Made in USA

Chemical Compatibility Guide

SOLUTION	TYPE OF HEATER
Acetic	PTFE or Quartz
Acid Sulfate	PTFE or Quartz
Actane 70, 80	PTFE
Actane Salt	PTFE
Alcorite	PTFE or Quartz
Alkaline Cleaners (Electrified)	304 Stainless Steel
Alkaline Soaking Cleaners	304 Stainless Steel
Alodine (most formulas)	316 Stainless Steel
Alstan	304 Stainless Steel
Aluminum Anodizing	PTFE or Quartz
Aluminum Bright Dip	PTFE or Quartz
Aluminum Chloride	PTFE or Quartz
Aluminum Cleaners	304 Stainless Steel
Aluminum Sulfate	304 Stainless Steel
Ammonia	304 Stainless Steel
Ammonia Persulfate	PTFE or Quartz
Ammonium Bi Fluoride	PTFE
Ammonium Chloride	Titanium
Ammonium Nitrate	316 Stainless Steel
Anodizing	PTFE or Quartz
ARP 28, 80 Blackening Salts	PTFE or Quartz
Arsenic	304 Stainless Steel
Barium Chloride	Titanium
Benzoic Acid	Titanium
Black Nickel	PTFE or Quartz
Black Oxide (High-Temp)	304 Stainless Steel
Black Oxide (Low-Temp)	Titanium
Bonderizing	316 Stainless Steel
Boric Acid	Titanium
Brass Cyanide	304 Stainless Steel
Bright Copper-Cyanide	304 Stainless Steel
Bright Nickel	PTFE, Quartz or Titanium
Bronze	304 Stainless Steel
Brown Oxide	Titanium
Burnite	PTFE or Quartz
Butyric Acid	Titanium
Cadmium (Alkaline)	304 Stainless Steel
Cadmium Black	PTFE or Quartz
Cadmium Fluoborate	PTFE
Calcium Chloride	Titanium
Calcium Hypochlorite	Titanium
Carbonic Acid	Titanium
Caustic Etch	Steel
Caustics	Steel
Caustics (highly concentrated 20% & over)	Steel
Chloride	PTFE, Quartz or Titanium
Chlorine/Wet	PTFE or Quartz
Chlorosulfuric Acid	Titanium
Chromic Acetate	PTFE or Quartz
Chromic Anodizing	PTFE or Quartz
Chromic Nickel	PTFE or Quartz
Chromium (Fluoride)	PTFE
Chromium (No Fluorides)	PTFE, Quartz or Titanium
Citric Acid	Titanium
Clear Chromate	PTFE or Quartz
Cobalt Nickel	PTFE, Quartz or Titanium
Cobalt Plating	304 Stainless Steel
Cobra Etch	PTFE
Copper Acid	PTFE or Quartz
Copper Bright Acid	PTFE or Quartz
Copper Cyanide	304 Stainless Steel
Copper Fluoborate	PTFE
Copper Pyrophosphate	304 Stainless Steel
Copper Strike	304 Stainless Steel
Copper Sulfate	PTFE or Quartz
Cyanide	304 Stainless Steel
Deionized Water	316 Stainless Steel
Deoxidizer (Etching)	PTFE or Quartz
Deoxidizer Non-Chromated	316 Stainless Steel
Dichromic Seal	Steel
Diethylene Glycol	304 Stainless Steel
Diversey, 511, 514	PTFE
Dow Therm	316 Stainless Steel
Dye Solutions	304 Stainless Steel
Ebonal C	Titanium
Electro Cleaner	304 Stainless Steel
Electro Polishing	PTFE or Quartz
Electroless Copper	PTFE
Electroless Nickel	PTFE or Titanium
Electroless Tin (Acid)	PTFE or Quartz
Electroless Tin (Alkaline)	316 Stainless Steel
Enthone 80 Acid	PTFE
Ethylene Glycol	Steel
Ferric Ammonium Oxide	316 Stainless Steel
Ferric Chloride	PTFE, Quartz or Titanium
Ferric Nitrate	304 Stainless Steel
Ferric Sulfate	304 Stainless Steel
Fluoborate	PTFE
Formic Acid	316 Stainless Steel
Glycerol	304 Stainless Steel
Gold-Acid	PTFE, Quartz or Titanium
Gold Cyanide	304 Stainless Steel
Gold-Immersion	304 Stainless Steel
Grey Nickel	PTFE, Quartz or Titanium
Hot Seal Dichromate	316 Stainless Steel
Hydrochloric Acid	PTFE or Quartz
Hydrofluoric Acid	PTFE
Hydrogen Peroxide	PTFE or Quartz
Indium	PTFE or Quartz
Iridite (1, 2, 3, 4-C, 7, 8, 15)	PTFE or Quartz
Iridite (4-75, 4-73, 14, 14-2, 14-9)	316 Stainless Steel
Iron Fluoborate	PTFE
Iron Phosphate	316 Stainless Steel
Isoprep (186, 187, 188)	316 Stainless Steel

