCERINE (GLYCEROL)	A	A	A	X	A	A	A	A	A	B	B
HYDROBROMIC ACID, 20%	A	A	A	B	X	A	E	E	C	A	A
HYDROCHLORIC ACID, 0-25%	A	A	A	B	A	A	E	A	A	B	A
HYDROCHLORIC ACID, 25-37%	A	A	A	B	B	A	E	B	A	D	A
HYDROFLUORIC ACID, 10%	C	A	A	A	B	A	C	E	E	A	A
HYDROFLUORIC ACID, 30%	C	A	B	D	E	A	C	E	E	A	A
HYDROFLUORIC ACID, 60%	D	A	B	E	E	A	C	E	E	D	A
HYDROFLUOSILICIC ACID, 20%	A	A	A	A	D	A	B	B	E	X	B
HYDROGEN PEROXIDE, 30%	A	A	A	B	B	A	B	A	X	A	A
HYDROGEN PEROXIDE, 50%	B	A	X	B	X	A	B	A	X	A	A
HYDROGEN PEROXIDE, 90%	E	A	X	D	E	A	B	B	X	D	A
HYDROGEN SULFIDE, AQ. SOL.	C	A	A	X	B	A	B	A	X	B	B
KETONES	E	A	E	X	E	A	A	E	A	E	E
LACTIC ACID	B	A	A	A	E	A	B	A	A	B	B
LEAD ACETATE	A	A	A	X	A	A	A	A	A	E	A
LUBRICATING OIL	C	B	C	D	A	A	A	E	A	D	A
MAGNESIUM CHLORIDE	A	A	A	A	A	A	B	A	A	A	A
MAGNESIUM NITRATE	A	A	A	X	A	A	A	A	A	A	A
MAGNESIUM SULFATE	A	A	A	A	A	A	A	A	A	A	A
MALEIC ACID	A	A	A	X	E	A	B	E	A	A	A
METHYLENE CHLORIDE	E	B	E	X	E	A	A	X	A	E	D
NAPHTHALENE	E	A	C	X	E	A	A	E	A	E	D
NICKEL CHLORIDE	A	A	A	A	A	A	B	A	A	B	B
NICKEL SULFATE	A	A	A	A	A	A	B	A	A	B	B
NITRIC ACID, 10%	A	A	A	A	C	A	C	A	A	A	A
NITRIC ACID, 20%	A	A	A	B	E	A	B	A	A	A	A
NITRIC ACID, 50%	A	A	C	C	E	A	C	E	A	D	A
NITRIC ACID, ANHYDROUS	E	B	E	E	E	A	B	E	A	E	B
NITROBENZENE	E	B	C	X	E	A	B	E	A	E	A
OILS AND FATS	A	A	A	X	X	A	A	X	A	X	A
OLEIC ACID	A	A	C	E	E	A	B	C	A	D	D
OLEUM, 25%	E	E	X	E	E	A	X	A	A	E	A
OXALIC ACID	A	A	A	B	D	A	C	B	A	A	A
PHENOL	C	A	B	C	A	A	B	A	A	E	A
PHOSPHORIC ACID, 0-50%	A	A	A	A	B	A	B	A	A	A	B
PHOSPHORIC ACID, 50-100%	B	A	B	B	D	A	B	A	A	A	B
POTASSIUM BICARBONATE	A	A	A	B	A	A	B	A	A	B	B
POTASSIUM BROMIDE	A	A	A	B	A	A	B	A	A	B	B

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POTASSIUM CARBONATE	A	A	A	B	A	A	B	A	A	B	B
POTASSIUM CHLORATE	A	A	A	B	A	A	A	A	A	B	B
POTASSIUM CHLORIDE	A	A	A	A	A	A	D	A	A	B	B
POTASSIUM CYANIDE	A	A	A	X	A	A	A	A	A	B	B
POTASSIUM DICHROMATE	A	A	A	B	A	A	A	A	A	B	B
POTASSIUM HYDROXIDE	A	A	A	A	E	A	B	A	E	B	B
POTASSIUM NITRATE	A	A	A	A	A	A	B	A	A	B	B
POTASSIUM PERMANGANATE	A	A	A	A	A	A	B	A	A	B	B
POTASSIUM SULFATE	A	A	A	A	A	A	B	A	A	B	B
SOAPS	A	A	A	C	A	A	A	B	A	B	B
SODIUM ACETATE	A	A	A	A	A	A	B	A	A	A	E
SODIUM BICARBONATE	A	A	A	A	A	A	B	A	A	B	B
SODIUM BISULFATE	A	A	A	A	A	A	A	A	A	B	B
SODIUM BISULFITE	A	A	A	A	A	A	B	A	A	B	B
SODIUM CARBONATE	A	A	A	A	A	A	B	A	A	B	B
SODIUM CHLORATE	A	A	A	A	A	A	B	A	A	B	B
SODIUM CHLORIDE	A	A	A	A	A	A	B	A	A	B	B
SODIUM CYANIDE	A	A	A	X	A	A	A	A	A	B	B
SODIUM HYDROXIDE, 20%	A	A	A	A	B	A	A	A	B	B	E
SODIUM HYDROXIDE, 50%	A	A	A	B	B	A	A	A	B	B	E
SODIUM HYPOCHLORITE	A	A	C	A	A	A	D	A	A	A	B
SODIUM NITRATE	A	A	A	A	A	A	A	A	A	B	B
SODIUM SILICATE	A	A	A	A	A	A	B	A	A	A	A
SODIUM SULFATE	A	A	A	A	A	A	A	A	A	B	B
SODIUM SULFIDE	A	A	A	A	A	A	B	A	A	B	B
STANNIC CHLORIDE	A	A	A	A	A	A	E	A	A	D	B
STEARIC ACID	A	A	C	E	E	A	A	B	A	D	A
STODDARDS SOLVENT	E	X	X	X	X	A	A	B	X	X	A
SULFURIC ACID, 0-10%	A	A	A	A	E	A	E	A	A	D	A
SULFURIC ACID, 10-75%	A	A	A	C	E	A	E	A	A	D	A
SULFURIC ACID, 75-95%	C	A	C	C	E	A	E	D	A	D	A
SULFURIC ACID, 95-100%	D	A	C	C	E	A	B	E	A	D	A
TANNIC ACID	A	A	A	B	X	A	B	B	A	B	B
TANNING LIQUORS	A	A	A	A	X	A	A	A	A	X	A
TARTARIC ACID	A	A	A	X	E	A	B	A	A	B	B
TRICHLOROETHYLENE	E	A	C	E	X	A	B	E	A	E	A
TRICRESYL PHOSPHATE	E	A	X	X	X	A	A	A	A	E	A
UREA	A	A	A	X	X	A	B	A	A	A	E
VINEGAR	A	A	A	A	A	A	A	A	A	B	B
WHITE LIQUOR (ACID)	A	A	X	X	E	A	A	A	A	X	A
ZINC CHLORIDE	A	A	A	A	A	A	B	A	A	B	B
ZINC SULFATE	A	A	A	A	A	A	A	A	A	A	A

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