

Material Selection Guide

Table 2.1 Material Selection Guide

Corrodent	Temp. (F/C)	Concentration	Recommended Material
A			
Acetic Acid	212/100	All	Monel 400
Acetic Anhydride	300/149		Nickel 200
Acetone	212/100	All	304, 304/304L SS
Acetylene	400/205		304, 304/304L
Alcohols	212/100	All	304, 304/304L SS
Aluminum (Potassium/Sodium)	300/149	All	Hastelloy C276
Aluminum Chloride	212/100	All	Hastelloy B-2
Aluminum Sulfate	212/100	All	316, 316/316L SS
Ammonia, Dry	212/100	All	304, 304/304L, 316, 316/316L SS
Ammonia Hydroxide (Ammonia, Aqua)	212/100	All	304, 304/304L, 316, 316/316L SS
Ammonium Chloride	300/149	50%	Monel 400
Ammonium Nitrate	300/149	All	304, 304/304L SS
Ammonium Sulfate	212/100	All	316, 316/316L SS
Amyl Acetate	300/149	All	304, 304/304L SS
Aniline	75/24		Monel 400
Asphalt	250/121		304, 304/304L SS
Atmosphere (Industrial and Marine)			304, 304/304L SS
B			
Barium Compounds			See Calcium
Beer	70/21		304, 304/304L SS
Benzene (Benzol)	212/100		Carbon Steel
Benzoic Acid	212/100	All	316, 316/316L SS
Bleaching Powder	70/21	15%	Monel 400
Borax	212/100	All	Brass
Bordeaux Mixture	200/93		304, 304/304L SS
Boric Acid	400/205	All	316, 316/316L SS
Bromine	125/52	Dry	Monel 400
Butane	400/205	All	Carbon Steel
Butyl Alcohol	212/100	All	304, 304/304L SS
Butyric Acid	212/100		Hastelloy C276
C			
Calcium Bisulphite	75/24	All	Hastelloy C276
Calcium Chloride	212/100	All	Hastelloy C276
Calcium Hydroxide	300/149	20%	Hastelloy C276
Calcium Hypochlorite	70/21	15%	Monel 400
Carbolic Acid	212/100	All	316, 316/316L SS
Carbon Dioxide, Dry	800/427	All	Brass
Carbonated Water	212/100	All	304, 304/304L SS
Carbonated Beverages	212/100		304, 304/304L SS
Carbon Disulfide	200/93		304, 304/304L SS
Carbon Tetrachloride	125/52	All	Monel 400
Chlorine, Dry	100/38		Monel 400
Chlorine, Moist	100/38	All	Monel 400
Chloroacetic Acid	212/100	All	Monel 400
Chloroform, Dry	212/100		Monel 400
Chromic Acid	300/149	All	Hastelloy C276
Cider	300/149	All	304, 304/304L SS
Citric Acid	212/100	All	Hastelloy C276
Copper (10) Chloride	212/100	All	Hastelloy C276
Copper (10) Nitrate	300/149	All	316, 316/316L SS
Copper (10) Sulfate	300/149	All	316, 316/316L SS
Copper Plating Solution (Cyanide)	180/82		304, 304/304L SS
Copper Plating Solution (Acid)	75/24		304, 304/304L SS

