Stripol

Stripol is a mild oxidizing, organic compound, that is dissolved in ratio with water and sodium cyanide, to strip plated metals such as nickel, copper, brass, silver, zinc/ nickel alloys, cadmium, and others that form soluble complexes with cyanide, off steel, cast iron, stainless steel and magnesium substrates. Stripol prepared in ratio with Sodium Hydroxide and water, will strip tin, tin/lead, and lead deposits off steel. Stripol prepared in ratio with sulfuric acid and water, will strip bright nickel and dull nickel plate off copper, brass and bronze alloys.

Stripol EN and Stripol are used in conjunction with water to make a solution which will remove electroless nickel deposits up to 5 mils thick from steel, copper and copper alloys. See Stripol EN bulletin for instructions to remove electroless nickel.

Stripol NSN and Stripol are used in conjunction with water to make a solution which will remove electroplated nickel from steel, copper and copper alloys. See Stripol NSN product bulletin for instructions to remove electroplated nickel.

Features & Benefits

Works on multiple metal types	Eliminates needs for multiple products
Immersion process	Reduces operating costs

Operating Conditions

Equipment

Stripol & Sodium Cyanide or Sodium Hydroxide Bath

Tank	Mild steel or Polypropylene.
Heater	Stainless steel, Lead or Pyrex immersion type, steam fed, or gas fired
Ventilation	Mechanical to maintain levels below permissible exposure limits.
Agitation	Stirrer, pump, work movement, or mild air

Stripol & Sulfuric Acid Bath

Tank	Poylpropylene, Rubber or Lined Lined Tanks, and Ceramic
Heater	Lead or Pyrex immersion type, steam fed, or gas fired
Ventilation	Mechanical to maintain levels below permissible exposure limits
Agitation	Stirrer, pump, work movement, or mild air

Application – (Stripol and Sodium Cyanide Baths)

Stripping Nickel, Copper, Brass, Silver, Cadmium, Zinc and Tin from Steel Substrates

	Range	Optimum
Stripol	6 – 10 oz/Gal (45 – 75 g/L)	8 oz/Gal (60 g/L)
Sodium Cyanide	16 – 24 oz/Gal (120 – 180 g/L)	20 oz/Gal (150 g/L)
Temperature	70°F – 140ºF (21°C – 60 ºC)	125ºF (52 ºC)
Time	See Operating Tips	As required
Agitation	Solution movement (no air)	As required

Notes:

- When stripping copper, brass, cadmium and silver and zinc the concentration of sodium cyanide should be 16 to 24 oz/Gal (120 – 180 g/L).

- Do not use Potassium Cyanide in place of Sodium Cyanide.

Solution Make-Up for Stripol and Sodium Cyanide Baths

**** Danger!! The prepared stripping bath contains Sodium Cyanide. Consult Stripol, MSDS Sheet and Sodium Cyanide MSDS sheet before handling these materials. Wear approved, protective clothing and confirm that ventilation system is functioning properly.**

Be sure the process tank has been drained and cleaned. Fill to within two thirds of final operating volume with clean, warm water (100°F to120ºF, 38°C to 49 ºC). With good solution mixing, gradually add the required amount of Stripol. After the required amount of Stripol has been added and dissolved, gradually add the required amount of Sodium Cyanide. Mix until all has been added and dissolved. Adjust final solution to operating volume and temperature.

Application – (Stripol and Sodium Hydroxide Baths)

Stripping Tin, Tin /Lead, And Lead from Steel

	Range	Optimum
Stripol	6 – 10 oz/Gal (45 – 75 g/L)	8 oz/Gal (60 g/L)
Sodium Hydroxide	16 – 20 oz/Gal (120 – 150 g/L)	18 oz/Gal (135 g/L)
Temperature	90°F – 190ºF (32°C – 88 ºC)	140ºF (60 ºC)
Time	See Operating Tips	As required
Agitation	Solution movement (no air)	As required

Solution Make-Up for Stripol and Sodium Hydroxide Baths

**** Danger!! The prepared stripping bath contains sodium hydroxide. Consult Stripol, MSDS Sheet and sodium hydroxide MSDS sheet before handling these materials. Wear approved, protective clothing and confirm that ventilation system is functioning properly.**

Be sure the process tank has been drained and cleaned. Fill to within two thirds of final operating volume with clean, warm water (100°F to 120ºF, 38°C to 49 ºC). With good solution stirring, gradually add the required amount of Stripol. After the required amount of Stripol has been added and dissolved, gradually add, with good mixing, the required amount of sodium hydroxide.

