

Index to Laboratory Corrosion Data Chart

- I. <.00035 inches in penetration/month –Resistant –Class 1
 .00035-.0035 inches of penetration/month –Partially Resistant –Class 2
 >.0035 inches of penetration/month –Not Resistant –Class 3
- II. *Subject to decomposition (forming HCl) in presence of moisture
 **Subject to pitting at air line or when allowed to dry
 ***Subject to attack in presence of H₂SO₄.

Typical 18-8 Stainless Steels are Types 304, 304L, 321 and 347

Typical 18-8 Mo. Stainless Steels are Types 316 and 316L

(Contact factory for other alloy recommendations)

Chemical	Temp. °F	Stainless Steel					Chemical	Temp. °F	Stainless Steel					Chemical	Temp. °F	Stainless Steel								
		18-8	18-8 Mo.	Mild Steel	Brass (80-20)	Bronze (Phos.)			Monel	18-8	18-8 Mo.	Mild Steel	Brass (80-20)			Bronze (Phos.)	Monel	18-8	18-8 Mo.	Mild Steel	Brass (80-20)	Bronze (Phos.)	Monel	
Acetic Acid 5%-20% Agitated or Aerated	70°	1	1	3	3	3	2	Amyl Chloride	70°	1	1	3	2	2	2	Commercial 50% (Cont. SO ₂)	Boiling	3	3	3	3	3	3	3
50%	70°	1	1	3	3	3	3	Aniline	70°	1	1	2	3	3	2	Chromium Plating Bath	70°	1	1	2	3	3	3	3
50% - 80%	Boiling	3	2	3	3	3	3	3%	70°	1	1	1	3	3	2	Cidar	70°	1	1	3	1	1	1	1
80%	70°	1	1	3	3	3	1	Concentrated Crude	70°	1	1	1	3	3	2	Citric Acid, 5% Still	70°-150°	1	1	3	2	1	2	2
100%	70°	1	1	3	3	3	1	Aniline Hydrochloride	70°	3	3	3	3	3	3	15% Still	70°	1	1	3	3	2	2	2
100%	Boiling	3	2	3	3	3	2	Antimony Trichloride	70°	3	3	3	3	3	3	15% or Concentrated	Boiling	2	1	3	3	2	3	3
100% – 150 lbs. pressure	400°	3	3	3	3	3	2	Barium Carbonate	70°	1	1	2	1	1	2	Coca-Cola Syrup® (Pure)	70°	1	1	3	3	2	2	2
Acetic Anhydride	70°	1	1	3	3	3	2	Barium Chloride	70°	1	1	3	2	2	2	Coffee	Boiling	1	1	3	1	1	1	1
Acetic Acid Vapors, 30%	Boiling	1	1	3	3	3	2	5% & Saturated	70°	1	1	3	2	2	2	Cooper Acetate (Sat. Sol.)	70°	1	1	3	3	2	2	2
100%	Hot	3	2	3	3	3	3	Barium Hydroxide	Hot	1	1	2	1	1	2	Copper Carbonate (Sat. Sol.)	70°	1	1	3	3	3	3	3
Acetone	Boiling	1	1	3	1	1	1	Aqueous Solution	Hot	1	1	2	1	1	2	in 50% NH ₄ OH	70°	2**	1**	3	3	3	3	3
Acetyl Chloride	Hot	3	3	3	3	3	2	Barium Nitrate	Hot	1	1	2	-	-	Copper Chloride, 1% Agitated	158°	3	3	3	3	3	3	3	
Acetylene Concentrated	Boiling	1	1	3	1	1	1	Aqueous Solution	70°	1	1	1	1	1	1	1% Aerated	70°	2**	1**	3	3	3	3	3
Commercially Pure	70°	1	1	3	1	1	1	Barium Sulphate	70°	1	1	1	1	2	5% Agitated	70°	3**	2**	3	3	3	3	3	3
Acid Salt Mixture	Boiling	1	1	3	3	3	3	(Barytes-Blanc Fixe)	70°	1	1	1	1	2	5% Aerated	70°	3**	3**	3	3	3	3	3	3
10% H ₂ SO ₄ Sp. G. 1.07 + 10% CuSO ₄ • 5 H ₂ O	Boiling	1	1	3	3	3	3	Barium Sulfide	70°	1	1	3	3	3	-	Copper Cyanide (Sat. Sol.)	Boiling	1	1	3	3	2	2	2
