

Service Guide

Data, recommendations, and suggestions contained herein are based on experiences in actual field applications as well as common corrosion data. However, because of so many possible variances in practices from plant to plant, these recommendations are intended for use only as a guide and should not be interpreted as a guarantee.

Selections in the following pages have been made with safety and serviceability as the foremost considerations.

Many variables enter into the question of serviceability. Factors such as concentration, temperature,

pressure, velocity, percent solids, temperature cycling, vacuum, cleaning practices, etc. are all important in determining whether or not a particular material will give satisfactory service.

Of the endless number of chemical compounds many are insoluble in water and would consequently cause no corrosion problems when in water. However, some of these simple services can become difficult when it is necessary to make such materials soluble through use of some other solvent. For example, sulfuric acid is commonly used as a solvent for silver chloride. Then the recommendation must take into account both silver chloride and sulfuric acid. As a general rule, it is recommended that pipeline or tank material be used for the valve body whenever possible.

Chemical	Max Use	
	°F	°C
A Acetaldehyde	200	95
Acetamide	250	120
Acetic Acid (50%)	250	120
Acetic Acid (Glacial)	230	110
Acetic Anhydride	300	150
Acetone	150	65
Acetone (50% H ₂ O)	150	65
Acetonitrile	150	65
Acetophenone	300	150
Acetylchloride	150	65
Acetylene	250	120
Acetylene Tetrabromide	300	150
Acetylene Tetrachloride	300	150
Acrylonitrile	150	65
Adipic Acid	275	135
Air	300	150
Allyl Alcohol	212	100
Allyl Chloride	212	100
Aluminum Ammonium Sulfate	300	150
Aluminum Chloride	300	150
Aluminum Fluoride	300	150
Aluminum Hydroxide	300	150
Aluminum Nitrate	300	150
Aluminum Oxychloride	300	150
Aluminum Potassium Sulfate	300	150
Amino Acids (H ₂ O)	212	100
Ammonia (Anhydrous)	300	150
Ammonia (Aqueous 30%)	230	110
Ammonium Bifluoride	300	150
Ammonium Bromide (50%)	275	135
Ammonium Carbonate	300	150
Ammonium Chloride	300	150
Ammonium Dichromate	275	135
Ammonium Dichromate	275	135
Ammonium Fluoride	300	150
Ammonium Hydroxide	300	150
Ammonium Nitrate (Conc.)	230	110

Chemical	Max Use	
	°F	°C
Ammonium Perchlorate	275	135
Ammonium Persulfate	150	65
Ammonium Phosphate	300	150
Ammonium Sulfate	300	150
Ammonium Sulfide	300	150
Ammonium Thiocyanate	300	150
Amyl Acetate	250	120
Amyl Alcohol	300	150
Amyl Chloride	300	150
Aniline	230	110
Aniline Hydrochloride (10%)	150	65
Anthraquinone	275	135
Anthraquinone-Sulfonic Acid	275	135
Antimony Trichloride	212	100
Aqua Regia	212	100
Arsenic Acid	300	150
B Barium Carbonate	300	150
Barium Chloride	300	150
Barium Hydroxide	300	150
Barium Sulfate	300	150
Barium Sulfide	300	150
Battery Acid	250	120
Benzaldehyde	212	100
Benzene	212	100
Benzene Sulfonic Acid	212	100
Benzoic Acid	275	135
Benzoyl Chloride	150	65
Benzyl Alcohol	300	150
Barium Sulfate	300	150
Barium Sulfide	300	150
Battery Acid	250	120
Benzaldehyde	212	100
Benzene	212	100
Benzene Sulfonic Acid	212	100
Benzoic Acid	275	135
Benzoyl Chloride	150	65
Benzyl Alcohol	300	150

