Heat Exchanger Solution Guide

SOLUTION	TYPE OF HEAT EXCHANGER
Acetic	Fluoropolymer, Hastelloy C®, or Zirconium
Actane 70, 80	Fluoropolymer
Actane Salt	Fluoropolymer
Acid Sulfate	Fluoropolymer
Alcorite	Fluoropolymer
Alkaline Cleaners (Electrified)	316 Stainless Steel
Alkaline Soaking Cleaners	316 Stainless Steel
Alodine (most formulas)	316 Stainless Steel
Alstan	316 Stainless Steel
Aluminum Bright Dip	Fluoropolymer
Aluminum Cleaners	316 Stainless Steel
Aluminum Chloride	Fluoropolymer
Aluminum Sulfate	316 Stainless Steel
Ammonia	316 Stainless Steel
Ammonia Persulfate	Fluoropolymer
Ammonium Bi Fluoride	Fluoropolymer
Ammonium Chloride	Titanium
Ammonium Nitrate	316 Stainless Steel or Tantalum
Anodizing (Aluminum)	Fluoropolymer
ARP 28, 80 Blackening Salts	Fluoropolymer
Arsenic	316 Stainless Steel
Barium Chloride	Titanium
Benzoic Acid	Titanium
Black Nickel	Fluoropolymer
Black Oxide (Hi-Temp)	316 Stainless Steel
Black Oxide (Low-Temp)	Titanium
Bonderizing	316 Stainless Steel
Boric Acid	Titanium
Brass Cyanide	316 Stainless Steel
Bright Nickel	Fluoropolymer or Titanium
Bright Copper Cyanide	316 Stainless Steel
Bronze (Alkaline)	316 Stainless Steel
Brown Oxide	Titanium
Burnite	Fluoropolymer
Butyric Acid	Titanium
Cadmium Black	Fluoropolymer
Cadmium (Alkaline)	316 Stainless Steel
Cadmium Fluoborate	Fluoropolymer
Calcium Chloride	Titanium or Zirconium
Calcium Hypochlorite	Titanium
Carbonic Acid	Titanium
Caustic Etch	Steel
Caustics	Steel
Caustics (highly concentrated 20% and over)	Steel
Chlorine/Wet	Fluoropolymer
Chloride	Fluoropolymer or Titanium
Chlorosulfuric Acid	Titanium
Chromic Anodizing	Fluoropolymer
Chromic Acetate	Fluoropolymer
Chromic Nickel	Fluoropolymer
Chromium (No Fluorides)	Fluoropolymer or Titanium
Chromium (Fluoride)	Columbium or Fluoropolymer
Citric Acid	Titanium
Clear Chromate	Fluoropolymer
Cobalt Nickel	Fluoropolymer or Titanium

SOLUTION	TYPE OF HEAT EXCHANGER
Cobalt Plating	316 Stainless Steel
Cobra Etch	Fluoropolymer
Copper Acid	Fluoropolymer
Copper Bright Acid	Fluoropolymer
Copper Cyanide	316 Stainless Steel
Copper Fluoborate	Fluoropolymer
Copper Pyrophosphate	316 Stainless Steel
Copper Strike	316 Stainless Steel
Copper Sulfate	Fluoropolymer
Cyanide	316 Stainless Steel
Deionized Water	316 Stainless Steel or Titanium
Deoxidizer (Etching)	Fluoropolymer
Deoxidizer Non-Chromated	316 Stainless Steel
Dichromic Seal	Steel
Diethylene Glycol	316 Stainless Steel
Diversey, 511, 514	Fluoropolymer
Dow Therm	316 Stainless Steel
Dye Solutions	316 Stainless Steel
Ebonal C	Titanium
Electroless Copper	Fluoropolymer
Electroless Nickel	Fluoropolymer or Titanium
Electroless Tin (Acid)	Fluoropolymer
Electroless Tin (Alkaline)	316 Stainless Steel
Electro Cleaner	316 Stainless Steel
Electro Polishing	Fluoropolymer
Enthone 80 Acid	Fluoropolymer
Ethylene Glycol	Steel
Ferric Ammonium Oxide	316 Stainless Steel
Ferric Chloride	Fluoropolymer or Titanium
Ferric Nitrate	316 Stainless Steel or Titanium
Ferric Sulfate	316 Stainless Steel or Titanium
Fluoborate	Fluoropolymer
Formic Acid	316 Stainless Steel
Glycerol	316 Stainless Steel
Immersion Gold	316 Stainless Steel
Gold-Acid	Fluoropolymer or Titanium
Gold Cyanide	316 Stainless Steel
Grey Nickel	Fluoropolymer or Titanium
Hot Seal Dichromate	316 Stainless Steel
Hydrochloric Acid	Fluoropolymer or Tantalum
Hydrofluoric Acid	Fluoropolymer
Hydrogen Peroxide	Fluoropolymer or Titanium
Indium	Fluoropolymer
Iridite (4-75,4-73,14,14-2,14-9)	316 Stainless Steel
Iridite (1,2,3,4-C,7,8,15)	Fluoropolymer
Iron Fluoborate	Fluoropolymer
Iron Phosphate	316 Stainless Steel
Isoprep (186,187,188)	316 Stainless Steel
Isoprep Acid Salts	Fluoropolymer
Jetal	316 Stainless Steel
Lead Acetate	316 Stainless Steel
Lime Saturated Water (Alkaline)	316 Stainless Steel
Linseed Oil	316 Stainless Steel
Magnesium Hydroxide	316 Stainless Steel
Magnesium Nitrate	Fluoropolymer

