

Stainless Steel Chemical Resistance Charts

CHEMICAL / SUBSTANCE	304 Stainless Steel Compatibility	316 Stainless Steel Compatibility
Acetaldehyde	A-Excellent	A-Excellent
Acetamide	B-Good	A-Excellent
Acetate Solvent	A-Excellent	A-Excellent
Acetic Acid	D-Severe Effect	B-Good
Acetic Acid 20%	B-Good	A-Excellent
Acetic Acid 80%	D-Severe Effect	B-Good
Acetic Acid, Glacial	C-Fair	A-Excellent
Acetic Anhydride	B-Good	A-Excellent
Acetone	A-Excellent	A-Excellent
Acetyl Bromide	N/A	N/A
Acetyl Chloride (dry)	A-Excellent	A-Excellent
Acetylene	A-Excellent	A-Excellent
Acrylonitrile	A-Excellent	A-Excellent
Adipic Acid	A-Excellent	A-Excellent
Alcohols: Amyl	A-Excellent	A-Excellent
Alcohols: Benzyl	B-Good	B-Good
Alcohols: Butyl	A-Excellent	A-Excellent
Alcohols: Diacetone	A-Excellent	A-Excellent
Alcohols: Ethyl	A-Excellent	A-Excellent
Alcohols: Hexyl	A-Excellent	A-Excellent
Alcohols: Isobutyl	A-Excellent	A-Excellent
Alcohols: Isopropyl	B-Good	B-Good
Alcohols: Methyl	A-Excellent	A-Excellent
Alcohols: Octyl	A-Excellent	A-Excellent
Alcohols: Propyl	A-Excellent	A-Excellent
Aluminum Chloride	B-Good	B-Good
Aluminum Chloride 20%	D-Severe Effect	C-Fair
Aluminum Fluoride	D-Severe Effect	D-Severe Effect
Aluminum Hydroxide	A-Excellent	C-Fair
Aluminum Nitrate	A-Excellent	A-Excellent
Aluminum Potassium Sulfate 10%	A-Excellent	A-Excellent
Aluminum Potassium Sulfate 100%	D-Severe Effect	B-Good
Aluminum Sulfate	B-Good	B-Good
Alums	N/A	A-Excellent
Amines	A-Excellent	A-Excellent
Ammonia 10%	A-Excellent	A-Excellent
Ammonia Nitrate	A-Excellent	A-Excellent
Ammonia, anhydrous	A-Excellent	A-Excellent
Ammonia, liquid	B-Good	A-Excellent
Ammonium Acetate	B-Good	A-Excellent
Ammonium Bifluoride	D-Severe Effect	B-Good
Ammonium Carbonate	B-Good	B-Good
Ammonium Caseinate	N/A	A-Excellent
Ammonium Chloride	C-Fair	B-Good
Ammonium Hydroxide	A-Excellent	A-Excellent
Ammonium Nitrate	A-Excellent	A-Excellent
Ammonium Oxalate	A-Excellent	A-Excellent
Ammonium Persulfate	A-Excellent	B-Good
Ammonium Phosphate, Dibasic	B-Good	C-Fair
Ammonium Phosphate, Monobasic	B-Good	C-Fair
Ammonium Phosphate, Tribasic	B-Good	B-Good
Ammonium Sulfate	B-Good	B-Good
Ammonium Sulfite	B-Good	B-Good
Ammonium Thiosulfate	N/A	A-Excellent
Amyl Acetate	A-Excellent	A-Excellent
Amyl Alcohol	A-Excellent	A-Excellent
Amyl Chloride	A-Excellent	A-Excellent
Aniline	A-Excellent	B-Good
Aniline Hydrochloride	D-Severe Effect	D-Severe Effect
Antifreeze	N/A	A-Excellent
Antimony Trichloride	D-Severe Effect	D-Severe Effect
Aqua Regia (80% HCl, 20% HNO3)	D-Severe Effect	D-Severe Effect
Arochlor 1248	B-Good	B-Good
Aromatic Hydrocarbons	N/A	C-Fair
