

## CHEMICAL COMPATIBILITY GUIDE

**DISCLAIMER:** This chart is intended to provide general guidance on chemical compatibility and should not be used for product selection. The chart is based on industry data and may not be applicable to your specific applications. Temperature, fluid concentration and other process conditions may affect the material compatibility. If there is uncertainty about the suitability of the material with the process chemical, Macnaught recommends physical testing of the sample material with the chemical. If further assistance is required, Macnaught's Technical Support Team can provide advice to assist with selection.

- ✓ Recommended
- Data not available
- ✗ Not recommended

	316 STAINLESS STEEL	PPS RYTON	ALUMINIUM 6061 SERIES	HASTELLOY C-276	CARBON	VITON	PTFE	FKMM
Acetaldehyde	✓	✓	✓	✓	✓	—	✓	✓
Acetamide	✓	—	✓	✓	✓	✓	✓	✓
Acetate Solvent	✓	—	✓	✓	✓	—	✓	—
Acetic Acid	—	—	✓	✓	✓	✓	✓	—
Acetic Acid 20%	✓	✓	✓	✓	✓	✓	✓	✓
Acetic Acid 80%	—	—	✓	✓	✓	✓	✓	—
Acetic Acid, Glacial	—	✓	✓	✓	✓	—	✓	✓
Acetic Anhydride	✓	✓	✓	✓	✓	—	✓	✓
Acetone	✓	✓	✓	✓	✓	✗	✓	—
Acetyl Chloride (dry)	✓	—	—	✓	✓	✓	✓	✓
Acetylene	✓	✓	✓	✓	✓	✓	✓	✓
Acrylonitrile	✓	—	✓	—	✓	—	✓	✓
Adipic Acid	✓	—	✓	✓	✓	✓	✓	✓
Alcohols: Amyl	✓	—	✓	—	—	✓	✓	—
Alcohols: Benzyl	✓	—	✓	—	—	✓	✓	—
Alcohols: Butyl	✓	—	✓	—	—	✓	✓	—
Alcohols: Diacetone	✓	—	✓	—	—	—	✓	—
Alcohols: Ethyl	✓	—	✓	—	—	✓	✓	—
Alcohols: Hexyl	✓	—	✓	—	—	—	✓	—
Alcohols: Isobutyl	✓	—	✓	—	—	✓	✓	—
Alcohols: Isopropyl	✓	—	✓	—	—	✓	✓	—
Alcohols: Methyl	✓	—	✓	—	—	—	✓	—
Alcohols: Octyl	✓	—	✓	—	—	✓	—	—
Alcohols: Propyl	✓	—	✓	—	—	✓	✓	—
Aluminum Chloride	✓	✓	—	✓	✓	✓	✓	✓

	316 STAINLESS STEEL	PPS RYTON	ALUMINIUM 6061 SERIES	HASTELLOY C-276	CARBON	VITON	PTFE	FKMM
Aluminum Chloride 20%	—	✓	—	✓	✓	✓	✓	✓
Aluminum Fluoride	—	—	✓	—	✓	✓	✓	✓
Aluminum Hydroxide	✓	✓	✓	—	✓	✓	✓	—
Aluminum Nitrate	✓	✓	—	—	✓	✓	✓	—
Aluminum Potassium Sulfate 10%	✓	—	—	—	✓	✓	✓	—
Aluminum Sulfate	✓	✓	✓	—	✓	✓	✓	✓
Alums	—	—	✓	—	—	✓	✓	—
Amines	✓	—	✓	—	✓	—	✓	—
Ammonia 10%	✓	—	✓	✓	✓	✗	✓	—
Ammonia Nitrate	✓	—	—	—	—	✗	✓	—
Ammonia, anhydrous	✓	—	✓	—	—	✗	✓	✓
Ammonia, liquid	✓	—	✓	—	✓	✗	✓	—
Ammonium Acetate	✓	—	✓	✓	—	✓	✓	—
Ammonium Bifluoride	—	—	✓	—	✓	✓	✓	—
Ammonium Carbonate	✓	—	✓	—	✓	✓	✓	✓
Ammonium Chloride	—	✓	✓	—	✓	✓	✓	✓
Ammonium Hydroxide	✓	✓	✓	—	✓	✓	✓	✓
Ammonium Nitrate	✓	✓	✓	—	✓	✓	✓	✓
Ammonium Oxalate	✓	—	—	✓	—	—	—	—
Ammonium Persulfate	✓	—	—	—	✓	✓	✓	✓
Ammonium Phosphate, Dibasic	✓	—	✓	—	✓	✓	✓	—
Ammonium Phosphate, Monobasic	✓	—	✓	—	—	✓	✓	—
Ammonium Phosphate, Tribasic	✓	—	✓	—	—	✓	✓	—
Ammonium Sulfate	✓	✓	✓	—	✓	✓	✓	✓
Ammonium Sulfite	✓	—	—	—	—	—	✓	—

# APPENDIX E

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- ✓ Recommended
- Data not available
- ✗ Not recommended