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Corrodent	Temp. (F/C)	Concentration	Recommended Material
Corn Oil	200/93		304, 304/304L SS
Creosote	200/93	All	304, 304/304L SS
Crude Oil	300/149		Monel 400
E			
Ethyl Acetate	300/149	All	304, 304/304L SS
Ethyl Chloride, Dry	500/260		Carbon Steel
Ethanol	212/100	All	304, 304/304L SS
Ethylene Glycol (Uninhibited)	212/100	All	304, 304/304L SS
Ethylene Oxide	75/24		Carbon Steel
F			
Fatty Acids	500/260	All	316, 316/316L SS
Ferric Chloride	75/24	All	Hastelloy C276
Ferric Sulfate	300/149	All	304, 304/304L SS
Formaldehyde	212/100	40%	316, 316/316L SS
Formic Acid	300/149	All	316, 316/316L SS
Freon	300/149		Carbon Steel
Fluorine, Anhydrous	100/38		304, 304/304L SS
Furfural	450/232		316, 316/316L SS
G			
Gasoline	300/149		Carbon Steel
Glucose	300/149		304, 304/304L SS
Glue, pH 6-8	300/149	All	304, 304/304L SS
Glycerine	212/100	All	Brass
H			
Hydrobromic Acid	212/100	All	Hastelloy C276
Hydrochloric Acid, (37%-38%)	225/107	All	Hastelloy B-2
Hydrogen Chloride, Dry	500/260		304, 304/304L SS
Hydrocyanic Acid	212/100	All	304, 304/304L SS
Hydrofluoric Acid	212/100	60%	Monel 400
Hydrogen Fluoride, Dry	175/80		Carbon Steel
Hydrogen Peroxide	125/52	10-100%	304, 304/304L SS
K			
Kerosene	300/149	All	Carbon Steel
L			
Lacquers and Thinners	300/149	All	304, 304/304L SS
Lactic Acid	300/149	All	316, 316/316L SS
Lime	212/100	All	316, 316/316L SS
Linseed Oil	75/24		Carbon Steel
M			
Magnesium Chloride	212/100	50%	Nickel 200
Magnesium Hydroxide (or Oxide)	75/24	All	304, 304/304L SS
Magnesium Sulfate	212/100	40%	304, 304/304L SS
Mercuric Chloride	75/24	10%	Hastelloy C276
Mercury	700/371	100%	Carbon Steel
Methylene Chloride	212/100	All	304, 304/304L SS
Methyl Chloride, Dry	75/24		Carbon Steel
Milk, Fresh or Sour	180/82		304, 304/304L SS
Molasses	300/149		304, 304/304L SS
N			
Natural Gas	70/21		304, 304/304L SS
Nitric Acid	75/24	All	304, 304/304L SS
Nitric Acid	300/149	All	316, 316/316L SS

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O			
Oxygen	75/24	All	Carbon Steel
Oleic Acid	500/260	All	316, 316/316L SS
Oxalic Acid	212/100	All	Monel 400
P			
Photographic Bleaching	100/38	All	304, 304/304L SS
Palmitic Acid	500/260	All	316, 316/316L SS
Phosphoric Acid	212/100	All	316, 316/316L SS
Phenol	212/100	All	316, 316/316L SS
Potassium Compounds			See Sodium Compounds
Propane	300/149		Carbon Steel
R			
Rosin	700/371	100%	316, 316/316L SS
S			
Sea Water	75/24		Monel 400
Soap & Detergents	212/100	All	304, 304/304L SS
Sodium Bicarbonate	212/100	20%	316, 316/316L SS
Sodium Bisulphite	212/100	20%	304, 304/304L SS
Sodium Bisulphate	212/100	20%	304, 304/304L SS
Sodium Carbonate	212/100	40%	316, 316/316L SS
Sodium Chloride	300/149	30%	Monel 400
Sodium Chromate	212/100	All	316, 316/316L SS
Salt or Brine	300/149	30%	Monel 400
Sodium Cyanide	212/100	All	304, 304/304L SS
Sodium Hydroxide	212/100	30%	316, 316/316L SS
Sodium Hypochlorite	75/24	20%	Hastelloy C276
Sodium Nitrate	212/100	40%	304, 304/304L SS
Sodium Nitrite	75/24	20%	316, 316/316L SS
Sodium Phosphate	212/100	10%	Carbon Steel
Sodium Silicate	212/100	10%	Carbon Steel
Sodium Sulfate	212/100	30%	316, 316/316L SS
Sodium Sulfide	212/100	10%	316, 316/316L SS
Sodium Sulfite	212/100	30%	304, 304/304L SS
Sodium Thiosulfate	212/100	All	304, 304/304L SS
Steam			304, 304/304L SS
Stearic Acid	500/260	All	316, 316/316L SS
Sugar Solutions	300/149		304, 304/304L SS
Sulfur	500/260		304, 304/304L SS
Sulfur Chloride	75/24	Dry	316, 316/316L SS
Sulfur Dioxide	500/260	Dry	316, 316/316L SS
Sulfur Trioxide	500/260	Dry	316, 316/316L SS
Sulfuric Acid	212/100	10%	316, 316/316L SS
Sulfuric Acid	212/100	10-90%	Hastelloy B-2
Sulfuric Acid	212/100	90-100%	316, 316/316L SS
Sulfuric Acid, Fuming	175/80		Hastelloy C276
Sulfurous Acid	75/24	20%	316, 316/316L SS
T			
Titanium Tetrachloride	75/24	All	316, 316/316L SS
Tannic Acid	75/24	40%	Hastelloy B-2
Toluene	75/24		Carbon Steel
Trichloroacetic Acid	75/24	All	316, 316/316L SS
Trichlorethylene	300/149	Dry	Monel 400
Turpentine	75/24		316, 316/316L SS
V			
Varnish	150/66		Carbon Steel
Z			
Zinc Chloride	212/100	All	Hastelloy B-2
Zinc Sulfate	212/100	All	316, 316/316L SS

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