Arsenic Acid	A-Excellent	A-Excellent
Arsenic Salts	N/A	N/A
Asphalt	B-Good	A-Excellent
Barium Carbonate	B-Good	B-Good

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Barium Chloride	A-Excellent	A-Excellent
Barium Cyanide	A-Excellent	A-Excellent
Barium Hydroxide	B-Good	B-Good
Barium Nitrate	B-Good	B-Good
Barium Sulfate	B-Good	B-Good
Barium Sulfide	B-Good	B-Good
Beer	A-Excellent	A-Excellent
Beet Sugar Liquids	A-Excellent	A-Excellent
Benzaldehyde	B-Good	B-Good
Benzene	B-Good	B-Good
Benzene Sulfonic Acid	B-Good	B-Good
Benzoic Acid	B-Good	B-Good
Benzol	A-Excellent	A-Excellent
Benzonitrile	D-Severe Effect	D-Severe Effect
Benzyl Chloride	C-Fair	B-Good
Bleaching Liquors	N/A	N/A
Borax (Sodium Borate)	A-Excellent	A-Excellent
Boric Acid	B-Good	A-Excellent
Brewery Slop	N/A	A-Excellent
Bromine	D-Severe Effect	D-Severe Effect
Butadiene	A-Excellent	A-Excellent
Butane	A-Excellent	A-Excellent
Butanol (Butyl Alcohol)	A-Excellent	A-Excellent
Butter	C-Fair	A-Excellent
Buttermilk	A-Excellent	A-Excellent
Butyl Amine	N/A	A-Excellent
Butyl Ether	N/A	A-Excellent
Butyl Phthalate	B-Good	B-Good
Butylacetate	B-Good	A-Excellent
Butylene	A-Excellent	A-Excellent
Butyric Acid	B-Good	B-Good
Calcium Bisulfate	N/A	A-Excellent
Calcium Bisulfide	B-Good	B-Good
Calcium Bisulfite	B-Good	A-Excellent
Calcium Carbonate	A-Excellent	B-Good
Calcium Chlorate	N/A	N/A
Calcium Chloride	C-Fair	B-Good
Calcium Hydroxide	B-Good	B-Good
Calcium Hypochlorite	C-Fair	B-Good
Calcium Nitrate	C-Fair	B-Good
Calcium Oxide	A-Excellent	A-Excellent
Calcium Sulfate	B-Good	B-Good
Calgon	A-Excellent	A-Excellent
Cane Juice	A-Excellent	A-Excellent
Carbolic Acid (Phenol)	B-Good	B-Good
Carbon Bisulfide	A-Excellent	B-Good
Carbon Dioxide (dry)	A-Excellent	A-Excellent
Carbon Dioxide (wet)	A-Excellent	A-Excellent
Carbon Disulfide	A-Excellent	B-Good
Carbon Monoxide	A-Excellent	A-Excellent
Carbon Tetrachloride	B-Good	B-Good
Carbon Tetrachloride (dry)	B-Good	B-Good
Carbon Tetrachloride (wet)	A-Excellent	A-Excellent
Carbonated Water	A-Excellent	A-Excellent
Carbonic Acid	A-Excellent	A-Excellent
Catsup	A-Excellent	A-Excellent
Chloric Acid	D-Severe Effect	C-Fair
Chlorinated Glue	N/A	A-Excellent
Chlorine (dry)	A-Excellent	B-Good
Chlorine Water	C-Fair	C-Fair
Chlorine, Anhydrous Liquid	C-Fair	C-Fair
Chloroacetic Acid	B-Good	A-Excellent
Chlorobenzene (Mono)	A-Excellent	B-Good
Chlorobromomethane	N/A	N/A
Chloroform	A-Excellent	A-Excellent
Chlorosulfonic Acid	D-Severe Effect	B-Good
Chocolate Syrup	A-Excellent	A-Excellent

Stainless Steel Chemical Resistance Charts

CHEMICAL / SUBSTANCE	304 Stainless Steel Compatibility	316 Stainless Steel Compatibility