	316 STAINLESS STEEL	PPS RYTON	ALUMINIUM 6061 SERIES	HASTELLOY C-276	CARBON	VITON	PTFE	FKMM
Amyl Acetate	✓	✓	✓	✓	✓	—	✓	✓
Amyl Alcohol	✓	✓	✓	✓	✓	✓	✓	✓
Amyl Chloride	✓	—	✓	✓	✓	✓	✓	—
Aniline	✓	—	—	—	✓	✓	✓	✓
Antifreeze	—	✓	✓	✓	—	✓	—	—
Aqua Regia (80% HCl, 20% HNO3)	—	✓	—	—	—	✓	✓	✓
Arochlor 1248	✓	—	✓	✓	—	✓	✓	✓
Aromatic Hydrocarbons	—	—	✓	—	—	✓	—	—
Arsenic Acid	✓	—	—	—	✓	✓	✓	✓
Asphalt	✓	✓	✓	✓	✓	✓	✓	✓
Barium Carbonate	✓	—	—	—	✓	✓	✓	—
Barium Chloride	✓	✓	—	—	✓	✓	✓	✓
Barium Cyanide	✓	—	—	✓	—	✓	✓	—
Barium Hydroxide	✓	✓	—	—	✓	✓	✓	✓
Barium Nitrate	✓	—	✓	—	✓	✓	✓	—
Barium Sulfate	✓	✓	✓	✓	✓	✓	✓	✓
Barium Sulfide	✓	—	—	—	✓	✓	✓	✓
Beer	✓	—	✓	✓	✓	✓	✓	✓
Beet Sugar Liquids	✓	—	✓	✓	✓	✓	✓	✓
Benzaldehyde	✓	—	✓	✓	✓	—	✓	✓
Benzene	✓	—	✓	—	✓	✓	✓	✓
Benzene Sulfonic Acid	✓	—	—	—	✓	✓	✓	✓
Benzoic Acid	✓	—	✓	—	✓	✓	✓	✓
Benzol	✓	—	✓	—	✓	✓	✓	—
Borax (Sodium Borate)	✓	✓	✓	—	✓	✓	✓	✓
Boric Acid	✓	—	✗	✓	✓	✓	✓	✓
Butadiene	✓	✓	✓	—	✓	✓	✓	✓

	316 STAINLESS STEEL	PPS RYTON	ALUMINIUM 6061 SERIES	HASTELLOY C-276	CARBON	VITON	PTFE	FKMM
Butane	✓	✓	✓	✓	✓	✓	✓	✓
Butanol (Butyl Alcohol)	✓	✓	✓	—	✓	✓	✓	✓
Butter	—	—	✓	✓	—	✓	✓	—
Buttermilk	✓	—	✓	✓	✓	✓	✓	—
Butyl Amine	—	—	✓	—	✓	—	✓	✓
Butyl Ether	—	✓	✓	—	✓	—	✓	—
Butyl Phthalate	✓	—	✓	—	✓	—	✓	—
Butylacetate	✓	—	✓	—	—	✗	✓	—
Butylene	✓	✓	✓	✓	✓	✓	✓	✓
Butyric Acid	✓	—	✓	✓	✓	✓	✓	—
Calcium Bisulfide	✓	—	—	✓	—	✓	✓	—
Calcium Bisulfite	✓	—	—	—	✓	✓	✓	✓
Calcium Carbonate	✓	—	—	—	✓	✓	✓	—
Calcium Chloride	—	✓	✗	✓	✓	✓	✓	✓
Calcium Hydroxide	✓	—	—	✓	✓	✓	✓	✓
Calcium Nitrate	—	✓	✓	—	✓	✓	✓	✓
Calcium Oxide	✓	—	—	✓	—	✓	✓	—
Calcium Sulfate	✓	✓	—	—	✓	✓	✓	—
Calgon	✓	—	—	—	—	✓	—	—
Cane Juice	✓	—	✓	—	—	✓	✓	—
Carbolic Acid (Phenol)	✓	—	✓	✓	✓	✓	✓	✓
Carbon Bisulfide	✓	—	✓	—	—	✓	—	✓
Carbon Dioxide (dry)	✓	✓	✓	✓	✓	✓	✓	✓
Carbon Dioxide (wet)	✓	✓	✓	✓	✓	✓	✓	✓
Carbon Disulfide	✓	✓	✓	—	✓	✓	✓	—
Carbon Monoxide	✓	—	✓	—	✓	✓	✓	✓
Carbon Tetrachloride (wet)	✓	—	✗	—	✓	—	✓	✓

Please refer to disclaimer on page 93

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- ✓ Recommended
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	316 STAINLESS STEEL	PPS RYTON	ALUMINIUM 6061 SERIES	HASTELLOY C-276	CARBON	VITON	PTFE	FKMM
Carbonated Water	✓	✓	✓	✓	✓	✓	-	✓
Carbonic Acid	✓	✓	✓	✓	✓	✓	✓	✓
Catsup	✓	-	-	✓	-	✓	-	-
Chlorine (dry)	✓	-	-	✓	✓	✓	✓	✓
Chloroacetic Acid	✓	-	-	✓	✓	-	✓	✓
Chlorobenzene (Mono)	✓	-	✓	✓	✓	✓	✓	✓
Chlorobromomethane	-	-	-	-	-	✓	✓	✓
Chloroform	✓	-	✓	✓	✓	✓	✓	✓
Chocolate Syrup	✓	-	✓	-	-	✓	✓	-
Chromic Acid 10%	✓	-	-	-	✓	✓	✓	✓
Chromic Acid 30%	✓	-	-	-	✓	✓	✓	✓
Chromic Acid 5%	✓	-	-	-	✓	✓	✓	✓
Cider	✓	-	✓	✓	-	✓	-	-
Citric Acid	✓	-	-	✓	✓	✓	✓	✓
Citric Oils	✓	-	-	✓	-	✓	-	-
Clorox <sup>®</sup> (Bleach) 5.25% NaClO	✓	✓	✗	✓	-	✓	✓	✓
Coffee	✓	-	✓	✓	-	✓	-	-
Copper Chloride	-	✓	-	✓	-	✓	✓	✓
Copper Cyanide	✓	-	-	✓	✓	✓	✓	✓
Copper Nitrate	✓	-	-	-	✓	✓	✓	-
Copper Sulfate >5%	✓	✓	-	✓	✓	✓	✓	✓
Copper Sulfate 5%	✓	✓	-	✓	✓	✓	✓	✓
Cream	✓	-	✓	-	-	✓	✓	-
Cresols	✓	-	✓	-	✓	✓	-	✓
Cresylic Acid	✓	-	✓	-	✓	✓	✓	✓
Cyanic Acid	✓	-	-	-	✓	✓	✓	-
Cyclohexane	✓	✓	✓	-	✓	✓	✓	✓