Chemical	Max Use	
	°F	°C
Benzyl Chloride	300	150
Bismuth Carbonate	300	150
Black Liquor	300	150
Bleach (12.5% Cl ₂)	212	100
Borax	300	150
Boric Acid	300	150
Brine	300	150
Bromic Acid	250	120
Bromine (Dry)	150	65
Bromine Water (10%)	230	110
mono-Bromobenzene	212	100
Bromoform	212	100
m-Bromotoluene	212	100
Butadiene	250	120
Butane	300	150
Butanediol	275	135
Butyl Acetate	230	110
Butyl Acrylate	230	110
n-Butyl Alcohol	300	150
sec-Butyl Alcohol	300	150
tert-Butyl Alcohol	300	150
n-Butylamine	120	50
sec-Butylamine	120	50
tert-Butylamine	120	50
di-n-Butyl Amine	230	110
tri-n-Butyl Amine	230	110
Butylene	300	150
Butyl Bromide	300	150
Butyl Chloride	300	150
n-Butyl Mercaptan	300	150
Butyl Phenol	230	110
Butyl Phthalate	150	65
Butyraldehyde	212	100
Butyric Acid	250	120
Calcium Bisulfate	300	150
Calcium Bisulfide	300	150
Calcium Carbonate	300	150
Calcium Chlorate	300	150
Calcium Chloride	300	150
Calcium Hydroxide	300	150
Calcium Hypochlorite	300	150
Calcium Nitrate	300	150
Calcium Oxide	275	135
Calcium Sulfate	300	150
Calcium Sulfide	250	120
Caprylic Acid	212	100
Carbon Dioxide (Dry)	300	150
Carbon Dioxide (Wet)	300	150
Carbon Disulfide	150	65
Carbon Monoxide	300	150
Carbon Tetrachloride	150	65
Carbonic Acid	300	150

C

Chemical	Max Use	
	°F	°C
Castor Oil	300	150
Caustic Potash (10 and 50%)	212	100
Caustic Soda (10 and 50%)	212	100
Cellosolve®	300	150
Chloral Hydrate	212	100
Chlorinated Brine	250	120
Chlorinated Phenol	212	100
Chlorine (Dry)	212	100
Chlorine (Wet)	250	120
Chlorine Dioxide	250	120
Chloroacetic Acid (50% H ₂ O)	230	110
Chlorobenzene	212	100
Chlorobenzyl Chloride	150	65
Chloroform	212	100
Chlorohydrin (Liquid)	150	65
Chlorosulphonic Acid	75	25
Chromic Acid (50%)	150	65
Chromic Chloride	212	100
Chromyl Chloride	212	100
Clorox Bleach Solution (5-1/2% Cl ₂)	212	100
Coal Gas	212	100
Copper Chloride	300	150
Copper Cyanide	300	150
Copper Fluoride	300	150
Copper Nitrate	300	150
Copper Sulfate	300	150
Cresol	275	135
Cresylic Acid	275	135
Croton aldehyde	212	100
Crude Oil	300	150
Cyclohexane	300	150
Cyclohexanol	250	120
Cyclohexanone	300	150
DDT	212	100
Decalin	250	120
Decane	300	150
Dextrin	300	150
Diacetone Alcohol	212	100
1,2-Dibromopropane	200	95
Dibutyl Phthalate	150	65
Dichloroacetic Acid	150	65
o-Dichlorobenzene	150	65
Dichloroethylene	150	65
Dichloropropionic Acid	150	65
Diesel Fuels	300	150
Diethyl Benzene	275	135
Diethyl Cellosolve	300	150
Diethyl Ether	212	100
Diethylamine	230	110
Diglycolic Acid	212	100
Diisobutyl Ketone	230	110
Diisobutylene	275	135

