



Flow Control

Flexible Piping Systems

Additional information on service life, etc. is keyed to the following notes. The numbers appear as superscripts to the upper right of the rating as:

- Acetaldehyde C² (Bronze).
- 'Dry' can also be referred to as 'Anhydrous'.

Rating Code:

- A** – Suitable (normal condition)
- B** – Limited Service
- C** – Unsuitable

Notes:

1. Susceptible to intergranular corrosion
2. May cause explosive reaction
3. Susceptible to stress corrosion cracking
4. Susceptible to pitting type corrosion
5. Discolours
6. Concentration over 50% and/or temperatures over 90°C - refer to our Engineering Department

When there is a question on this reference table or you have unusual service conditions or media, contact us before ordering.

The following tables may be used only as a guide in the selection of the most suitable hose and fittings material when conveying a give medium. The listed media in general considered to be pure, at room temperature and unless otherwise specified, dry. A change in any one of these conditions may change the rating. No attempt has been made to account for variations in service conditions since these variables are too innumerable and complex.

Corrosion Resistance Reference Table

	Bronze	Monel	Carbon Steel	304L/321 Stainless	316 Stainless
Acetaldehyde	C ²	A	B	A	A
Acetanilide	B ³	B	B	B	B
Acetic Acid	C	B	C	B ¹	A ¹
Acetic Anhydride	B	B	C	B	B
Acetone	A	A	C	B	B
Acetophenone	A	A	A	B	B
Acetylene	C ²	A	A	A	A
Acrylates	B	B	B	B	B
Acrylic Acid	B	B	C	B	B
Acrylonitrile	A ⁴	A	A	A	A
Alcohols	A ⁵	A	A ⁵	A	A
Alum	B	B	C	B	B
Alumina	A	A	A	A	A
Aluminium Acetate	B	B	C	B	B
Aluminium Chloride – Dry	B ¹	A	B	A	A
Aluminium Chloride - Moist	C	B	C ³	C ^{3,4}	C ³
Aluminium Fluoride	B	B	B	C	C
Aluminium Hydroxide	B	B	B	A	A
Aluminium Sulfate	C	B	C	B ^{1,3}	A ³
Ammonia – Dry	A	A	A	A	A
Ammonia – Moist	C ³	C	C ³	A	A
Ammonium Acetate	C	A	A	A	A
Ammonium Bromide	C	B	C	C ⁴	C ⁴
Ammonium Chloride – Dry	C ⁴	A	B	A	A
Ammonium Chloride – Moist	C ⁴	B	C	C ^{3,4}	C ³
Ammonium Hydroxide 6	C ³	A	B	A	A
Ammonium Nitrate	C ²	C ²	C ³	A	A
Ammonium Sulfate	C	B	C	C ¹	B
Amyl Acetate	A	A	A	A	A
Amyl Alcohol	A	A	A	A	A
Amyl Chloride – Dry	A	A	B	A	A
Amyl Chloride – Moist	C	B	C	C ^{3,4}	C ³
Aniline	C ³	A	C	B	B
Aniline Dyes	C ³	A	C	B	B
Asphalt	A	A	A	A	A
Atmosphere – Industrial	A	A	C	B ⁴	A ⁴
Atmosphere – Marine	A	A	C	B ⁴	B ⁴
Atmosphere – Rural	A	A	C	A	A
Barium Carbonate	B	B	B	B	B
Barium Chloride - Dry	B	A	A	A	A
Barium Chloride – Moist	B	B	B	C ^{3,4}	C ³
Barium Hydroxide	C	B	B	B	A
Barium Sulfate	B	B	B	B	B
Barium Sulfide	C	C	C	B	B



Metal Hose - Corrosion Resistance Guide

Corrosion Resistance Reference Table - cont.