	316 STAINLESS STEEL	PPS RYTON	ALUMINIUM 6061 SERIES	HASTELLOY C-276	CARBON	VITON	PTFE	FKMM
Cyclohexanone	✓	✓	✓	✓	✓	-	✓	✓
Detergents	✓	✓	✓	-	✓	✓	✓	✓
Diacetone Alcohol	✓	-	✓	✓	✓	-	✓	✓
Dichlorobenzene	-	-	✓	✓	✓	-	✓	-
Dichloroethane	✓	-	✓	✓	✓	-	✓	-
Diesel Fuel	✓	✓	✓	✓	✓	✓	✓	✓
Diethyl Ether	✓	✓	✓	✓	✓	-	✓	✓
Diethylamine	✓	-	✓	✓	✓	✓	-	✓
Diethylene Glycol	✓	-	✓	✓	✓	✓	✓	✓
Dimethyl Aniline	✓	-	✓	-	✓	-	✓	✓
Dimethyl Formamide	✓	✓	✓	✓	-	-	✓	✓
Diphenyl	✓	-	✓	-	-	✓	✓	-
Diphenyl Oxide	✓	-	✓	-	-	✓	✓	✓
Dyes	✓	-	✓	-	-	✓	-	-
Epsom Salts (Magnesium Sulfate)	✓	-	✓	-	✓	✓	✓	-
Ethane	✓	✓	-	-	✓	✓	✓	✓
Ethanol	✓	✓	✓	✓	✓	✓	✓	✓
Ethanolamine	✓	-	✓	-	✓	-	✓	✓
Ether	✓	-	✓	-	✓	-	✓	-
Ethyl Acetate	✓	✓	✓	✓	✓	-	✓	✓
Ethyl Chloride	✓	-	✓	-	✓	✓	✓	✓
Ethyl Ether	✓	✓	✓	-	✓	-	✓	✓
Ethylene Bromide	✓	-	✓	-	✓	✓	✓	-
Ethylene Chloride	✓	-	✓	✓	✓	✓	✓	✓
Ethylene Chlorohydrin	✓	-	✓	-	✓	✓	✓	-
Ethylene Diamine	✓	-	✓	-	-	✓	✓	✓
Ethylene Dichloride	✓	-	✓	-	✓	✓	✓	✓

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# APPENDIX E

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-  Recommended
-  Data not available
-  Not recommended

	316 STAINLESS STEEL	PPS RYTON	ALUMINIUM 6061 SERIES	HASTELLOY C-276	CARBON	VITON	PTFE	FKMM
Ethylene Glycol	✓	✓	✓	✓	✓	✓	✓	✓
Ethylene Oxide	✓	—	—	✓	✓	—	✓	✓
Fatty Acids	✓	—	✓	✓	✓	✓	✓	✓
Ferric Chloride	—	✓	—	—	✓	✓	✓	✓
Ferric Nitrate	✓	—	—	—	✓	✓	✓	✓
Ferric Sulfate	✓	—	—	—	—	✓	✓	✓
Ferrous Chloride	—	✓	—	—	✓	✓	✓	—
Ferrous Sulfate	✓	—	✓	—	✓	✓	✓	—
Fluoboric Acid	✓	—	—	✓	✓	✓	✓	✓
Fluorine	—	—	✓	—	—	—	—	✓
Fluosilicic Acid	—	✓	—	—	✓	✓	✓	✓
Formaldehyde 100%	—	✓	✓	✓	—	—	✓	✓
Formaldehyde 40%	✓	✓	✓	✓	✓	✓	✓	✓
Formic Acid	✓	✓	✓	✓	✓	—	✓	✓
Freon 12	✓	—	✓	✓	—	✓	✓	—
Freon 22	✓	—	—	✓	—	—	✓	—
Freon TF	✓	—	—	✓	—	✓	✓	—
Freon 11	✓	—	—	✓	—	✓	✓	—
Fruit Juice	✓	—	✓	✓	—	✓	✓	—
Fuel Oils	✓	✓	—	✓	✓	✓	✓	✓
Furan Resin	✓	✓	✓	—	—	—	✓	✓
Furfural	✓	✓	✓	—	✓	—	✓	✓
Gallic Acid	✓	—	—	—	—	✓	✓	✓
Gasoline (high-aromatic)	✓	✓	—	✓	✓	✓	✓	✓
Gasoline, leaded, ref.	✓	✓	✓	✓	✓	✓	✓	✓
Gasoline, unleaded	✓	✓	✓	✓	✓	✓	✓	✓
Gelatin	✓	—	✓	✓	✓	✓	✓	✓