Chromic Acid 10%	B-Good	B-Good
Chromic Acid 30%	B-Good	B-Good
Chromic Acid 5%	B-Good	A-Excellent
Chromic Acid 50%	C-Fair	B-Good
Chromium Salts	N/A	N/A
Cider	A-Excellent	A-Excellent
Citric Acid	B-Good	A-Excellent
Citric Oils	A-Excellent	A-Excellent
Clorox® (Bleach)	A-Excellent	A-Excellent
Coffee	A-Excellent	A-Excellent
Copper Chloride	D-Severe Effect	D-Severe Effect
Copper Cyanide	B-Good	B-Good
Copper Fluoborate	D-Severe Effect	D-Severe Effect
Copper Nitrate	A-Excellent	A-Excellent
Copper Sulfate >5%	B-Good	B-Good
Copper Sulfate 5%	B-Good	B-Good
Cream	A-Excellent	A-Excellent
Cresols	A-Excellent	A-Excellent
Cresylic Acid	A-Excellent	A-Excellent
Cupric Acid	D-Severe Effect	B-Good
Cyanic Acid	A-Excellent	A-Excellent
Cyclohexane	A-Excellent	A-Excellent
Cyclohexanone	A-Excellent	A-Excellent
Detergents	A-Excellent	A-Excellent
Diacetone Alcohol	B-Good	B-Good
Dichlorobenzene	N/A	B-Good
Dichloroethane	B-Good	B-Good
Diesel Fuel	A-Excellent	A-Excellent
Diethyl Ether	B-Good	B-Good
Diethylamine	A-Excellent	A-Excellent
Diethylene Glycol	A-Excellent	A-Excellent
Dimethyl Aniline	B-Good	B-Good
Dimethyl Formamide	A-Excellent	B-Good
Diphenyl	B-Good	B-Good
Diphenyl Oxide	B-Good	A-Excellent
Dyes	A-Excellent	A-Excellent
Epsom Salts (Magnesium Sulfate)	A-Excellent	B-Good
Ethane	A-Excellent	A-Excellent
Ethanol	A-Excellent	A-Excellent
Ethanolamine	A-Excellent	A-Excellent
Ether	A-Excellent	A-Excellent
Ethyl Acetate	B-Good	B-Good
Ethyl Benzoate	N/A	N/A
Ethyl Chloride	A-Excellent	A-Excellent
Ethyl Ether	B-Good	B-Good
Ethyl Sulfate	D-Severe Effect	D-Severe Effect
Ethylene Bromide	A-Excellent	A-Excellent
Ethylene Chloride	B-Good	B-Good
Ethylene Chlorohydrin	B-Good	B-Good
Ethylene Diamine	B-Good	B-Good
Ethylene Dichloride	B-Good	B-Good
Ethylene Glycol	B-Good	B-Good
Ethylene Oxide	B-Good	B-Good
Fatty Acids	B-Good	A-Excellent
Ferric Chloride	D-Severe Effect	D-Severe Effect
Ferric Nitrate	B-Good	B-Good
Ferric Sulfate	B-Good	A-Excellent
Ferrous Chloride	D-Severe Effect	D-Severe Effect
Ferrous Sulfate	B-Good	B-Good
Fluoboric Acid	B-Good	B-Good
Fluorine	C-Fair	A-Excellent
Fluosilicic Acid	C-Fair	B-Good
Formaldehyde 100%	C-Fair	A-Excellent
Formaldehyde 40%	A-Excellent	A-Excellent
Formic Acid	B-Good	A-Excellent
Freon 113	N/A	N/A
Freon 12	B-Good	B-Good
Freon 22	A-Excellent	A-Excellent

CHEMICAL / SUBSTANCE	304 Stainless Steel Compatibility	316 Stainless Steel Compatibility
Freon TF	A-Excellent	A-Excellent
Freon® 11	A-Excellent	A-Excellent
Fruit Juice	A-Excellent	A-Excellent
Fuel Oils	A-Excellent	A-Excellent
Furan Resin	A-Excellent	A-Excellent