Acid Salt Mixture	Boiling	1	1	3	3	3	3	Saturated Solution	70°	1	1	3	1	1	1	Cooper Nitrate	70°	1	1	3	3	3	3	3
10% H ₂ SO ₄ Sp. G. 1.07 + 2% FeSO ₄ • 7 H ₂ O	Boiling	1	1	3	3	3	3	Beer (Barley Malt & Hops)	70°	1	1	3	1	1	1	1% Still, Agitated & Aerated	70°	1	1	3	3	3	3	3
Alcohol, Ethyl, 70° & Boiling	70°	1	1	1	1	1	1	3.5% - 4.5% Alcohol	160°	1	1	3	1	1	1	5% Still, Agitated & Aerated	70°	1	1	3	3	3	3	3
Alcohol, Methyl	70°	1	1	1	1	1	1	Benzene (Benzol) 70° or Hot	70°	1	1	2	1	1	2	50% Aqueous Solution	Hot	1	1	3	3	3	3	3
Aluminum, Molten	Boiling	3**	2	3	1	1	1	Benzoic Acid	70°	1	1	1	1	1	-	Copper Sulphate	70°	1	1	3	2	2	3	3
Aluminum Acetate, Saturated	1400°	3	3	3	3	3	3	Blood (Meat Jucies)	Cold	1**	1	2	2	2	2	5% Agitated Still or Aerated	Boiling	1	1	3	2	2	3	3
Aluminum Chloride	70° & Boiling	1	1	3	3	3	1	Borax 5%	Hot	1	1	2	1	1	2	Saturated Solution	Boiling	1	1	3	2	2	3	3
10% Quiescent	70°	3	3	3	3	3	2	Boric Acid 5%	Hot or Cold	1	1	-	-	-	Creosote (Coal Tar)	Hot	1	1	2	1	1	2	2	
25% Quiescent	70°	1	1	3	3	3	2	5% Solution, 70° or Hot	70°	1	1	3	1	1	2	Creosote Oil	Hot	1	1	2	2	2	2	2
Aluminum Fluoride	70°	3	3	3	3	3	2	5% Solution	Boiling	1	1**	3	2	1	2	Cyanogen Gas	70°	1	1	3	3	3	3	3
Aluminum Hydroxide, Saturated	70°	1**	1**	1	1	1	1	Saturated Solution	70°	1**	1**	3	2	2	2	Dichloroethane (Dry)	Boiling	1	1	3	3	3	3	3
Aluminum Sulphate, 5%	150°	1**	1	3	3	3	1	Saturated Solution	Boiling	1**	1**	3	3	3	2	Dinitrochlorobenzene	70°	1	1	3	3	3	3	3
10%	70°	1**	1	3	3	3	1	Bromine, Bromine Water	70°	3	3	3	3	3	3	Melted & Solidified	70°	1	1	3	3	3	3	3
10%	Boiling	2**	1	3	3	3	1	Buttermilk	70°	1	1	3	3	3	2	Distillery Wort	70°	1	1	3	3	3	3	3
Saturated	70°	1**	1	3	3	3	1	Butyl Acetate	70°	1	1	2	2	2	Developing Solutions	70°	1	1	3	3	3	3	3	
Saturated	Boiling	2**	1	3	3	3	1	Butyric Acid 5%	70°-150°	1	1	3	2	2	2	Dyewood Liquer	70°	1**	1	3	3	3	3	3
Aluminum Potassium Sulphate	Boiling	2**	1	3	3	3	1	Aqueous Soln. Sp. G. .964	Boiling	1	1	3	3	3	2	Epsom Salt (Magnesium Sulfate)	Hot & Cold	1	1	3	1	1	2	2
(Alum) 2% - 10%	70°	1	1	3	2	2	2	Calcium Carbonate	70°	1	1	1	1	1	1	Ethers	70°	1	1	2	1	1	2	2
10%	Boiling	2	1	3	3	3	2	Calcium Chlorate	70° or Hot	1	1	2	2	2	2	Ethyl Acetate (Conc. Sol.)	70°	1	1	2	1	1	2	
Saturated	Boiling	3	2	3	3	3	2	Dilute Solution	70°	2**	1**	3	2	2	3	Ethyl Chloride	70°	1	1	2	2	2	1	
Ammonia (Anhydrous)	70°	1	1	1	1	1	1	Calcium Chloride	70°	2**	1**	3	2	2	3	Ethylene Chloride	70°	1	1	2	2	2	1	
All Concentrations	Hot	3	3	3	3	3	3	Dilute or Concen. Solution	70°	2**	1**	3	2	2	3	Ethylene Glycol	70°	1	1	2	1	1	1	
Gas	70°	1	1	3	3	3	3	Calcium Chlorohypochlorite	70°	3	3	3	2	2	3	Ferric Chloride	70°	2**	1**	3	3	3	3	