	316 STAINLESS STEEL	PPS RYTON	ALUMINIUM 6061 SERIES	HASTELLOY C-276	CARBON	VITON	PTFE	FKMM
Glucose	✓	—	✓	✓	✓	✓	✓	✓
Glue, P.V.A.	✓	—	✓	✓	✓	✓	✓	✓
Glycerin	✓	—	✓	✓	✓	✓	✓	✓
Glycolic Acid	✓	✓	—	✓	✓	✓	✓	—
Gold Monocyanide	✓	—	—	—	—	✓	—	—
Grape Juice	✓	—	—	—	—	✓	✓	—
Grease	—	—	—	✓	✓	✓	✓	✓
Heptane	✓	✓	✓	✓	✓	✓	✓	—
Hexane	✓	✓	✓	✓	✓	✓	✓	✓
Honey	✓	—	✓	✓	—	✓	✓	—
Hydraulic Oil (Petro)	✓	✓	✓	✓	—	✓	✓	✓
Hydraulic Oil (Synthetic)	✓	✓	✓	✓	—	✓	✓	✓
Hydrazine	✓	—	—	—	—	✓	✓	✓
Hydrocyanic Acid	✓	—	✓	✓	✓	✓	✓	✓
Hydrofluoric Acid 100%	✓	✗	✗	—	—	✓	✓	✓
Hydrogen Gas	✓	✓	✓	✓	✓	✓	✓	✓
Hydrogen Peroxide 5%	✓	✓	✓	✓	—	✓	✓	✓
Hydrogen Peroxide 30%	✓	—	✓	✓	—	✓	✓	✓
Hydrogen Peroxide 50%	✓	✗	✓	✓	—	✓	✓	✓
Hydrogen Peroxide 100%	✓	✗	✓	✓	✗	✓	✓	✓
Hydrogen Sulfide (aqua)	—	✓	✓	✓	✓	—	✓	✓
Hydrogen Sulfide (dry)	—	✓	✓	✓	✓	—	✓	✓
Hydroquinone	✓	—	✓	—	✓	✓	✓	✓
Iodine	—	—	✓	✓	—	✓	✓	✓
Iodine (in alcohol)	—	—	✓	—	—	—	—	✓
Iodoform	✓	—	—	—	—	—	—	✓
Isooctane	✓	—	✓	✓	✓	✓	✓	✓

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- ✓ Recommended
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	316 STAINLESS STEEL	PPS RYTON	ALUMINIUM 6061 SERIES	HASTELLOY C-276	CARBON	VITON	PTFE	FKMM
Isopropyl Acetate	-	-	-	-	✓	-	✓	✓
Isopropyl Ether	✓	-	✓	✓	✓	-	✓	✓
Jet Fuel (JP3, JP4, JP5)	✓	✓	✓	✓	✓	✓	✓	-
Kerosene	✓	✓	✓	-	✓	✓	✓	✓
Ketones	✓	-	✓	✓	✓	✗	✓	-
Lacquer Thinners	✓	-	✓	✓	✓	✗	✓	✓
Lacquers	✓	-	✓	✓	✓	✗	✓	✓
Lactic Acid	✓	✓	✓	-	✓	✓	✓	✓
Lard	✓	-	✓	✓	✓	✓	✓	✓
Latex	✓	-	✓	✓	-	✓	✓	-
Lead Acetate	✓	-	-	-	✓	-	✓	✓
Lead Nitrate	✓	-	-	-	✓	✓	✓	✓
Lime	✓	-	✓	✓	✓	✓	✓	✓
Linoleic Acid	✓	-	✓	✓	✓	✓	✓	✓
Lithium Chloride	✓	-	-	-	✓	✓	✓	-
Lithium Hydroxide	✓	-	-	-	-	-	✓	-
Lubricants	✓	✓	✓	✓	✓	✓	✓	✓
Lye: Ca(OH) <sub>2</sub> Calcium Hydroxide	✓	-	-	✓	✓	✓	✓	✓
Lye: KOH Potassium Hydroxide	✓	-	-	-	-	✓	✓	✓
Lye: NaOH Sodium Hydroxide	✓	-	-	-	-	✓	✓	✓
Magnesium Bisulfate	✓	-	-	-	✓	-	✓	-
Magnesium Carbonate	✓	-	✓	-	-	✓	✓	-
Magnesium Chloride	-	✓	-	✓	✓	✓	✓	✓
Magnesium Hydroxide	✓	✓	-	✓	✓	✓	✓	✓
Magnesium Nitrate	✓	-	✓	✓	-	✓	✓	-
Magnesium Oxide	✓	-	✓	✓	-	-	✓	-
Magnesium Sulfate (Epsom Salts)	✓	-	✓	-	✓	✓	✓	✓