Furfural	A-Excellent	B-Good
Gallic Acid	A-Excellent	B-Good
Gasoline (high-aromatic)	A-Excellent	A-Excellent
Gasoline, leaded, ref.	A-Excellent	A-Excellent
Gasoline, unleaded	A-Excellent	A-Excellent
Gelatin	A-Excellent	A-Excellent
Glucose	A-Excellent	A-Excellent
Glue, P.V.A.	A-Excellent	A-Excellent
Glycerin	A-Excellent	A-Excellent
Glycolic Acid	A-Excellent	A-Excellent
Gold Monocyanide	A-Excellent	A-Excellent
Grape Juice	A-Excellent	A-Excellent
Grease	N/A	A-Excellent
Heptane	A-Excellent	A-Excellent
Hexane	A-Excellent	A-Excellent
Honey	A-Excellent	A-Excellent
Hydraulic Oil (Petro)	A-Excellent	A-Excellent
Hydraulic Oil (Synthetic)	A-Excellent	A-Excellent
Hydrazine	A-Excellent	A-Excellent
Hydrobromic Acid 100%	D-Severe Effect	D-Severe Effect
Hydrobromic Acid 20%	D-Severe Effect	D-Severe Effect
Hydrochloric Acid 100%	D-Severe Effect	D-Severe Effect
Hydrochloric Acid 20%	D-Severe Effect	D-Severe Effect
Hydrochloric Acid 37%	D-Severe Effect	D-Severe Effect
Hydrochloric Acid, Dry Gas	D-Severe Effect	D-Severe Effect
Hydrocyanic Acid	B-Good	A-Excellent
Hydrocyanic Acid (Gas 10%)	N/A	N/A
Hydrofluoric Acid 100%	B-Good	B-Good
Hydrofluoric Acid 20%	D-Severe Effect	D-Severe Effect
Hydrofluoric Acid 50%	D-Severe Effect	D-Severe Effect
Hydrofluoric Acid 75%	D-Severe Effect	D-Severe Effect
Hydrofluosilicic Acid 100%	D-Severe Effect	D-Severe Effect
Hydrofluosilicic Acid 20%	C-Fair	B-Good
Hydrogen Gas	A-Excellent	A-Excellent
Hydrogen Peroxide 10%	B-Good	B-Good
Hydrogen Peroxide 100%	B-Good	A-Excellent
Hydrogen Peroxide 30%	B-Good	B-Good
Hydrogen Peroxide 50%	B-Good	A-Excellent
Hydrogen Sulfide (aqua)	C-Fair	A-Excellent
Hydrogen Sulfide (dry)	C-Fair	A-Excellent
Hydroquinone	B-Good	B-Good
Hydroxyacetic Acid 70%	N/A	N/A
Ink	C-Fair	C-Fair
Iodine	D-Severe Effect	D-Severe Effect
Iodine (in alcohol)	N/A	N/A
Iodoform	A-Excellent	A-Excellent
Isooctane	A-Excellent	A-Excellent
Isopropyl Acetate	C-Fair	A-Excellent
Isopropyl Ether	A-Excellent	A-Excellent
Isotane	N/A	N/A
Jet Fuel (JP3, JP4, JP5)	A-Excellent	A-Excellent
Kerosene	A-Excellent	A-Excellent
Ketones	A-Excellent	A-Excellent
Lacquer Thinners	A-Excellent	A-Excellent
Lacquers	A-Excellent	A-Excellent
Lactic Acid	B-Good	B-Good
Lard	A-Excellent	A-Excellent
Latex	A-Excellent	A-Excellent
Lead Acetate	B-Good	B-Good
Lead Nitrate	B-Good	B-Good
Lead Sulfamate	C-Fair	C-Fair
Ligroin	N/A	A-Excellent
Lime	A-Excellent	A-Excellent

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CHEMICAL / SUBSTANCE	304 Stainless Steel Compatibility	316 Stainless Steel Compatibility
Linoleic Acid	B-Good	A-Excellent