D

	Max Use		
	°F	°C	
Chemical			
Dimethyl Formamide	250	120	
Dimethyl Phthalate	212	100	
Dimethyl Sulfate	150	65	
Dimethyl Sulfoxide	212	100	
Dimethylamine	120	50	
Dimethylaniline	275	135	
Diethyl Phthalate	150	65	
p-Dioxane	150	65	
Diphenyl Ether	175	80	
Divinyl Benzene	175	80	
E	Epichlorhydrin	150	65
Ethyl Acetate	150	65	
Ethyl Acrylate	212	100	
Ethyl Alcohol	300	150	
Ethyl Chloride	300	150	
Ethyl Chloroacetate	212	100	
Ethyl Cyanoacetate	212	100	
Ethylacetoacetate	150	65	
Ethylamine	100	40	
Ethylene Bromide	300	150	
Ethylene Chloride	300	150	
Ethylene Chlorohydrin	150	65	
Ethylene Diamine	120	50	
Ethylene Glycol	300	150	
Ethylene Oxide	230	110	
F	Fatty Acids	300	150
Ferric Chloride (50% in H ₂ O)	300	150	
Ferric Hydroxide	300	150	
Ferric Nitrate	300	150	
Ferric Sulfate	300	150	
Ferrous Chloride	300	150	
Ferrous Hydroxide	300	150	
Ferrous Nitrate	300	150	
Ferrous Sulfate	300	150	
Fluorine (Gaseous)	100	40	
Fluoroboric Acid	275	135	
Fluosilicic Acid	275	135	
Formaldehyde (37% in H ₂ O)	230	110	
Formic Acid	275	135	
FREON® 11	230	110	
FREON® 12	230	110	
FREON® 22	230	110	
Fuel Oil	300	150	
Fumaric Acid	200	95	
Furane	150	65	
Furfural	212	100	
G	Gallic Acid	212	100
Gas-Manufactured	300	150	
Gas-Natural	300	150	
Gasoline-Leaded	300	150	
Gasoline-Sour	300	150	
Gasoline-Unleaded	300	150	

	Max Use		
	°F	°C	
Chemical			
Glycerol	300	150	
Glycol	275	135	
Glycolic Acid	250	120	
H	Heptane	300	150
Hexane	300	150	
Hydrazine	100	40	
Hydrazine Dihydrochloride	125	50	
Hydriodic Acid	300	150	
Hydrobromic Acid (50%)	300	150	
Hydrochloric Acid (20%)	300	150	
Hydrochloric Acid (Conc.)	300	150	
Hydrochloric Acid (Gas)	300	150	
Hydrocyanic Acid	300	150	
Hydrofluoric Acid (35%)	275	135	
Hydrofluoric Acid (70%)	250	120	
Hydrofluoric Acid (100%)	230	110	
Hydrofluorosilicic Acid	300	150	
Hydrogen	300	150	
Hydrogen Cyanide	300	150	
Hydrogen Peroxide (30%)	250	120	
Hydrogen Peroxide (90%)	150	65	
Hydrogen Phosphide	150	65	
Hydrogen Sulfide (Dry)	300	150	
Hydrogen Sulfide (Wet)	300	150	
Hydroquinone	250	120	
Hypochlorous Acid	300	150	
I	Inert Gases	300	150
Iodine (Dry)	230	110	
Iodine (Wet)	230	110	
Iodoform	230	110	
Isobutyl Alcohol	275	135	
Isopropylamine	120	50	
J	Jet Fuel-JP4	230	110
Jet Fuel-JP5	230	110	
L	Lactic Acid	250	120
Lard Oil	300	150	
Lauric Acid	250	120	
Lauryl Chloride	275	135	
Lauryl Sulfate	250	120	
Lead Acetate	300	150	
Linoleic Acid	275	135	
Linseed Oil	300	150	
Lithium Bromide (Saturated)	250	120	
Lithium Hydroxide	300	150	
Lubricating Oil	300	150	
M	Magnesium Carbonate	300	150
Magnesium Chloride	300	150	
Magnesium Hydroxide	300	150	
Magnesium Nitrate	300	150	
Magnesium Sulfate	300	150	
Maleic Acid	275	135	
Maleic Anhydride	200	95	