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Manganese Phosphate	316 Stainless Steel
McDermid 629	Fluoropolymer
Mercuric Chloride	Titanium
Muriatic Acid	Fluoropolymer or Tantalum
Nickel (Plating Solution) (Watts)	Fluoropolymer or Titanium
Nickel Acetate Seal	316 Stainless Steel
Nickel Chloride	Titanium
Nitric Acid	Fluoropolymer or Zirconium
Nitric Hydrochloric Acids	Fluoropolymer
Nitric Phosphoric	Fluoropolymer
Oil	Steel
Oleic Acid	Fluoropolymer
Oxalic Acid	Fluoropolymer
Paint Stripper (Alkaline)	316 Stainless Steel
Perchlorethylene	316 Stainless Steel
Phosphoric Acid (No Fluoride)	Fluoropolymer or Tantalum
Phosphate Cleaner	316 Stainless Steel
Phosphate	316 Stainless Steel
Potassium Acid Sulfate	Fluoropolymer
Potassium Cyanide	316 Stainless Steel
Potassium Hydroxide	316 Stainless Steel
Potassium Hydrochloric	Fluoropolymer
Potassium Permanganate	Fluoropolymer or Titanium
Rhodium	Fluoropolymer
Rochelle Salt Cyanide	316 Stainless Steel
Ruthenium Plating	Fluoropolymer
Salt (Actine)	Fluoropolymer
Sea Water	Titanium or Zirconium
Silver Bromide	316 Stainless Steel
Silver Cyanide	316 Stainless Steel
Silver Lume	316 Stainless Steel
Silver Nitrate	316 Stainless Steel
Sodium Bisulfate	Fluoropolymer
Sodium Carbonate	Titanium

SOLUTION	TYPE OF HEAT EXCHANGER
Sodium Chlorate	Titanium
Sodium Chloride	Titanium
Sodium Cyanide	316 Stainless Steel
Sodium Dichromate (Hot Seal)	316 Stainless Steel
Sodium Hydroxide	Steel
Sodium Hypochlorite	Fluoropolymer
Sodium Persulfate	Fluoropolymer
Stannate	Steel
Stanostar	Fluoropolymer
Stearic Acid	Fluoropolymer
Sulfamate Nickel	Fluoropolymer or Titanium
Sulfur	Fluoropolymer
Sulfur Peroxide	Fluoropolymer
Sulfuric Acid	Fluoropolymer
Sulphamic Acid	Fluoropolymer
Tannic Acid	Titanium
Tin Nickel	Fluoropolymer
Tin Plating (Acid)(Stanus/Sulphate)	Fluoropolymer
Tin Plating Acid (Fluoborate)	Fluoropolymer
Tin Plating (Alkaline)	316 Stainless Steel
Trichlorethylene	316 Stainless Steel
Trioxide (Pickle)	Fluoropolymer
Turco (4181, 4338)	316 Stainless Steel
Unichrome	Fluoropolymer
Water	316 Stainless Steel
Wood's Nickel Strike	Fluoropolymer or Titanium
Yellow Dichromate	Fluoropolymer
Zinc Acid	Fluoropolymer or Titanium
Zinc Ammonium Chloride	Fluoropolymer or Titanium
Zinc Cyanide	316 Stainless Steel
Zinc Phosphate	316 Stainless Steel
Zinc Phosphate (Fluoride)	Fluoropolymer
Zincate	316 Stainless Steel

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PLEASE ENSURE APPLICABILITY OF HEAT EXCHANGER BEFORE INSTALLATION SINCE WE CANNOT GUARANTEE HEAT EXCHANGERS AGAINST PREMATURE FAILURE DUE TO CORROSION OR CHEMICAL DESTRUCTION CAUSED BY UNUSUAL CONDITIONS OVER WHICH WE HAVE NO CONTROL, SUCH AS:

- Excessively high solution temperatures.
- The concentration of the solution.
- The presence of inhibitors.
- The presence of other acids causing a secondary reaction.
- Stray electrical currents.
- Flux floating on the surface.
- The presence of dissolved gases.
- Excessive sludge build-up.
- Stagnant or turbulent flow of the solution.
- Aeration.
- Presence of oxygen or an oxidizing agent in the solution.
- Erosion.
- High pressures.
- Vacuum conditions.

PROCESS TECHNOLOGY

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