Ammonia Liquor	70°	1	1	3	3	3	3	(Bleaching Powder) 1%	70°	3	3	3	2	2	3	1% Solution Still	Boiling	3	3	3	3	3	3	
Ammonium Bicarbonate	Boiling	1	1	3	3	3	2	(Bleaching Powder) 5%	70°	3	3	3	2	2	3	5% Solution, Agitated, Aerated	70°	3	3	3	3	3	3	
Ammonium Bromide	Hot	1	1	3	3	3	2	Calcium Hypochlorite, 2%	70°	2**	1**	3	2	2	3	Ferric Hydroxide	70°	1	1	3	3	3	3	
Ammonium Carbonate 1 & 5%	70°	1	1	3	3	3	2	Calcium Hydroxide, 10-20%	Boiling	1	1	3	1	1	1	(Hydrated Iron Oxide)	70°	1	1	3	3	3	3	
Ammonium Chloride 1%	70°	1	1	2	3	3	1	Calcium Sulphate, Saturated	70°	1	1	3	1	1	2	Ferric Nitrate	70°	1	1	3	3	3	3	
10%	Boiling	1**	1**	3	3	3	2	Carbonic Acid Saturated Soln.	70°	1	1	3	3	1	3	1%-5% Quiescent or Agitated	70°	1	1	3	3	3	3	
28%	Boiling	2**	1**	3	3	3	2	Carbolic Acid C.P.	70° or Boiling	1	1	3	2	2	1	1%-5% Aerated	70°	1	1	3	3	3	3	
50%	Boiling	2**	1**	3	3	3	2	Carbonated Water	1	1	3	2	2	3	Ferric Sulphate	70°	1**	1	3	3	3	3		
Ammonium Hydroxide	70°	1	1	2	3	3	3	Carbon Bisulfide	70°	1	1	2	1	2	2	1%-5% Quiescent or Agitated	70°	1**	1	3	3	3	3	
All Concentrations	70°	1	1	2	3	3	2	Carbon Monoxide Gas	1400°	1	1	2	1	2	2	1%-5% Aerated	70°	1**	1	3	3	3	3	
Ammonium Monophosphate	70°	1	1	2	3	3	2	Carbon Tetrachloride	1600°	1	1	3	3	3	1	10%	Boiling	1**	1	3	3	3	3	
Ammonium Nitrate	70°	1	1	3	3	3	2	C.P.	70°	1	1	2	1	1	1	Ferrous Chloride	70°	3	1	3	2	2	-	
All Concentrate Agitated	70°	1	1	3	3	3	2	Dry C.P.	Boiling	1	1	2	1	1	2	Saturated Solution	70°	3	1	3	2	2	-	
All Concentrate Aerated	70°	1	1	3	3	3	2	Commercial + 1% Water	Boiling	3**	3	3	2	2	2	Ferrous Sulphate	70°	3	3	3	3	3	3	
All Concentrate Saturated	Boiling	1	1	3	3	3	2	Carnallite - Cold Saturated Soln. (KCl • MgCl ₂ • 6H ₂ O)	Boiling	3	1**	-	-	-	-	Dilute Solution	70°	1	1	3	2	2	3	
Ammonium Oxalate 5%	70°	1	1	2	3	3	3	Cellulose	1	1	1	1	1	1	1	Fluorine (Gas) Moist	70°	3	3	3	3	3	3	
Ammonium Perchlorate 10%	Boiling	1	1	2	3	3	3	Chloracetic Acid	70°	3	3	3	2	2	2	Formaldehyde 40% Solution	1**	1**	2	1	1	1	1	
Ammonium Persulphate 5%	70°	1	1	3	3	3	3	Chlorbenzol Conc. Pure Dry	70°	1	1	2	2	2	2	Formic Acid, 5% Still	70°	2	1	3	2	2	2	
Ammonium Phosphate 5%	70°	1	1	2	3	3	3	Chloric Acid	70°	3	3	3	3	3										

Laboratory Corrosion Chart



These charts contain recommendations based on published corrosion data for valid laboratory or field tests. However, this data should be used only as a guide and is not a guarantee of actual service performance. It is recommended that the user test the combination before connecting the product to any application. For additional recommendations contact US Hose.