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SOLUTION	TYPE OF HEATER
Isoprep Acid Salts	PTFE
Jetal	304 Stainless Steel
Lead Acetate	304 Stainless Steel
Lime Saturated Water (Alkaline)	316 Stainless Steel
Linseed Oil	304 Stainless Steel
Magnesium Hydroxide	304 Stainless Steel
Magnesium Nitrate	PTFE or Quartz
Manganese Phosphate	316 Stainless Steel
McDermid 629	PTFE
Mercuric Chloride	Titanium
Muriatic Acid	PTFE or Quartz
Nickel (Plating Solution) (Watts)	PTFE, Quartz or Titanium
Nickel Acetate Seal	316 Stainless Steel
Nickel Chloride	Titanium
Nitric Acid	PTFE or Quartz
Nitric Hydrochloric Acids	PTFE or Quartz
Nitric Phosphoric	Quartz
Oil	Steel
Oleic Acid	PTFE or Quartz
Oxalic Acid	PTFE or Quartz
Paint Stripper (Alkaline)	304 Stainless Steel
Perchlorethylene	316 Stainless Steel
Phosphate	316 Stainless Steel
Phosphate Cleaner	304 Stainless Steel
Phosphoric Acid (No Fluoride)	PTFE or Quartz
Potassium Acid Sulfate	PTFE or Quartz
Potassium Cyanide	304 Stainless Steel
Potassium Hydrochloric	PTFE or Quartz
Potassium Hydroxide	304 Stainless Steel
Potassium Permanganate	PTFE or Titanium
Rhodium	PTFE or Quartz
Rochelle Salt Cyanide	304 Stainless Steel
Ruthenium	PTFE or Quartz
Salt (Actine)	PTFE
Sea Water	Titanium
Silver Bromide	316 Stainless Steel
Silver Cyanide	304 Stainless Steel
Silver Lume	304 Stainless Steel
Silver Nitrate	316 Stainless Steel
Sodium Bisulfate	PTFE or Quartz
Sodium Carbonate	Titanium
Sodium Chlorate	Titanium
Sodium Chloride	Titanium
Sodium Cyanide	304 Stainless Steel
Sodium Dichromate (Hot Seal)	316 Stainless Steel
Sodium Hydroxide	Steel
Sodium Hypochlorite	PTFE
Sodium Persulfate	PTFE or Quartz
Stannate	Steel
Stanostar	PTFE or Quartz
Stearic Acid	Quartz
Sulfamate Nickel	PTFE, Quartz or Titanium
Sulfur	PTFE or Quartz
Sulfur Peroxide	PTFE or Quartz
Sulfuric Acid	PTFE or Quartz
Sulphamic Acid	PTFE or Quartz
Tannic Acid	Titanium
Tin Nickel	PTFE
Tin Plating (Acid) (Fluoborate)	PTFE
Tin Plating (Acid) (Stanus/Sulphate)	PTFE or Quartz
Tin Plating (Alkaline)	304 Stainless Steel
Trichlorethylene	316 Stainless Steel
Trioxide (Pickle)	PTFE or Quartz
Turco (4181, 4338)	316 Stainless Steel
Unichrome	PTFE or Quartz
Water	316 Stainless Steel or Quartz
Wood's Nickel Strike	PTFE, Quartz or Titanium
Yellow Dichromate	PTFE or Quartz
Zinc Acid	PTFE or Titanium
Zinc Ammonium Chloride	Quartz or Titanium
Zinc Cyanide	304 Stainless Steel
Zinc Phosphate	316 Stainless Steel
Zinc Phosphate (Fluoride)	PTFE
Zincate	304 Stainless Steel

Solutions requiring derated heaters are indicated in red type.

PTFE is the abbreviation for PolyTetraFluoroEthylene.

Note: The data listed is provided as a reference and is offered as a guide only. It is not intended to be used as the sole basis of design or to establish specification limits. **Tempco Electric Heater Corporation** assumes no obligation or liability for any advice furnished by it or for results obtained from its use. Due to the complexities of solutions and applications, it is the customer's responsibility to contact their chemical supplier for heater material compatibility and recommendations. Ultimate responsibility lies with the user.

Do not use electric immersion heaters to heat flammable solutions!

CAUTION

Please insure applicability of heater before installation since we cannot guarantee heaters 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 buildup
- Aeration
- Stagnant or turbulent flow of the solution
- Presence of oxygen or an oxidizing agent in the solution
- Erosion
- High Pressures or Vacuum Conditions