	316 STAINLESS STEEL	PPS RYTON	ALUMINIUM 6061 SERIES	HASTELLOY C-276	CARBON	VITON	PTFE	FKMM
Maleic Acid	✓	-	✓	-	✓	✓	✓	✓
Maleic Anhydride	✓	-	✓	✓	-	✓	✓	✓
Malic Acid	✓	-	✓	-	-	✓	✓	✓
Manganese Sulfate	✓	-	✓	✓	✓	✓	✓	-
Mash	✓	-	✓	✓	-	✓	-	-
Mayonnaise	-	-	✓	✓	-	✓	✓	-
Mercurous Nitrate	✓	-	-	✓	-	✓	✓	-
Mercury	✓	-	-	✓	-	✓	✓	✓
Methane	✓	✓	✓	✓	-	✓	✓	✓
Methanol (Methyl Alcohol)	✓	✓	✓	✓	✓	✗	✓	✓
Methyl Acetate	✓	-	✓	✓	✓	-	✓	✓
Methyl Acetone	✓	-	✓	-	✓	-	✓	-
Methyl Acrylate	✓	✓	-	-	-	-	-	✓
Methyl Alcohol 10%	✓	✓	✓	✓	✓	-	✓	✓
Methyl Bromide	✓	-	-	-	✓	✓	✓	✓
Methyl Butyl Ketone	✓	-	-	-	-	-	-	✓
Methyl Cellosolve	✓	-	✓	-	✓	-	✓	✓
Methyl Chloride	✓	-	-	-	✓	✓	✓	✓
Methyl Ethyl Ketone	✓	✓	✓	✓	✓	✗	✓	✓
Methyl Isobutyl Ketone	✓	✓	✓	✓	✓	-	✓	✓
Methyl Isopropyl Ketone	✓	-	✓	-	✓	-	✓	-
Methyl Methacrylate	✓	✓	-	-	-	-	-	✓
Methylamine	✓	-	✓	-	✓	-	✓	-
Methylene Chloride	✓	-	-	-	✓	✓	✓	✓
Milk	✓	-	✓	✓	✓	✓	✓	✓
Mineral Spirits	✓	-	✓	-	✓	✓	✓	-
Molasses	✓	-	✓	✓	✓	✓	✓	-

Please refer to disclaimer on page 93

# APPENDIX E

## CHEMICAL COMPATIBILITY GUIDE

- ✓ Recommended
- Data not available
- ✗ Not recommended

	316 STAINLESS STEEL	PPS RYTON	ALUMINIUM 6061 SERIES	HASTELLOY C-276	CARBON	VITON	PTFE	FKMM		316 STAINLESS STEEL	PPS RYTON	ALUMINIUM 6061 SERIES	HASTELLOY C-276	CARBON	VITON	PTFE	FKMM
Monochloroacetic acid	✓	—	—	✓	—	—	✓	—	Oils: Creosote	✓	—	✓	—	—	✓	✓	—
Monoethanolamine	✓	—	✓	—	✓	—	✓	✓	Oils: Diesel Fuel (20, 30, 40, 50)	✓	—	✓	—	✓	✓	✓	—
Morpholine	—	—	✓	✓	✓	—	✓	—	Oils: Fuel (1, 2, 3, 5A, 5B, 6)	✓	—	—	—	✓	✓	✓	—
Motor oil	✓	✓	✓	✓	✓	—	✓	✓	Oils: Hydraulic Oil (Petro)	✓	—	✓	—	✓	✓	✓	—
Mustard	✓	—	✓	✓	✓	—	✓	—	Oils: Hydraulic Oil (Synthetic)	✓	—	✓	—	✓	✓	✓	—
Naphtha	✓	✓	✓	—	✓	✓	✓	✓	Oils: Lemon	✓	—	✓	—	—	✓	✓	—
Naphthalene	✓	—	✓	✓	✓	✓	✓	✓	Oils: Linseed	✓	—	✓	—	—	✓	✓	—
Natural Gas	✓	—	✓	✓	—	✓	✓	✓	Oils: Mineral	✓	—	✓	—	✓	✓	✓	—
Nickel Nitrate	✓	—	—	—	—	✓	✓	—	Oils: Olive	✓	—	✓	—	✓	✓	✓	✓
Nickel Sulfate	✓	—	—	—	✓	✓	✓	✓	Oils: Orange	✓	—	✓	—	—	✓	—	—
Nitric Acid (5-10%)	✓	—	✗	✓	✓	✓	✓	✓	Oils: Palm	✓	—	—	—	—	✓	✓	—
Nitric Acid (20%)	✓	✗	✗	✓	✓	✓	✓	✓	Oils: Peanut	✓	—	✓	—	—	✓	✓	—
Nitric Acid (50%)	✓	✗	✗	—	—	✓	✓	✓	Oils: Peppermint	✓	—	—	—	—	✓	✓	—
Nitric Acid (Concentrated)	✓	✗	✗	—	—	✓	✓	✓	Oils: Pine	✓	—	✓	—	—	✓	✓	—
Nitrobenzene	✓	—	✓	—	—	✓	✓	✓	Oils: Rapeseed	✓	—	—	—	—	✓	✓	—
Nitromethane	✓	—	✓	✓	✓	—	✓	✓	Oils: Rosin	✓	—	✓	—	—	✓	✓	—
Nitrous Acid	✓	—	—	—	—	✓	✓	—	Oils: Sesame Seed	✓	—	—	—	—	✓	✓	—
Nitrous Oxide	✓	—	✓	—	—	✓	✓	—	Oils: Silicone	✓	—	✓	—	—	✓	✓	—
Oils: Aniline	✓	—	—	—	—	—	✓	—	Oils: Soybean	✓	—	✓	—	—	✓	✓	—
Oils: Castor	✓	—	✓	—	—	✓	✓	—	Oils: Sperm (whale)	✓	—	—	—	—	✓	✓	—
Oils: Cinnamon	✓	—	—	—	—	✓	✓	—	Oils: Tanning	✓	—	—	—	—	✓	—	—
Oils: Citric	✓	—	✓	—	—	✓	✓	—	Oils: Transformer	✓	—	✓	—	✓	✓	✓	—
Oils: Clove	✓	—	✓	—	—	✓	✓	—	Oils: Turbine	✓	—	✓	—	✓	✓	✓	—
Oils: Coconut	✓	—	✓	—	—	✓	✓	—	Oleic Acid	✓	—	✓	✓	✓	✓	✓	—
Oils: Cod Liver	✓	—	✓	—	—	✓	✓	—	Oleum 100%	✓	—	✓	—	—	✓	✓	—
Oils: Corn	✓	—	✓	—	—	✓	✓	—	Oleum 25%	✓	—	✓	✓	—	✓	✓	—
Oils: Cottonseed	✓	—	✓	—	—	✓	✓	—	Oxalic Acid (cold)	✓	—	✓	—	—	✓	✓	✓

