

Material Selection Guide

CORROSIVE AGENT	Deg C	CONC %	RECOMMENDED MATERIAL
Acetic Acid (Glacial)	200	ALL	316 SS
Acetic Acid	140	80%	Hast. C
	200	50%	316 SS
	140	80%	Carp. 20 *
Acetic Anhydride	130	ALL	Hast. C
	200	ALL	316 SS *
Acetone	200	ALL	316 SS
Acetylene	200	ALL	304 SS
Alcohol, Ethyl	90	ALL	Hast. C
	200	ALL	316 SS *
Aluminum Chloride (Aqueous)	140	ALL	Hast. B
	140	ALL	Nickel *
Aluminum Nitrate (Saturated)	90	ALL	446 SS
	90	ALL	316 SS *
Aluminum Sulfate (Saturated)	90	ALL	Titanium
	90	ALL	316 SS *
Ammonia (Anhydrous)	290	ALL	316 SS
Ammonia (Gas)	90	ALL	304 SS
Ammonium Chloride	90	ALL	Titanium
	290	ALL	Nickel *
	70	50%	Nickel
Ammonium Hydroxide	30	ALL	Steel
	80	ALL	Steel *
Ammonium Nitrate	90	ALL	Carp. 20
Ammonium Sulfate	90	SAT	Hast. B
	140	SAT	304 SS *
	90	10-40%	Titanium
	200	10-40%	316 SS *
Anil Acetate	140	ALL	304 SS
Aniline	250	ALL	304 SS
Barium Chloride (Saturated)	90	ALL	Hast. C
	290	ALL	Inconel *
Barium Hydroxide (Saturated)	100	50%	Carp. 20
	200	ALL	316 SS *
Beer	90		SS 304
Benzene (Benzol)	100	ALL	Carp. 20
	100	ALL	304 SS *
Benzoic Acid	200	ALL	Titanium
	200	ALL	304 SS *
Black Liquor	240	ALL	TFE
	190	ALL	FEP
	90	ALL	Carp. 20 *
Bleach (Active Chlorine)	60	12.50%	Hast. C
Borax	200	ALL	316 SS
Boric Acid	290	ALL	Hast. C
	90	ALL	Nickel *
Brine Acid	60	ALL	Hast. C
	30	ALL	Brass *
Bromine (Liquid)	290	ALL	Tantalum
	90	ALL	Aluminum *
Butane	170	ALL	Steel
Butyl Acetate	90	ALL	Titanium
	190	ALL	316 SS *
Butyl Alcohol	200	ALL	316 SS
Butyric Acid	140	ALL	Carp. 20
	200	ALL	316 SS *
Calcium Bisulfite	90	ALL	TFE
	190	ALL	FEP
	170	ALL	316 SS *
Calcium Chlorate	240	ALL	TFE
	190	ALL	FEP
	90	ALL	316 SS *
Calcium Chloride (Saturated)	170	ALL	Hast. C
	90	ALL	Carp. 20 *
Calcium Hydroxide	90	50%	Hast. C
	90	SAT	304 SS *
Carbonic Acid	290	ALL	Carp. 20
	170	ALL	316 SS *
Carbon Dioxide (Dry)	430	ALL	Brass
Carbonated Beverages	100	ALL	304 SS
Carbon Disulfide	90	ALL	Titanium
	200	ALL	316 SS *
Carbon Tetrachloride	90	ALL	304 SS
Chlorine (Gas)	90	ALL	Monel
	200	ALL	316 SS *