Lithium Chloride	A-Excellent	A-Excellent
Lithium Hydroxide	B-Good	B-Good
Lubricants	A-Excellent	A-Excellent
Lye: Ca(OH) ₂ Calcium Hydroxide	B-Good	B-Good
Lye: KOH Potassium Hydroxide	B-Good	A-Excellent
Lye: NaOH Sodium Hydroxide	B-Good	B-Good
Magnesium Bisulfate	A-Excellent	A-Excellent
Magnesium Carbonate	B-Good	B-Good
Magnesium Chloride	D-Severe Effect	D-Severe Effect
Magnesium Hydroxide	B-Good	A-Excellent
Magnesium Nitrate	B-Good	B-Good
Magnesium Oxide	A-Excellent	A-Excellent
Magnesium Sulfate (Epsom Salts)	A-Excellent	B-Good
Maleic Acid	A-Excellent	B-Good
Maleic Anhydride	A-Excellent	A-Excellent
Malic Acid	A-Excellent	A-Excellent
Manganese Sulfate	B-Good	B-Good
Mash	A-Excellent	A-Excellent
Mayonnaise	C-Fair	A-Excellent
Melamine	N/A	D-Severe Effect
Mercuric Chloride (dilute)	D-Severe Effect	D-Severe Effect
Mercuric Cyanide	C-Fair	C-Fair
Mercurous Nitrate	A-Excellent	A-Excellent
Mercury	A-Excellent	A-Excellent
Methane	A-Excellent	A-Excellent
Methanol (Methyl Alcohol)	A-Excellent	A-Excellent
Methyl Acetate	A-Excellent	B-Good
Methyl Acetone	A-Excellent	A-Excellent
Methyl Acrylate	A-Excellent	N/A
Methyl Alcohol 10%	A-Excellent	A-Excellent
Methyl Bromide	A-Excellent	A-Excellent
Methyl Butyl Ketone	A-Excellent	A-Excellent
Methyl Cellosolve	B-Good	B-Good
Methyl Chloride	A-Excellent	A-Excellent
Methyl Dichloride	N/A	N/A
Methyl Ethyl Ketone	A-Excellent	A-Excellent
Methyl Ethyl Ketone Peroxide	N/A	N/A
Methyl Isobutyl Ketone	B-Good	B-Good
Methyl Isopropyl Ketone	A-Excellent	A-Excellent
Methyl Methacrylate	B-Good	B-Good
Methylamine	A-Excellent	A-Excellent
Methylene Chloride	B-Good	B-Good
Milk	A-Excellent	A-Excellent
Mineral Spirits	A-Excellent	A-Excellent
Molasses	A-Excellent	A-Excellent
Monochloroacetic acid	A-Excellent	A-Excellent
Monoethanolamine	A-Excellent	A-Excellent
Morpholine	N/A	A-Excellent
Motor oil	A-Excellent	A-Excellent
Mustard	A-Excellent	A-Excellent
Naphtha	A-Excellent	A-Excellent
Naphthalene	A-Excellent	A-Excellent
Natural Gas	A-Excellent	A-Excellent
Nickel Chloride	D-Severe Effect	C-Fair
Nickel Nitrate	B-Good	B-Good
Nickel Sulfate	B-Good	B-Good
Nitrating Acid (<15% HNO ₃)	C-Fair	D-Severe Effect
Nitrating Acid (>15% H ₂ SO ₄)	C-Fair	C-Fair
Nitrating Acid (<1% Acid)	C-Fair	A-Excellent
Nitrating Acid (<15% H ₂ SO ₄)	C-Fair	C-Fair
Nitric Acid (20%)	A-Excellent	A-Excellent
Nitric Acid (50%)	A-Excellent	A-Excellent
Nitric Acid (5-10%)	A-Excellent	A-Excellent
Nitric Acid (Concentrated)	A-Excellent	A-Excellent
Nitrobenzene	B-Good	B-Good
Nitrogen Fertilizer	N/A	N/A
Nitromethane	A-Excellent	A-Excellent

CHEMICAL / SUBSTANCE	304 Stainless Steel Compatibility	316 Stainless Steel Compatibility