	Bronze	Monel	Carbon Steel	304L/321 Stainless	316 Stainless
Beer	A	A	C	A	A
Beet Sugar Syrups	A	A	B	A	A
Benzaldehyde	C	B	C	B	B
Benzene (Benzol)	A	A	A	A	A
Benzoic Acid	A	B	C	A	A
Benzylamine	C ³	B	B	B	B
Benzyl Chloride – Dry	B	A	B	A	A
Benzyl Chloride – Moist	B	B	C	C ^{3,4}	C ³
Black Liquor, Sulfate Process	C	A	C	B	B
Bleaching Powder - Dry	B	A	C	A	A
Bleaching Powder – Moist	B ¹	B	C	C ^{3,4}	C ^{3,4}
Borax	A	A	B	A	A
Bordeaux Mixture	B	A	B	A	A
Boric Acid	B	B	C	A	A
Boron Trichloride – Dry	B	B	A	B	B
Boron Trichloride – Moist	B	B	B	C ^{3,4}	C ³
Boron Trifluoride – Dry	B	B	A	B	B
Brines	B	B	C	C ^{3,4}	C ³
Bromic Acid	C	C	C	C	C
Bromine – Dry	A	A	C	B	B
Bromine – Moist	B	B	C	C	C
Butadiene	A	A	A	A	A
Butane	A	A	A	A	A
Butanol (Butyl Alcohol)	A	A	A ⁵	A	A
Butyl Phenols	B	A	B ⁵	B	B
Butylamine	C ³	A	A	A	A
Butyric Acid	B	B	C	B	B
Cadmium Chloride – Moist	B	B	C	C ^{3,4}	C ³
Cadmium Chloride – Dry	B	A	A	A	A
Cadmium Sulfate	B	A	B	A	A
Calcium Bisulfite	B	B	B	B1	B
Calcium Bromide	B	B	C	C ³	C ³
Calcium Chloride – Moist	B	B	C	C ^{3,4}	C ³
Calcium Chloride – Dry	B	A	A	A	A
Calcium Fluoride	B	B	C	C	C
Calcium Hydroxide	B	B	C	B	B
Calcium Hypochlorite – Moist	C	B	C	C ^{3,4}	C ^{3,4}
Calcium Hypochlorite – Dry	B	A	B	A	A
Calcium Nitrate	B	B	C ¹	B ¹	B
Calcium Oxide	A	A	A	A	A
Cane Sugar Syrups	A	A	B	A	A
Carbolic Acid (Phenol)	B	B	C	B	A
Carbon Dioxide – Dry	A	A	A	A	A
Carbon Dioxide – Moist	C ⁴	A	C	A	A
Carbonated Beverages	B	A	C	A	A
Carbonated Water	B ⁴	A	C	A	A
Carbon Disulfide	B	B	B	B	B
Carbon Tetrachloride – Dry	A	A	B	A	A
Carbon Tetrachloride – Moist	B	B	C	C ^{3,4}	C ⁴
Caster Oil	A	A	A	A	A
Chlorine – Dry	A	A	B	A	A
Chlorine – Moist	C	B	C	C ^{3,4}	C ³
Chloracetic Acid	C	B	C	C ^{3,4}	C ³
Chloric Acid	C	C	C	C ³	C ³
Chlorine Dioxide – Dry	B	A	B	A	A
Chlorine Dioxide – Moist	C	B	C	C ^{3,4}	C ³

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Corrosion Resistance Reference Table - cont.