Please refer to disclaimer on page 93

## CHEMICAL COMPATIBILITY GUIDE

- ✓ Recommended
- Data not available
- ✗ Not recommended

	316 STAINLESS STEEL	PPS RYTON	ALUMINIUM 6061 SERIES	HASTELLOY C-276	CARBON	VITON	PTFE	FKMM		316 STAINLESS STEEL	PPS RYTON	ALUMINIUM 6061 SERIES	HASTELLOY C-276	CARBON	VITON	PTFE	FKMM
Ozone	✓	—	✓	—	—	✓	✓	✓	Plating Solutions (Cadmium): Fluoroborate Bath 100°F	✓	—	✓	—	—	✓	✓	✓
Palmitic Acid	✓	—	✓	—	✓	✓	✓	✓	Plating Solutions, (Chromium): Black Chrome Bath 115°F	—	—	✓	—	—	—	✓	✓
Paraffin	✓	—	✓	—	✓	✓	✓	—	Plating Solutions, (Chromium): Chromic-Sulfuric Bath 130°F	—	—	✓	—	—	—	✓	✓
Pentane	—	—	✓	—	—	✓	✓	—	Plating Solutions, (Chromium): Fluoride Bath 130°F	—	—	✓	—	—	—	✓	✓
Perchloroethylene	✓	—	—	—	✓	✓	✓	✓	Plating Solutions, (Chromium): Fluosilicate Bath 95°F	—	—	✓	—	—	—	✓	✓
Petrolatum	✓	—	—	✓	✓	✓	—	—	Plating Solutions (Copper) (Acid): Copper Fluoroborate Bath 120°F	✓	—	✓	—	—	✓	✓	✓
Petroleum	✓	—	—	—	✓	✓	✓	✓	Plating Solutions (Copper) (Acid): Copper Sulfate Bath R.T.	—	—	✓	—	—	✓	✓	✓
Phenol (10%)	✓	—	✓	—	✓	✓	✓	✓	Plating Solutions (Copper) (Cyanide): High-Speed Bath 180°F	—	—	✓	—	—	✓	✓	✓
Phenol (Carbolic Acid)	✓	—	✓	✓	✓	✓	✓	✓	Plating Solutions (Copper) (Cyanide): Rochelle Salt Bath 150°F	—	—	✓	—	—	✓	✓	✓
Phosphoric Acid (>40%)	✗	✓	✗	✓	—	✓	✓	✓	Plating Solutions (Copper) (Misc): Copper (Electroless)	—	—	✓	—	—	✓	✓	✓
Phosphoric Acid (crude)	—	✓	✗	—	—	✓	✓	✓	Plating Solutions (Copper) (Misc): Copper Pyrophosphate	—	—	✓	—	—	✓	✓	✓
Phosphoric Acid (<40%)	—	✓	✗	✓	✓	✓	✓	✓	Potash (Potassium Carbonate)	✓	—	—	—	✓	✓	—	—
Phosphorus	✓	—	✓	✓	—	—	✓	—	Potassium Bicarbonate	✓	—	—	—	✓	✓	✓	—
Phosphorus Trichloride	✓	✓	—	✓	✓	✓	✓	✓	Potassium Bromide	✓	—	—	—	✓	✓	✓	—
Photographic Developer	✓	—	—	—	✓	✓	✓	—	Potassium Chlorate	✓	—	✓	—	✓	✓	✓	—
Photographic Solutions	—	—	—	—	✓	✓	✓	—	Potassium Chloride	—	✓	✗	✓	✓	✓	✓	✓
Phthalic Acid	✓	—	✓	—	✓	✓	✓	—	Potassium Chromate	✓	—	✓	✓	✓	✓	✓	—
Phthalic Anhydride	✓	—	✓	✓	✓	✓	✓	—	Potassium Cyanide Solutions	✓	—	—	—	✓	✓	✓	✓
Picric Acid	✓	—	—	—	✓	✓	✓	✓	Potassium Dichromate	✓	—	✓	—	✓	✓	✓	✓
Plating Solutions, Antimony Plating 130°F	✓	—	✓	—	—	✓	✓	✓	Potassium Ferricyanide	✓	—	✓	—	✓	✓	✓	—
Plating Solutions, Arsenic Plating 110°F	✓	—	✓	—	—	✓	✓	✓	Potassium Ferrocyanide	✓	—	✓	—	✓	✓	✓	—
Plating Solutions (Brass): High-Speed Brass Bath 110°F	—	—	✓	—	—	✓	✓	✓	Potassium Hydroxide (Caustic Potash)	✓	✓	✗	—	✗	✓	✓	✓
Plating Solutions (Brass): Regular Brass Bath 100°F	✓	—	✓	—	—	✓	✓	✓	Potassium Hypochlorite	—	✓	✗	✓	—	—	✓	✓
Plating Solutions (Bronze): Cu-Cd Bronze Bath R.T.	✓	—	✓	—	—	✓	✓	✓	Potassium Iodide	✓	—	✓	✓	✓	✓	✓	—
Plating Solutions (Bronze): Cu-Sn Bronze Bath 160°F	✓	—	✓	—	—	✓	✓	✓	Potassium Nitrate	✓	—	✓	—	✓	✓	✓	✓
Plating Solutions (Bronze): Cu-Zn Bronze Bath 100°F	✓	—	✓	—	—	✓	✓	✓	Potassium Oxalate	✓	—	✓	✓	✓	—	✓	—
Plating Solutions (Cadmium): Cyanide Bath 90°F	—	—	✓	—	—	✓	✓	✓	Potassium Permanganate	✓	—	✓	✓	—	✓	✓	—