CORROSIVE AGENT	Deg C	CONC. %	RECOMMENDED MATERIAL
Chlorine (Gas - Moist)	70	ALL	Hast. C
Chloroacetic Acid	180	ALL	Hast. B
Chloroform	90	ALL	Nickel
	90	ALL	Corp. 20 *
Chronic Acid	90	50%	Titanium
	90	50%	Hast. C *
Citric Acid	130	ALL	Hast. C *
	90	ALL	Corp. 20 *
Copper Chloride	90	ALL	Titanium
	90	ALL	Hast. C *
Copper Nitrate 300 ALL 304 SS	150	ALL	304 SS
Copper Sulfate 200 ALL Hast. C	90	ALL	Hast. C
	200	ALL	316 SS *
Corn Oil	240	ALL	TFE
	190	ALL	FEP
	170	ALL	316 SS *
Crude Oil	90	ALL	304 SS
Cyanogen Gas	240	ALL	TFE
	190	ALL	FEP
	170	ALL	316 SS *
Ether	90	ALL	304 SS
Ethyl Acetate	90	ALL	Titanium
	200	ALL	316 SS *
Ethyl Chloride (Dry)	200	ALL	316 SS
Ethylene Glycol	90	ALL	Corp. 20
	90	ALL	304 SS *
Ethylene Oxide	20	ALL	Hast. C
	200	ALL	316 SS *
Fatty Acids	200	ALL	316 SS
Ferric Chloride	140	ALL	Titanium
	30	ALL	Hast. C *
Ferric Sulfate	50	ALL	Corp. 20
	90	10%	316 SS
Ferrous Sulfate	30	ALL	Titanium
	90	ALL	304 SS *
Formaldehyde	50	50%	304 SS
	50-200		50% 304 SS *
Formic Acid (Anhydrous)	90	ALL	Corp. 20
Freon (F-11)	200	ALL	Monel
	200	ALL	316 SS *
Furfural	200		
	200	ALL	304 SS *
Gallic Acid	240	ALL	TFE
	190	ALL	FEP
	200	ALL	316 SS *
Gasoline (Unleaded)	150	ALL	Hast. C
	20	ALL	446 SS
	170		Steel*
Gasoline (Refined)	240		TFE
	190		FEP
	90		Steel*
Glucose	30	ALL	Nickel
	190	ALL	316 SS *
Gluce	30	ALL	Hast. B
	60	ALL	Steel *
Glycerine	130	ALL	304 SS
Iodine	250	ALL	Hast. C
	20	ALL	Nickel
Hydrogen Peroxide	90	90%	Hast. C
Hydrogen Sulfide (Dry)	70	ALL	316 SS
	290	ALL	316 SS
Hydrobromic Acid	90	50%	Titanium
	120	50%	Hast. B *
Hydrochloric Acid	60	38%	Hast. B
Hydrocyanic Acid	240	ALL	TFE
	190	ALL	FEP
	170	ALL	316 SS *
Hydrofluoric Acid	240	ALL	TFE
	190	ALL	FEP
	90	ALL	Hast. C *
Hydrogen Chloride (Gas, Dry)	290	ALL	Corp
Hydrogen Fluoride (Dry)	40	ALL	304 SS
	200	ALL	304 SS *
Kerosene	240	ALL	TFE
	190	ALL	FEP
	170	Steel*	

