

E-Strip™ 922

Immersion, Non-Cyanide, Buffered Copper Stripping Process for Copper plated on Steel

E-Strip 922 process is used at room temperature, 65° to 90°F, to strip copper plate from steel/iron surfaces. **E-Strip 922** is a non-cyanide, highly buffered immersion and low in ammonium hydroxide concentration. It will not etch the steel and iron surfaces. The process does not require presence of copper metal in the solution to initiate copper stripping.

STRIPPING CHARACTERISTICS

Stripping Rate: 25 micro inches/minute, 38 microns/hour (0.0015 inches per hour)
Solution Copper Capacity: 15 oz/gallon (112 grams/liter) copper metal

BATH MAKE-UP

100 GALLONS

E-Strip 922-A: 1 lb/gallon (120 grams/liter) 100 pounds
E-Strip 922-B: 9% by volume 9 gallons

pH range: 8.2 – 8.9, Optimum 8.6 *Use calibrated pH meter*

NOTE: Initial pH is typically 7.3 – 7.6. Use 2-3% by volume of liquid Technical Grade Ammonium Hydroxide to bring up pH into the 8.5 – 8.6 range. Upon bath make-up, some of the E-Strip 922-A will not dissolve. During the stripping process the white precipitate will slowly dissolve into the stripping solution.

AGITATION – Not required

COMPONENT DESCRIPTION:

E-Strip 922-A – Buffer & make-up stripper
E-Strip 922-B – Controls stripping speed
Ammonium Hydroxide – Raises bath pH and complexes copper

EQUIPMENT

Polypropylene tank preferred; ventilation required for Ammonium Hydroxide - keep at PEL for Ammonium Hydroxide.

NOTE: When **E-Strip 922** copper is used as a replacement for a cyanide stripping solution, the tanks must be free of cyanide before charging the tank with the **E-Strip 922** solution. After the removal of the cyanide solution, the equipment should be washed with Hypochlorite solution and the tank soaked for 24 hours in 2% Sodium Hypochlorite to destroy residual cyanide. Do not neglect racks and barrels. After removal of the Hypochlorite solution and water rinsing, a dilute 1 to 2% Sulfuric Acid rinse should be used, followed with

another rinse with cold water and then a 5% Potassium Hydroxide rinse should be used to eliminate the acid. Remove the alkaline rinse, rinse with cold water and then make up the tank with the E-Strip 922 solution. When destroying cyanide, forced ventilation should be used at all times to prevent toxic cyanide fumes from accumulating. Personnel should be equipped with self-contained breathing apparatus. New ventilation duct work and hood must be installed to prevent cyanide affecting **E-Strip 922** quality. Best results are obtained with a new tank or by installing a new flexible liner in a tank which previously contained a cyanide stripping solution.

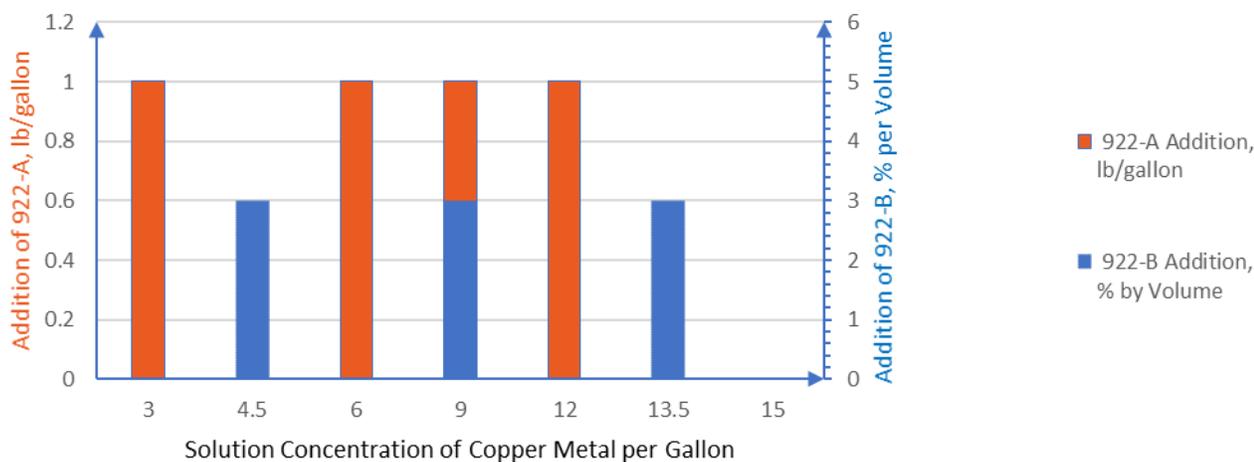
SOLUTION MAINTENANCE

After solution concentration has increased by 3 ounces of copper metal per gallon, add 1 lb/gallon (120 grams/liter) of **E-Strip 922-A** to the tank. ***See note on page 2**