Chemical	Max Use	
	°F	°C
Malic Acid	275	135
Mercuric Chloride	275	135
Mercuric Cyanide	275	135
Mercuric Nitrate	275	135
Mercury	275	135
Methacrylic Acid	200	95
Methane	250	120
Methane Sulfonic Acid (50%)	230	110
Methyl Alcohol	300	150
n-Methylaniline	250	120
Methyl Benzoate	250	120
Methyl Bromide	300	150
Methyl Cellosolve®	300	150
Methyl Chloride	200	95
Methyl Chloroform	150	65
Methyl Chloromethyl Ether	175	80
Methyl Cyanoacetate	175	80
Methyl Ethyl Ketone	230	110
Methyl Isobutyl Ketone	230	110
Methyl Methacrylate	175	80
Methyl Salicylate	200	95
Methyl Sulfuric Acid	212	100
Methyl Trichlorosilane	200	95
Methylene Bromide	212	100
Methylene Chloride	212	100
Methylene Iodide	212	100
Mineral Oil	300	150
Monochlorobenzene	230	110
Monoethanolamine	150	65
Morpholine	150	65
N		
Naphtha	300	150
Naphthalene	300	150
Nickel Chloride	300	150
Nickel Nitrate	300	150
Nickel Sulfate	300	150
Nicotine	212	100
Nicotinic Acid	250	120
Nitric Acid (50%)	150	65
Nitric Acid (Conc. 70%)	75	25
Nitric Acid-Sulfuric Acid (50/50)	212	100
Nitrobenzene	300	150
Nitrogen Dioxide	212	100
Nitrogen Gas	300	150
Nitromethane	212	100
Nitrous Acid	212	100
O		
Octane	300	150
Octene	300	150
Oleic Acid	275	135
Oleum	120	50
Oxalic Acid	230	110
Oxygen	300	150
Ozone (<1% in Air)	212	100

Chemical	Max Use	
	°F	°C
P		
Palmitic Acid	275	135
Perchlorethylene	275	135
Perchloric Acid (10%)	230	110
Perchloric Acid (72%)	150	65
Petrolatum	300	150
Petroleum	300	150
Petroleum Ether	212	100
Phenol (10%)	230	110
Phenol (100%)	212	100
Phenolsulfonic Acid	212	100
Phenylhydrazine	212	100
Phenylhydrazine Hydrochloride	212	100
o-Phenylphenol	212	100
Phosgene	212	100
Phosphoric Acid (30%)	300	150
Phosphoric Acid (85%)	275	135
Phosphorus Oxychloride	221	100
Phosphorus Pentachloride	212	100
Phosphorus Pentoxide	230	110
Phosphorus Trichloride	250	120
Phthalic Acid	212	100
Phthalic Anhydride	212	100
Picric Acid	125	50
Polyvinyl Acetate	300	150
Polyvinyl Alcohol	300	150
Potassium Aluminum Chloride	300	150
Potassium Aluminum Sulfate (50%)	300	150
Potassium Bicarbonate	300	150
Potassium Borate	300	150
Potassium Bromate	300	150
Potassium Bromide	300	150
Potassium Carbonate	300	150
Potassium Chlorate	300	150
Potassium Chloride	300	150
Potassium Chromate	300	150
Potassium Cyanide	300	150
Potassium Dichromate	300	150
Potassium Ferrocyanide	300	150
Potassium Fluoride	300	150
Potassium Hydroxide (50%)	212	100
Potassium Hypochlorite	275	135
Potassium Nitrate	300	150
Potassium Perborate	275	135
Potassium Perchlorate	212	100
Potassium Permanganate	300	150
Potassium Persulfate	150	65
Potassium Sulfate	300	150
Potassium Sulfide	300	150
Propane	275	135
Propionic Acid	212	100
Propyl Alcohol	300	150
Propylene Dibromide	212	100