Nitrous Acid	B-Good	B-Good
Nitrous Oxide	B-Good	B-Good
Oils: Aniline	A-Excellent	A-Excellent
Oils: Anise	N/A	A-Excellent
Oils: Bay	N/A	A-Excellent
Oils: Bone	N/A	A-Excellent
Oils: Castor	A-Excellent	A-Excellent
Oils: Cinnamon	A-Excellent	A-Excellent
Oils: Citric	A-Excellent	A-Excellent
Oils: Clove	A-Excellent	A-Excellent
Oils: Coconut	A-Excellent	A-Excellent
Oils: Cod Liver	A-Excellent	A-Excellent
Oils: Corn	A-Excellent	A-Excellent
Oils: Cottonseed	A-Excellent	A-Excellent
Oils: Creosote	B-Good	B-Good
Oils: Diesel Fuel (20, 30, 40, 50)	A-Excellent	A-Excellent
Oils: Fuel (1, 2, 3, 5A, 5B, 6)	A-Excellent	A-Excellent
Oils: Ginger	D-Severe Effect	D-Severe Effect
Oils: Hydraulic Oil (Petro)	A-Excellent	A-Excellent
Oils: Hydraulic Oil (Synthetic)	A-Excellent	A-Excellent
Oils: Lemon	A-Excellent	A-Excellent
Oils: Linseed	A-Excellent	A-Excellent
Oils: Mineral	A-Excellent	A-Excellent
Oils: Olive	A-Excellent	A-Excellent
Oils: Orange	A-Excellent	A-Excellent
Oils: Palm	A-Excellent	A-Excellent
Oils: Peanut	A-Excellent	A-Excellent
Oils: Peppermint	A-Excellent	A-Excellent
Oils: Pine	A-Excellent	A-Excellent
Oils: Rapeseed	A-Excellent	A-Excellent
Oils: Rosin	A-Excellent	A-Excellent
Oils: Sesame Seed	A-Excellent	A-Excellent
Oils: Silicone	A-Excellent	A-Excellent
Oils: Soybean	A-Excellent	A-Excellent
Oils: Sperm (whale)	A-Excellent	A-Excellent
Oils: Tanning	A-Excellent	A-Excellent
Oils: Transformer	A-Excellent	A-Excellent
Oils: Turbine	A-Excellent	A-Excellent
Oleic Acid	A-Excellent	A-Excellent
Oleum 100%	A-Excellent	A-Excellent
Oleum 25%	B-Good	B-Good
Oxalic Acid (cold)	B-Good	A-Excellent
Ozone	B-Good	A-Excellent
Palmitic Acid	B-Good	A-Excellent
Paraffin	A-Excellent	A-Excellent
Pentane	C-Fair	C-Fair
Perchloric Acid	C-Fair	C-Fair
Perchloroethylene	B-Good	A-Excellent
Petrolatum	A-Excellent	A-Excellent
Petroleum	A-Excellent	A-Excellent
Phenol (10%)	B-Good	B-Good
Phenol (Carbolic Acid)	B-Good	B-Good
Phosphoric Acid (>40%)	D-Severe Effect	D-Severe Effect
Phosphoric Acid (crude)	D-Severe Effect	B-Good
Phosphoric Acid (molten)	N/A	C-Fair
Phosphoric Acid (<40%)	D-Severe Effect	C-Fair
Phosphoric Acid Anhydride	N/A	N/A
Phosphorus	A-Excellent	A-Excellent
Phosphorus Trichloride	A-Excellent	A-Excellent
Photographic Developer	A-Excellent	A-Excellent
Photographic Solutions	D-Severe Effect	N/A
Phthalic Acid	B-Good	A-Excellent
Phthalic Anhydride	A-Excellent	A-Excellent
Picric Acid	B-Good	B-Good
Potash (Potassium Carbonate)	B-Good	B-Good
Potassium Bicarbonate	B-Good	B-Good
Potassium Bromide	B-Good	B-Good
Potassium Chlorate	B-Good	B-Good