After solution concentration has increased by 4-5 ounces of copper metal per gallon, add 3% by volume of **E-Strip 922-B** to the tank.

*** Note:** pH increases during stripping of copper. **E-Strip 922-A** lowers the pH. After making additions of **E-Strip 922-A**, adjust pH with Ammonium Hydroxide to optimum (8.6).

Maintenance Additions Chart



Bath, oz/gal Cu	922-A Addition, lb/gallon	922-B Addition, % by Volume
3	1	0.00
4.5	0	3.00
6	1	0.00
9	1	3.00
12	1	0.00
13.5	0	3.00
15	Discard Bath	Discard Bath

E-Strip 922-B TITRATION METHOD:

1. Take a 50 ml sample of the **E-Strip 922** working solution and cool to room temperature.
2. Measure out 5 ml of the cooled sample with a 5 ml pipette and transfer to a clean 100 ml volumetric flask. Dilute to the 100 ml mark with tap water and mix thoroughly.
3. Pipette a 10 ml portion of the solution from Step 2 into a clean 250 ml Erlenmeyer flask. Add 25 ml of tap water.
4. Add 10 ml of 15% Potassium Iodide solution and 10 ml of 6N Hydrochloric Acid. The solution will turn to a reddish-brown color.
5. Titrate the solution with 0.1N Sodium Thiosulfate to a straw color and add 2 ml of 0.2% Starch Solution. The solution will turn to a dark blue color.
6. Continue titrating until the blue color disappears.
7. Record the burette reading in ml of 0.1N Sodium Thiosulfate.
8. Calculation: **E-Strip 922** (% by volume) = ml of 0.1N Sodium Thiosulfate x 1.106

COPPER METAL TITRATION METHOD:

1. Pipette 2 ml sample of **E-Strip 922** solution into a 250 ml Erlenmeyer flask.
2. Add 25 ml of distilled or deionized water.
3. Add 4 to 5 grams of Ammonium Persulfate. Let it stand for 5 to 10 minutes. Swirl the solution a few times.
4. Add 5 ml of Ammonium Hydroxide to the solution.
5. Add 50 ml distilled or deionized water.
6. Add PAN indicator.
Low copper metal concentration (0-2.0 oz/gal Cu metal) 4-5 drops of indicator.
High copper metal concentration (2.0 oz/gal and up Cu metal) 8-10 drops of indicator.
7. Color is a purple to pale red depending on copper metal concentration.
8. Titrate with 0.1 M EDTA solution to a yellow-green end point.

Calculations: oz/gallon of copper metal = ml of EDTA x 0.425

CAUTION

Do not work with **E-Strip 922-A** or **E-Strip 922-B** without first reading and understanding the **Safety Data Sheets** furnished by EPI.

Do not mix **E-Strip 922-A** or **E-Strip 922-B** products or their solutions with acids or any other materials.

Avoid contact with eyes, skin and clothing. Wear eye protection, protective gloves and rubber apron when preparing and working with **E-Strip 922** solutions.

PACKAGING

E-Strip 922-A: One hundred- and four-hundred-pound non-returnable containers. **E-Strip 922-B:** 5 gallon, 55 gallon and 275 gallon non-returnable containers.



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TECHNICAL DATA

IMPORTANT NOTICE! For Industrial Use Only

The following is made in lieu of all warranties, expressed or implied, including the implied warranties of merchantability and fitness for purpose: seller's and manufacturer's only obligation shall be to replace such quantity of the product as proved to be defective. Before using, user shall determine the suitability of the product for its intended use, and user assumes all risk and liability whatsoever in connection therewith. **Neither seller nor manufacturer shall be liable either in tort or in contract for any loss or damage, direct, incidental or consequential, arising out of the use or the inability to use the product.**

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