Chemical	Max Use		
	°F	°C	
Propylene Dichloride	212	100	
Propylene Glycol Methyl Ether	212	100	
Propylene Oxide	150	65	
Pyridine	150	65	
Pyrogallol	150	65	
S	Salicylaldehyde	212	100
Salicylic Acid	250	120	
Salt Brine	300	150	
Sea Water	300	150	
Silicon Tetrachloride	250	120	
Silver Chloride	300	150	
Silver Cyanide	300	150	
Silver Nitrate	300	150	
Sodium Acetate	300	150	
Sodium Benzene-Sulfonate	300	150	
Sodium Benzoate	300	150	
Sodium Bicarbonate	300	150	
Sodium Bisulfate	300	150	
Sodium Bisulfite	300	150	
Sodium Borate	212	100	
Sodium Bromide	300	150	
Sodium Carbonate	300	150	
Sodium Chlorate	300	150	
Sodium Chloride	300	150	
Sodium Chromate	300	150	
Sodium Cyanide	300	150	
Sodium Dichromate (Alkaline)	212	100	
Sodium Ferricyanide	300	150	
Sodium Ferrocyanide	300	150	
Sodium Fluoride	300	150	
Sodium Glutamate	275	135	
Sodium Hydroxide (10%)	230	110	
Sodium Hydroxide (50%)	230	110	
Sodium Hypochlorite	300	150	
Sodium Hyposulfite	300	150	
Sodium Iodide	300	150	
Sodium Lignosulfonate	300	150	
Sodium Metasilicate	300	150	
Sodium Nitrate	300	150	
Sodium Nitrite	300	150	
Sodium Perborate	212	100	
Sodium Perchlorate	150	65	
Sodium Peroxide	300	150	
Sodium Persulfate	175	80	
Sodium Phosphate	300	150	
Sodium Silicate	300	150	
Sodium Silicofluoride	300	150	
Sodium Sulfate	300	150	
Sodium Sulfide	300	150	
Sodium Sulfite	300	150	
Sodium Thiosulfate	300	150	
Sorbic Acid	275	135	

Chemical	Max Use		
	°F	°C	
Sour Crude Oil	300	150	
Stannic Chloride	300	150	
Stannous Chloride	300	150	
Stannous Fluoride	250	120	
Stearic Acid	300	150	
Stoddard's Solvent	275	135	
Styrene Monomer	212	100	
Succinic Acid	275	135	
Sulfamic Acid	212	100	
Sulfur (Molten)	250	120	
Sulfur Dioxide	230	110	
Sulfur Trioxide (Liquid)	75	25	
Sulfuric Acid (60%)	300	150	
Sulfuric Acid (Conc.)	300	150	
Sulfuric Acid (Fuming-Oleum)	120	50	
Sulfurous Acid	230	110	
T	Tall Oil	300	150
Tannic Acid	275	135	
Tartaric Acid	275	135	
2,3,4,6-Tetrachlorophenol	212	100	
Tetraethyl Lead	300	150	
Tetrahydrofuran	212	100	
Tetramethyl Ammonium			
Hydroxide (50%)	212	100	
Thionyl Chloride	212	100	
Tin Tetrachloride	230	110	
Titanium Dioxide	300	150	
Titanium Tetrachloride	212	100	
Toluene	250	120	
Tributyl Phosphate	150	65	
Trichloroacetic Acid	212	100	
Trichloroethylene	275	135	
Trichloromethane	212	100	
2,4,5-Trichlorophenol	212	100	
Triethylamine	230	110	
Trisodium Phosphate	275	135	
Turpentine	275	135	
U	UDMH-Hydrazine (50/50)	120	50
Urea (50% H2O)	275	135	
V	Varsol	275	135
Vinyl Acetate	275	135	
Vinyl Chloride (Monomer)	150	65	
W	Water	300	150
Water Sewage	275	135	
Wax	300	150	
X	Xylene	250	120
Z	Zinc Acetate	250	120
Zinc Chloride	300	150	
Zinc Hydrosulfite (10%)	250	120	
Zinc Nitrate	300	150	
Zinc Sulfate	300	150	
Zinc Sulfide	300	150	