Chemical	Temp. °F	Stainless Steel					Chemical	Temp. °F	Stainless Steel					Chemical	Temp. °F	Stainless Steel								
		18-8	18-8 Mo	Mild Steel	Brass (80-20)	Bronze (Phos.)			Monel	18-8	18-8 Mo	Mild Steel	Brass (80-20)			Bronze (Phos.)	Monel	18-8	18-8 Mo	Mild Steel	Brass (80-20)	Bronze (Phos.)	Monel	
Hydrofluosilicic Acid	70°	3	3	3	2	2	Paraffine	Cold & Hot	1	1	2	1	1	1	Sodium Cyanide	70°	1	1	2	3	3	-		
Hydrogen Peroxide	70°	1***	1	3	3	2	Phenol (See Carboic Acid)							Sodium Fluoride, 5% Solution	70°	2**	1**	3	1	1	1			
	Boiling	2***	1	3	3	2	Petroleum Ether		1	1	2			Sodium Hydroxide	70°	1	1	2	3	2	1			
Hydrogen Sulphide (Dry)	70°	1	1	2	1	1	Phosphoric Acid							Sodium Hypochlorite, 5% Still	70°	2**	1**	3	3	2	3			
Hydrogen Sulphide (Wet)	70°	2***	1***	3	3	3	1%		70°	1*	1*	3	3	3	Sodium Hyposulfite	70°	1***	1	3		1			
Hyposulphite Soda (Hypo)		1	1				1%		Boiling	1	1	3	3	2	Sodium Nitrate	Fused	1	1	2	1	1	2		
Ink	70°	2***	1	3	3	3	1%-45 lbs. Pressure		284°	1	1	3	3	2	Sodium, Perchlorate, 10%	70°	1	1			-			
Iodine	70°	3	3	3	3	3	5% Quiescent, or Agitated		70°	1	1	3	3	2		Boiling	1	1			-			
Iodoform	70°	1	1	3		2	5% Aerated		70°	1	1	3	3	2	Sodium Phosphate	70°	1	1	2	2	2	2		
Kerosene	70°	1	1	2	1	1	10% Quiescent		70°	1	1	3	3	2	Sodium Sulphate, 5% Still	70°	1	1	3	1	1	1		
Ketchup, Quiescent	70°-150°	1**	1	3		2	10% Agitated or Aerated		70°	3	2	3	3	2	Sodium Sulphate, Saturated	70°	1	1	3	1	1	1		
Lactic Acid, 1%	70°	1	1	3	2	2	10%-50%		Boiling	1	1	3	3	3	Sodium Sulphide, 5%	70°	1	1	3	3	2	2		
1%	Boiling	1	1	3	3	2	80%		70°	3	3	3	3	2	Sodium Sulphide, 10%	150°	1	1	3	3	2	2		
5%	70°	1	1	3	2	2	80%		230°	3	3	3	3	2	Sodium Thiosulphate									
5%	150°						85%		Boiling	3	3	3	3	3	Saturated Solution	70°	1	1***	3	3	3	1		
10%	Boiling	2	1	3	3	3	Picric Acid		70°	1	1	3	3	3	Acid Fixing Bath (Hypo)	70°	1	1	3	3	3	2		
10%	150°						Potassium Bichromate, 25%		70°	1	1	3	3	2	25% Solution	70° &								
	Boiling	3	2	3	3	3	25%		Boiling	1	1	3	3	2	Stannic Chloride Solution	Boiling	1	1***	3	3	3	2		
Concentrated	70°	2	1	3	2	2	Potassium Bromide		70°	2**	1**	3	2	2	Sp. G. 1.21	70° &								
Concentrated	Boiling	3	2	3	3	2	Potassium Carbonate 1%		70°	1	1	2	2	2		Boiling	3	3	3	3	3			