Please refer to disclaimer on page 93

# APPENDIX E

## CHEMICAL COMPATIBILITY GUIDE

- ✓ Recommended
- Data not available
- ✗ Not recommended

	316 STAINLESS STEEL	PPS RYTON	ALUMINIUM 6061 SERIES	HASTELLOY C-276	CARBON	VITON	PTFE	FKMM
Potassium Sulfate	✓	—	—	—	✓	✓	✓	✓
Potassium Sulfide	✓	—	—	—	✓	✓	✓	—
Propane (liquefied)	✓	✓	✓	✓	✓	✓	✓	✓
Propylene	✓	✓	✓	—	✓	✓	✓	✓
Propylene Glycol	✓	✓	✓	—	—	✓	✓	—
Pyridine	✓	—	✓	—	✓	—	✓	✓
Pyrogalllic Acid	✓	—	✓	—	✓	✓	✓	—
Rosins	✓	—	✓	—	✓	✓	✓	—
Rum	✓	—	—	—	—	✓	—	—
Rust Inhibitors	✓	—	—	—	—	✓	—	—
Salad Dressings	✓	—	✓	—	—	✓	—	—
Salicylic Acid	✓	—	✓	✓	✓	✓	✓	✓
Salt Brine (NaCl saturated)	✓	—	✓	✓	✓	✓	✓	✓
Sea Water	✓	—	—	✓	✓	✓	✓	✓
Shellac (Bleached)	✓	—	✓	—	✓	✓	✓	—
Shellac (Orange)	✓	—	✓	—	✓	✓	✓	—
Silicone	✓	—	✓	—	✓	✓	✓	—
Silver Nitrate	✓	—	—	✓	✓	✓	✓	✓
Soap Solutions	✓	—	—	✓	✓	✓	✓	✓
Soda Ash (see Sodium Carbonate)	✓	—	—	—	—	✓	✓	✓
Sodium Acetate	✓	✓	✓	✓	✓	—	✓	✓
Sodium Aluminate	✓	—	—	—	✓	✓	✓	—
Sodium Benzoate	—	—	✓	✓	✓	✓	✓	—
Sodium Bicarbonate	✓	✓	—	—	✓	✓	✓	✓
Sodium Bisulfate	—	✓	—	—	✓	✓	✓	—
Sodium Bisulfite	✓	—	—	—	✓	✓	✓	✓
Sodium Borate (Borax)	✓	—	—	✓	✓	✓	✓	✓

	316 STAINLESS STEEL	PPS RYTON	ALUMINIUM 6061 SERIES	HASTELLOY C-276	CARBON	VITON	PTFE	FKMM
Sodium Carbonate	✓	✓	—	✓	✓	✓	✓	—
Sodium Chlorate	✓	—	—	—	—	✓	✓	—
Sodium Chloride	✓	✓	—	✓	✓	✓	✓	✓
Sodium Chromate	✓	—	✓	✓	✓	✓	✓	—
Sodium Cyanide	✓	✓	—	✓	✓	✓	✓	✓
Sodium Ferrocyanide	✓	—	✓	✓	✓	✓	✓	—
Sodium Fluoride	—	—	✓	✓	✓	✓	✓	—
Sodium Hydrosulfite	—	✓	✓	✓	—	✓	✓	—
Sodium Hydroxide (20%)	✓	✓	✗	—	✓	—	✓	✓
Sodium Hydroxide (50%)	✓	✓	✗	—	✓	✗	✓	✓
Sodium Hydroxide (80%)	—	✓	✗	—	—	✗	✓	✓
Sodium Hypochlorite (<20%)	✗	—	✗	—	✓	✓	✓	✓
Sodium Hypochlorite (100%)	✗	—	✗	—	—	✓	✓	✓
Sodium Hyposulfate	✓	—	—	—	—	—	✓	—
Sodium Metaphosphate	✓	—	—	—	✓	✓	✓	✓
Sodium Metasilicate	✓	—	—	✓	—	✓	✓	—
Sodium Nitrate	✓	✓	✓	—	—	✓	✓	✓
Sodium Perborate	✓	—	—	—	—	✓	✓	✓
Sodium Peroxide	✓	—	—	—	✓	✓	✓	✓
Sodium Polyphosphate	✓	—	—	✓	✓	✓	✓	—
Sodium Silicate	✓	—	✓	—	✓	✓	✓	✓
Sodium Sulfate	✓	✓	✓	—	✓	✓	✓	✓
Sodium Sulfide	✓	✓	—	—	✓	✓	✓	—
Sodium Sulfite	✓	—	—	—	✓	✓	✓	—
Sodium Tetraborate	✓	—	—	—	—	✓	✓	—
Sodium Thiosulfate (hypo)	✓	✓	✓	—	—	✓	✓	✓
Sorghum	✓	—	—	—	—	✓	—	—