	Bronze	Monel	Carbon Steel	304L/321 Stainless	316 Stainless
Chloroform – Dry	A	A	A	A	A
Chloroform – Moist	B	B	C	C ^{3,4}	C ³
Chromic Acid	C	B	C ³	C ^{1,4}	B
Chromic Fluorides	C	B	C	C	C
Chromic Hydroxide	B	B	B	B	B
Chromium Sulfate	B	B	C	B	B
Cider	A	A	C	A	A
Citric Acid	C	B	C	B	B
Coffee	A	A	C	A	A
Copper Chloride – Dry	A	A	B	A	A
Copper Chloride – Moist	B	B	C	C ^{3,4}	C ³
Copper Nitrate	C	C	C	A	A
Copper Sulfate	C	B	C	B ¹	B
Corn Oil	A	A	A	A	A
Cottonseed Oil	A	A	A	A	A
Creosole	B	A	A	A	A
Crude Oil	B	A	C	C ¹	B
Cyclohexane	B	B	B	B	B
DDT	B	B ⁴	C	A	A
Dichloroethane – Dry	A	A	A	A	A
Dichloroethane – Moist	C	B	C	C ⁴	C ⁴
Dichloroethylene – Dry	A	A	B	A	A
Dichloroethylene – Moist	C	B	C	C ⁴	C ⁴
Dichlorophenol	B	B	C	B ³	B ³
Dilsocyanate	B	A	B	A	A
Dimethyl Sulfate	B	B	B	B	B
Epichlorohydrin – Dry	B ⁴	A	C ⁴	A	A
Epichlorohydrin – Moist	C ⁴	B	C ⁴	C ^{3,4}	C ³
Ethane	A	A	A	A	A
Ethers	A	A	B	A	A
Ethyl Acetate	A	B	B	B	B
Ethyl Alcohol	A	A	A	A	A
Ethyl Benzene	B ⁵	B	B	B ³	B
Ethyl Chloride – Dry	A	A	A	A	A
Ethyl Chloride – Moist	B	B	C	C ^{3,4}	C ³
Ethylene	A	A	A	A	A
Ethylene Chlorohydrin – Dry	B	A	B	A	A
Ethylene Chlorohydrin – Moist	C	B	C	C ⁴	C ⁴
Ethylene Diamine	C ³	B	B	B	B
Ethylene Glycol	A	A	A	A	A
Ethylene Oxide	C ²	B	B	A	A
Fatty Acids	C	B	C	B ^{1,4}	A
Ferric Chloride – Dry	B	A	B	A	A
Ferric Chloride – Moist	C	B	C	C ^{1,3,4}	C ^{3,4}
Ferric Nitrate	C	C	C	B	B
Ferric Sulfate	C	C	C	B ¹	A
Ferrous Chloride – Dry	B	A	B	A	A
Ferrous Chloride – Moist	C	B	C	C ^{3,4}	C ³
Ferrous Sulfate	B	A	C	B ⁴	B
Fluorine – Dry	B	A	A	A	A
Fluorine – Moist	C	B	C	C	C
Formaldehyde	A ⁵	A ⁵	B ⁵	B	B
Formic Acid	B	B	C	B ¹	A
Freon	A	A	A	A	A
Fruit Juices	C	A	C	A	A
Fuel Oil	B	A	C	A	A

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Metal Hose - Corrosion Resistance Guide

Corrosion Resistance Reference Table - cont.