Lard	70°	1	1			1	Potassium Carbonate		Hot	1	1	2	2	3	1									
Lead (Molten)	750°	2	2		3	3	Potassium Chlorate		Boiling	1	1	2	3	3	3	Stannous Chloride, Saturated		3	1	3		3		
Lead Acetate 5%	Boiling	1	1	3		2	Sat. at 212°		Boiling	1	1	2	3	3	3	Steam		1	1	3	2	1	1	
Linseed Oil	70°	1	1	2	2	2	Potassium Chloride		70°	1**	1**	3	3	2	1	Stearic Acid	70°	1	1	3	3	2	2	
Plus 3% H ₂ SO ₄	390°	2	1	3	3	3	1% Quiescent		70°	1	1	3	3	2	1	Starch, Aqueous Solution		1	1			2		
Magnesium Chloride							1% Agitated or Aerated		70°	1	1	3	3	2	1	Strontium Hydroxide		1	1			-		
1% Quiescent	70°	1**	1	3	2	2	5% Quiescent		70°	1	1	3	3	2	1	Strontium Nitrate Solution	Hot	1	1	3		2		
1% Quiescent	Hot	3	2**	3	2	2	5% Agitated or Aerated		70°	1	1	3	3	2	1	Sulphur, Moist	70°	2**	1**	3	3	3	2	
5% Quiescent	70°	1**	1	3	2	2	5%		Boiling	1	1	3	3	2	1	Molten	266°	1	1	3	3	3	1	
5% Quiescent	Hot	3	2**	3	2	2	Potassium Chromium Sulfate		70°	1**	1	3	3	2	-	Molten	833°	3	3	3	3	3	3	
Magnesium Oxchloride	70°	3	2**	3		-	5%		Boiling	3	3	3	3	3	-	Sulphur Chloride (Dry)		3	3	3	1	2		
Magnesium Sulphate	Hot & Cold	1	1	3	1	1	Sp. G. 1.6		70°	1	1	2	3	2	1	Sulphur Dioxide Gas (Moist)	70°	2	1	3	2	2	3	
Malic Acid	Hot & Cold	2	1	3		2	Potassium Cyanide		70°	1	1	3	3	2	1	Sulphur Dioxide Gas (Dry)	575°	1	1	3	1	1	2	
Mash	Hot	1	1			2	Potassium Ferricyanide, 5%-25%		Boiling	1	1	3	3	2	2	Sulphuric Acid								
Mayonnaise	70°	1**	1	3		2	25%		70°	1	1	3	2	1	5%-10%	70°	3	2	3	3	2	3		
Mercury		1	1	1	3	3	Potassium Hydroxide, 5%		Boiling	1	1	2†	3	2	1	50%	70°	3	3	3	3	3	3	
Mercuric Chloride Dilute Sol.	70°	3	3	3	3	3	27%		Boiling	2	1	3	3	2	1	50%	Boiling	3	3	3	3	3	3	
Methanol (Methyl Alcohol)		1	1	2	1	1	50%		70°	2	2	3	3	3	3	Concentrated	70°	1	1	3	3	2	3	
Milk, Fresh or Sour	70°	1	1	3	1	1	Potassium Hypochlorite		70°	2	2	3	3	3	3	Concentrated	Boiling	3	3	3	3	2	3	
	Boiling	1	1	3	1	1	Potassium Nitrate		70°	1	1	3	3	2	2	1	Concentrated	300°	3	3	3	3	2	3
Mixed Acids							1%-5% Still or Agitated		70°	1	1	3	2	2	1	Fuming	70°	3	2	3	3	2	3	
53% H ₂ SO ₄ + 45% HNO ₃	Cold	1	1	3	3	3	1%-5% Aerated		70°	1	1	3	2	2	1	Sulphurous Acid, Saturated	70°	3	2	3	3	2	3	
Molasses		1	1	2	2	1	50%		Boiling	1	1	3	3	2	1	Saturated - 60 lb. Pressure	250°	3	2	3	3	2	3	