Please refer to disclaimer on page 93



## CHEMICAL COMPATIBILITY GUIDE

- Recommended
- Data not available
- Not recommended

	316 STAINLESS STEEL	PPS RYTON	ALUMINIUM 6061 SERIES	HASTELLOY C-276	CARBON	VITON	PTFE	FKMM
Soy Sauce	✓	—	✓	—	—	✓	—	✓
Starch	✓	—	✓	—	✓	✓	✓	—
Stearic Acid	✓	—	✓	—	✓	✓	✓	✓
Stoddard Solvent	✓	✓	✓	✓	✓	✓	✓	✓
Styrene	✓	—	✓	—	✓	✓	✓	✓
Sugar (Liquids)	✓	—	✓	✓	✓	✓	✓	✓
Sulfate (Liquors)	✓	—	—	—	✓	✓	✓	—
Sulfur Dioxide	—	✓	✓	—	✓	✓	✓	✓
Sulfur Dioxide (dry)	—	✓	✓	—	✓	✓	✓	✓
Sulfur Trioxide	✓	—	✓	—	—	✓	✓	✓
Sulfur Trioxide (dry)	—	—	✓	—	—	✓	✓	✓
Sulfuric Acid (<10%)	—	✓	—	✓	✓	✓	✓	✓
Sulfuric Acid (10-75%)	✗	✓	✗	✓	✓	✓	✓	✓
Sulfuric Acid (75-100%)	✗	✓	✗	✓	✗	✓	✓	✓
Sulfuric Acid (cold concentrated)	✗	✓	✗	✓	—	✓	✓	✓
Sulfuric Acid (hot concentrated)	✗	✓	✗	—	✗	✓	✓	✓
Sulfurous Acid	✓	—	✓	—	✓	✓	✓	✓
Tallow	✓	—	✓	—	✓	✓	✓	—
Tannic Acid	✓	—	—	—	✓	✓	✓	✓
Tanning Liquors	✓	—	✓	—	—	✓	✓	—
Tartaric Acid	—	—	✓	—	✓	✓	✓	✓
Tetrachloroethane	✓	—	—	✓	✓	✓	✓	—
Tetrahydrofuran	✓	✓	—	✓	✓	—	✓	✓
Toluene (Toluol)	✓	—	✓	✓	✓	✗	✓	✓
Tomato Juice	✓	✓	✓	—	✓	✓	✓	✓
Trichloroethane	✓	—	—	✓	✓	✓	✓	✓
Trichloroethylene	✓	—	—	✓	✓	✓	✓	✓

	316 STAINLESS STEEL	PPS RYTON	ALUMINIUM 6061 SERIES	HASTELLOY C-276	CARBON	VITON	PTFE	FKMM
Trichloropropane	✓	—	—	✓	—	✓	✓	—
Tricresylphosphate	✓	—	—	✓	✓	✓	✓	✓
Triethylamine	✓	—	—	—	✓	—	✓	✓
Trisodium Phosphate	✓	✓	—	—	—	✓	✓	—
Turpentine	✓	✓	✓	—	✓	✓	✓	✓
Urea	✓	—	✓	—	✓	✓	✓	—
Uric Acid	✓	—	—	—	✓	—	✓	—
Urine	✓	—	✓	—	✓	✓	✓	—
Varnish	✓	—	✓	✓	✓	✓	✓	✓
Vegetable Juice	✓	✓	—	—	—	✓	✓	✓
Vinegar	✓	✓	—	✓	✓	✓	✓	✓
Vinyl Acetate	✓	—	✓	—	✓	✓	✓	—
Vinyl Chloride	✓	—	✓	✓	✓	✓	✓	✓
Water, Acid, Mine	✓	—	—	✓	✓	✓	✓	✓
Water, Deionized	✓	✓	✓	✓	✓	✓	✓	✓
Water, Distilled	✓	✓	✓	✓	✓	✓	✓	✓
Water, Fresh	✓	✓	✓	✓	✓	✓	✓	✓
Water, Salt	✓	✓	✓	✓	✓	✓	✓	✓
Weed Killers	✓	—	—	—	—	✓	—	—
Whey	✓	—	✓	—	—	✓	✓	—
Whiskey & Wines	✓	—	—	—	—	✓	✓	✓
White Liquor (Pulp Mill)	✓	—	✓	✓	✓	✓	✓	—
White Water (Paper Mill)	✓	—	—	—	—	✓	—	—
Xylene	✓	—	✓	✓	✓	✓	✓	✓
Zinc Chloride	✓	✓	—	—	✓	✓	✓	✓
Zinc Hydrosulfite	✓	—	—	—	—	—	✓	—
Zinc Sulfate	✓	—	—	✓	✓	✓	✓	✓

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