Buffered Copper Stripping Process for Copper plated on Steel

**E-Strip™ 922**

**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 highly buffered 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**

<table>
<thead>
<tr>
<th>Component</th>
<th>100 GALLONS</th>
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<tr>
<td><strong>E-Strip 922-A:</strong></td>
<td>1 lb/gallon (120 grams/liter) 100 pounds</td>
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<tr>
<td><strong>E-Strip 922-B:</strong></td>
<td>9% by volume 9 gallons</td>
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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.

**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.
**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*

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).

**COPPER METAL TITRATION**

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.

**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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