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Ketones	30	ALL	Hast. C
	130	ALL	316 SS *
Lactic Acid	150	ALL	Titanium
	120	ALL	Hast. B *
Lime (Sulfur)	240	ALL	TFE
	190	ALL	FEP
	150	ALL	316 SS *
Linseed Oil	60	ALL	Carp. 20
	30	ALL	Steel *
Magnesium Chloride	140	ALL	Nickel
	90	50%	Carp. 20 *
Magnesium Hydroxide	90	ALL	304 SS
Magnesium Sulfate	90	60%	Nickel
	170	ALL	316 SS *
Mercuric Chloride	140	ALL	Tantalum
	80	10%	Hast. C *
Mercury	290	ALL	304 SS
Methyl Chloride (Dry)	170	ALL	316 SS
Methylene Chloride	90	ALL	Carp. 20
Milk	90	30%	SS 300
Naphtha	20	ALL	446 SS
	120	ALL	304 SS
Natural Gas	240		TFE
	190		FEP
	40		Steel*
Nickel Chloride	90	80%	Hast. C 304 SS *
Nickel Sulfate	80	10%	Tantalum
	90	ALL	304 SS *
Nitric Acid	20	ALL	304 SS
	90	40%	304 SS
Nitrobenzene	140	ALL	Carp. 20
	170	ALL	316 SS *
Oleic Acid	140	ALL	316 SS
Oleum	50	40%	Hast. C
	120	ALL	316 SS *
Oxalic Acid	90	ALL	Tantalum
	90	ALL	Carp. 20 *
Oxygen	270	ALL	Tantalum
	20	ALL	446 SS
	170	ALL	316 SS *
Palmitic Acid	240	ALL	TFE
	190	ALL	FEP
	200	ALL	304 SS *
Phenol (Carbolic Acid)	290	ALL	316 SS
Phosphoric Acid	90	50-85%	Hast. C
	40	50-85%	Carp. 20
Photographic Solutions	170	ALL	316 SS
Picric Acid	30	ALL	Titanium
	20	ALL	Aluminum
	200	ALL	316 SS *
Potassium Bromide	90	30%	Titanium
	90	30%	446 SS
Potassium Carbonate	90	50%	304 SS
Potassium Chlorate	170	30%	316 SS
Potassium Hydroxide	90	50%	Nickel
Potassium Nitrate	170	80%	Aluminum
	200	80%	446 SS *
Potassium Permanganate	20	20%	Hast. C
	170	20%	316 SS *
Potassium Sulfate	170	10%	316 SS
Propene	60	ALL	446 SS
	30	ALL	Brass
Pyrogallic Acid	30	ALL	Copper
	170	ALL	316 SS *
Salicylic Acid	120	ALL	Hast. C
	170	ALL	316 SS *
Sea Water (Stagnant)			Monel
Sea Water (Cavitation)	(20)		316 SS
Soap Solutions	20	ALL	446 SS
	50	ALL	Nickel *
Sodium Bicarbonate	170	20%	316 SS
Sodium Bisulfite	70	10%	316 SS
	90	10-40%	Carp. 20
Sodium Carbonate	90	30%	Carp. 20
Sodium Chloride	290	10-100%	Hast. B *
	30	30%	Nickel

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Sodium Fluoride	70	ALL	Monel
	80	ALL	Carp. 20 *
Sodium Hydroxide	100	70%	Monel
	70	ALL	316 SS *
Sodium Nitrate	170	60%	316 SS
Sodium Nitrite	90	Sat	Titanium
	90	40%	304 SS *
Sodium Peroxide	20	10%	446 SS
Sulfur	290	ALL	304 SS
	70	ALL	Alloy 536
Sulfur Chloride (Dry)	30	ALL	Tantalum
	290	ALL	Nickel *
Sulfur Dioxide (Dry)	50	ALL	Steel
	290	ALL	316 SS *
Sulfur Trioxide (Dry)	240	ALL	TFE
	190	ALL	FEP
	290	ALL	304 SS *
Sulfuric Acid	40	100	Carp. 20
	120	60%	Hast. B
Sulfurous Acid	70	ALL	Titanium
	180	ALL	Carp. 20 *
Steam (Low Pressure)			Inconel
			304 SS *
(Medium Pressure)			Nickel
			304 SS *
(High Pressure)			316 SS *
			20% Titanium
Tannic Acid	90	10	304 SS *
	90	ALL	304 SS
Tartaric Acid	200	ALL	Carp.
Titanium Tetrachloride	30	ALL	Titanium
	140	ALL	Steel
Toluene (Toluol)	170	ALL	304 SS
	90	ALL	TFE
Trichloroacetic Acid	240	ALL	FEP
	190	ALL	Hast. C *
Trichloroethylene	70	ALL	Inconel
	90	ALL	304 SS
Whiskey and Wine		ALL	304 SS
Xylene (Xylo)	90	ALL	446 SS
Zinc Chloride	80	TO 70%	Titanium
	290	ALL	Hast. B **
Zinc Sulfate	90	SAT	316 SS

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