	Bronze	Monel	Carbon Steel	304L/321 Stainless	316 Stainless
Furfural	A	A	B	A	A
Gasoline	A	A	B	A	A
Gelatine	A	A	C	A	A
Glucose	A	A	B	A	A
Glue	B	A	C	A	A
Glutamic Acid	C ^{4,5}	B	C	B ^{3,4}	B ^{3,4}
Glycerin (Glycerol)	A	A	B ⁵	A	A
Heptane	A	A	A	A	A
Hexachloroethane – Dry	B	A	B	A	A
Hexachloroethane – Moist	C	B	C	C ⁴	C ⁴
Hydrazine	C ³	C	C	A	A
Hydrobromide Acid	C	C	C	C ⁴	C
Hydrocarbons, Pure	A	A	A	A	A
Hydrochloric Acid	C	B	C	C ⁴	C ⁴
Hydrocyanic Acid	C	B	C ³	C ^{1,3}	C ³
Hydrofluoric Acid	C	B	C	C ^{1,3}	C
Hydrofluorsilicic Acid	C	B	C	C	C
Hydrogen	A	A	A	A	A
Hydrogen Chloride – Dry	A	A	B	A	A
Hydrogen Chloride – Moist	C	B	C	C ⁴	C ⁴
Hydrogen Peroxide	C	C	C	B	B
Hydrogen Sulfide – Dry	A ⁵	A	B	A	A
Hydrogen Sulfide – Moist	C ^{4,5}	B	C ³	B ⁴	A
Hydroquinone	B	B	B ⁵	B	B
Kerosene (Kerosene)	A	A	B	A	A
Lacquers	A	A	A	A	A
Lacquer Solvents	A	A	A	A	A
Lactic Acid	B	B	C	B ^{1,4}	B ¹
Lime	A	A	B	A	A
Lime – Sulfur	C	B	C	B	B
Linseed Oil	A	A	B	A	A
Lithium Chloride – Dry	B	A	B	A	A
Lithium Chloride – Moist	B	B	B	C ^{3,4}	C ³
Lithium Hydroxide	C	B	B	B	B
Magnesium Chloride – Dry	B	A	B	A	A
Magnesium Chloride – Moist	B	B	C	C ^{3,4}	C ³
Magnesium Hydroxide	A	A	A	A	A
Magnesium Sulfate	A	A	B	B	A
Maleic Acid	C	B	B	B ¹	B
Mercuric Chloride – Dry	B	A	B	A	A
Mercuric Chloride – Moist	C	B	C	C ^{3,4}	C ³
Mercurous Nitrate	C ³	B ³	B	B	B
Mercury	C	B ³	B	B	B
Methyl Alcohol	A	A	A	A	A
Methane	A	A	A	A	A
Methyl Chloride – Dry	A	A	A	A	A
Methyl Chloride – Moist	B	B	C	C ^{3,4}	C ³
Methyl Ethyl Ketone	B	B	B	B	B
Milk	B	A	C	A	A
Mine Water	C	B	C	B	B
Naphthalene	B	B	A	A	A
Natural Gas	A	A	A	A	A
Nickel Chloride – Dry	B	A	B	A	A
Nickel Chloride – Moist	C	B	C	C ^{3,4}	C ³
Nitric Acid	C	C	C	A	A
Nitrotoluene	B	B	B	B	B

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Corrosion Resistance Reference Table - cont.

	Bronze	Monel	Carbon Steel	304L/321 Stainless	316 Stainless
Nitrogen	A	A	A	A	A
Oleic Acid	B ⁵	A	C	B ⁴	B
Oleum (Fuming H ₂ SO ₄)	C	C	B ³	B	B
Oxalic Acid	B	B	C	C1	B ¹
Oxygen	A	A	C	A	A
Palmitic Acid	B	A	C	A	A
Parafin	A	A	B	A	A
Pentane	B	B	B	B	B
Phenol (Carbolic Acid)	B	B	C	B	A
Phosphoric Acid	C	B	C	C ¹	B ¹
Phthalic Acid	B	B	C	B1	B
Picric Acid	C	C	C	B	B
Potassium Bromide	B	B	C	C	C
Potassium Carbonate	B	A	B	A	A
Potassium Chloride – Dry	A	A	A	A	A
Potassium Chloride – Moist	B ³	B	C	C ^{3,4}	C ³
Potassium Chromate	B	B	C	B	B
Potassium Cyanide	C ⁴	A	B	B	B
Potassium Dichromate	C	A	C	A	A
Potassium Fluoride	B	B	C	C	C
Potassium Hydroxide	C ⁵	A ³	B ³	B ³	A
Potassium Nitrate	B	B	B	B	A
Potassium Permanganate	B	B	B	B	B
Potassium Sulfate	B	B	C	B	B
Propane	A	A	A	A	A
Propylene	A	A	A	A	A
Propylene Oxide	C	C	C	A	A
Propylene Dichloride – Dry	B	A	B	A	A
Propylene Dichloride – Moist	C	B	C	C ⁴	C ⁴
Pyridine	B ⁵	B	B ⁵	B	B
Pyrrolidine	C ³	B	B	B	A
Quinine	B	B	C	B	B
Rosin	A ⁵	A	C ⁵	A	A
Sea Water	B	B	C	C ^{3,4}	C ³
Sewage	A	A	B	A	A
Silver Salts	C	A	C	B	B
Silver Nitrate	C	C	C ³	B	A
Soap Solutions	A	A	B	A	A
Sodium	C	A	A	A	A
Sodium Acetate	B	B	B	B ⁴	B
Sodium Bicarbonate	B	A	C	A	A
Sodium Bisulfate	B	B	C	B ^{1,4}	A
Sodium Bisulfite	C ⁴	B ⁴	C	B	B
Sodium Bromide	B	B	B	C	C
Sodium Carbonate	B	A	B	A	A
Sodium Chlorate – Dry	B	A	A	A	A
Sodium Chlorate – Moist	B	B	C	C ^{3,4}	C ³
Sodium Chloride – Dry	B	A	B	A	A
Sodium Chloride – Moist	B	B	C	C ^{3,4}	C ³
Sodium Chromate	A	A	B	A	A
Sodium Citrate	C	B	B	B	B
Sodium Cyanide	C ⁴	B	B	B	B
Sodium Dichromate	C	B	C	A	A
Sodium Fluoride	B	A	B	C ⁴	C
Sodium Hydroxide 6	B ⁴	A	B ⁴	B ³	B ³
Sodium Hypochlorite – Dry	B	A	B	A	A