Muriatic Acid	70°	3	3	3	3	2	Molten		1022°	1	1	3		-	Saturated - 70-125 lb. Pressure	310°	3	2	3	3	2	3		
Mustard	70°	1**	1**	3		2	Potassium Oxalate		70°	1	1	1			150 lbs. Pressure	375°	3	2	3	3	2	3		
Naphtha, Crude	70°	1	1	2	2	2	Potassium Permanganate, 5%		70°	1	1	2		3	Sulphurous Spray	70°	3	3	3	3	3	3		
Naphtha, Pure	70°	1	1	2	2	2	Potassium Sulphate		70°	1	1	2	2	1	2	Tannic Acid	70°	1	1	3	2	1	3	
Naphthalene Sulfonic Acid	70°	1	1	3		1	1%-5% Still or Agitated		70°	1	1	2	2	1	2	Tanning Liquor	150°	1	1		2	1	3	
Nickel Chloride Solution	70°	1**	1**	3	3	2	1%-5% Aerated		70°	1	1	3	2	1	2	Tar	70°	1	1			1		
Nitrating Solution	Cold & Hot	2	2		3	2	50%		Hot	1	1	3	2	1	2	Tartaric Acid, 10%	70°	1	1	3	2	1	2	
Nickel Sulphate	Cold & Hot	1	1	3	3	1	Molten		1	1	3			-	10%-50%	Boiling	2	1	3	2	1	2		
Niter Cake	Fused	2	1	3		2	Potassium Oxalate		1	1	3			-	Tin	Moisten	3	3	3	3	3	-		
Nitric Acid							Quinine Bisulphate (Dry)		2	1	3			-	Trichloroacetic Acid	70°	3	3	3	3	2	3		
5% - 50% - 70%	Boiling	1	1	3	3	3	Quinine Sulphate (Dry)		1	1	3	2	2	1	Trichlorethylene (Dry)	70°	1**	1	3	1	1	1		
65%	70°	1	1	3	3	3	Rosin		Moisten	1	1	3	1	1	Trichlorethylene (Moist)						2	2		
65%	Boiling	2	2	3	3	3	Sea Water		70°	1**	1**	3	2	2	1	Varnish	70°	1	1	2	1	1	1	
Concentrated	70°	1	1	3	3	3	Sewage		1***	1***	1	1	1	1	1	Vegetable Juices		1	1	2	3	2	2	
Concentrated	Boiling	3	3	3	3	3	Silver Bromide		2**	1**	3	3	3	-	Vinegar Fumes	2	1	3	3	2	3			
Fuming Concentrated	70°-110°	1	1	3	3	3	Silver Chloride		3	3	3	3	3	3	Vinegar, Still, Agitated or Aerated	70°	1	1	3	3	2	3		
Fuming Concentrated	Boiling	3	3	3	3	3	Silver Nitrate		70°	1	1	3	3	3	Water		1	1	2	1	1	1		
Nitrous Acid 5%	70°	1	1	3	3	3	Soap		1**	1	3		2	Whiskey		1	1	3	2	1	1			
Oils, Crude	Cold & Hot	1***	1***	2	2	1	Sodium Acetate (Moist)		70°	1	1	3	2	2	1	Wine - All Phases of Processing and Storing	75°	1	1	3	3	3	2	
Oils, Vegetable, Mineral	Cold & Hot	1***	1	2	2	1	Sodium Bicarbonate		70°	1***	1***	3	3	2	2	Yeast		1	1		3	3	1	
Oleic Acid	70°-400°	1**	1	2	2	2	All Concentrations		70°	1	1	3	2	2	1	Zinc	Moisten	3	3	3	3	3	3	
Oxalic Acid							5% Still		150°	1	1	3	2	2	1	Zinc Chloride, 5% Still	70°	1**	1**	3	3	3	2	
5%-10%	70° & Boiling	1	1	3	3	2	Saturated Solution		70°	3	3	3	3	2	2		Boiling	2**	2**	3	3			