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Metal Hose - Corrosion Resistance Guide

Corrosion Resistance Reference Table - cont.

	Bronze	Monel	Carbon Steel	304L/321 Stainless	316 Stainless
Sodium Hypochlorite – Moist	C	B	C	C ^{1,4}	C ⁴
Sodium Metasilicate	B	A	B	A	A
Sodium Nitrate	B	A	B ³	A	A
Sodium Nitrite	B	B	B	B	B
Sodium Peroxide	C	B	C	A	A
Sodium Phosphate	B	A	C	A	A
Sodium Silicate	A	A	B	A	A
Sodium Sulfate	A	A	B	B ³	B
Sodium Sulfide	C	A	C	B ⁴	B
Sodium Sulfite	B	A	C	B	B
Sodium Thiosulfate	C	A	C	B	B
Stannic Chloride – Dry	B	A	B	A	A
Stannic Chloride – Moist	C	B	C	C ^{3,4}	C ³
Stannous Chloride – Dry	B	A	B	A	A
Stannous Chloride – Moist	C	B	C	C ^{3,4}	C ³
Steam	A	A ³	C	A	A
Stearic Acid	B	B	C ⁵	B	B
Strontium Nitrate	B	B	C	B	B
Sulfate Black Liquor	C	B	B	B	B
Sulfate Green Liquor	C	B	B	B ³	B
Sugar Solutions	A	A	B	A	A
Sulfur – Dry	C	A	B	A	A
Sulfur – Molten	C	C	C	C	B
Sulfur Chloride – Dry	B	A	C	A	A
Sulfur Chloride – Moist	C	B	C	C ^{3,4}	C ³
Sulfur Dioxide – Dry	B	B	C	C ¹	B
Sulfur Dioxide – Moist	C ⁴	C	C	C ¹	B
Sulfur Trioxide – Dry	A	A	C	A	A
Sulfuric Acid, 95-100%	B	B	B	A	A
Sulfuric Acid, 80-95%	B	B	C	B	B
Sulfuric Acid, 40-80%	C	C	C	C ¹	C ¹
Sulfuric Acid, 40%	C	C	C	C ¹	C ¹
Sulphurous Acid	B	B	C	C ^{1,4}	C ^{1,4}
Tall Oil	C	B	B	B	B
Tannic Acid	B	B	C ⁵	B	B
Tar	A	A	B	A	A
Tartaric Acid	C	B	C	B	B
Tetraphosphoric Acid	C	C	C	B	B
Toluene	A	A	A	A	A
Trichloroacetic Acid	C	B	C	C ^{3,4}	C ⁴
Trichloroethane – Dry	A	A	A	A	A
Trichloroethane – Moist	C	B	C	C ⁴	C ⁴
Trichloroethylene – Dry	A	A	A	A	A
Trichloroethylene – Moist	C	B	C	C ⁴	C ⁴
Turpentine	A	A	B	A	A
Varnish	A	A	B	A	A
Vinegar	B	B	C	A	A
Water, Potable	A	A	C	A	A
Xylene	B	A	B	A	A
Zinc Chloride – Dry	B	A	A	A	A
Zinc Chloride – Moist	C ⁴	B	C	C ^{3,4}	C ³
Zinc Sulfate	B	B	C	B	A

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