Rapid additions may result in localized boiling and spattering!

After the required amount of Sodium Hydroxide has been added and dissolved, adjust final solution to operating volume and temperature.

Note: Do not use baskets racks, or related equipment to be immersed in the bath that have brazed or soldered joints.

Application – (Stripol and Sulfuric Acid Baths)

Stripping Nickel from Brass & Copper Alloys

	Range	Optimum
Stripol	8 – 16 oz/Gal (60 – 120 g/L)	12 oz/Gal (90 g/L)
Conc. 66 Be Sulfuric Acid	3% – 10% v/v	6% v/v
Temperature	140°F – 190ºF (60°C – 88ºC)	165ºF (74ºC)
Time	(Time to plate) x (1 to 2)	As required
Agitation	Solution, movement or mild air	As required

Solution Make-Up for Stripol and Sulfuric Acid Baths

Consult Stripol SDS sheet before handling this product for safety information and protective clothing requirements.

Be sure the process tank has been drained and cleaned. Fill to within two thirds of final operating volume with clean, warm water (100°F to 120 ºF, 38°C to 49 ºC) with good solution stirring, gradually add the required amount of Stripol. After the required amount of Stripol has been added and dissolved, the required volume of sulfuric acid can be added! **Slowly, with good mixing.** Consult Sulfuric Acid SDS sheet before handling this product for safety information and protective clothing requirements. Adjust final operating volume and temperature.

Process Suggestions

Under typical operating conditions, the bath is maintained with additions of Stripol and Sodium Cyanide, or with Sodium Hydroxide, following the same ratio as per initial bath makeup. As the bath ages, the stripping rate at constant operating temperature will decrease. Replenishment additions per the analysis procedure are suggested If the solution is not analyzed, adding Stripol at the rate of 2oz/Gal (15g/L) and 4.5 oz/Gal (34g/L) of Sodium Cyanide is recommended. If the bath is prepared with Stripol and Sodium Hydroxide is recommended. Once the initial make up of Stripol has been added as maintenance, either working bath may be replace with a fresh solution.

- The working pH of Stripol Sodium Cyanide solution should be maintained at 11 to 12. Lower solution pH results longer stripping times. Higher solution pH may contribute to etching steel base metal.
- Maintain Free Sodium Cyanide above 10 oz/Gal (75g/L) to avoid etching steel.
- Heating the bath for prolonged periods above the recommended maximum temperature will hasten the thermal oxidation of cyanides.
- **Do not** use the bath to strip plated coatings off: zinc base metals, aluminum alloys, lead, and tin base metals.
- At 160ºF (71 ºC), the nickel metal will be stripped in approximately the time that was necessary to deposit the coating. At 180ºF (82ºC), the strip-rate will be approximately twice as fast.
- At 160°F to170 ºF (71°C to 77ºC), electrolytic nickel will be stripped at a rate of 1.5 mil/hour.
- At 135°F to 145ºF (57°C to 63ºC), copper and brass will be stripped at the rate of 3 mils/hour.
- A new working solution may require the addition of 1-2 grams/ 100 Gal of Ammonium Thiocyanate, to initiate the stripping reaction.
- If the temperature is too low, stripping may cease at the first copper layer.
- Mechanical agitation is recommended to accelerate the stripping rate.

- Rinse well before immersing the parts in the working Stripol solution.
- Economical use of the stripping bath is achieved by processing parts in a rotating, enclosed barrel.
- As the square feet of parts processed in the bath increases, there will be an increase in sludge. Remove the sludge to avoid buildup and contact with parts. Sludge contact with steel parts, will etch the base metal.
- Stripped parts should be relatively clean; therefore, a standard pretreatment cleaning cycle will suffice before plating.
- Aged stripper solutions may develop a light smut on processed parts. This smut is readily removed in the surface preparation cycle.
- Oily and greasy parts should first be soaked cleaned in the appropriate Hubbard-Hall cleaner, before being immersed in the Stripol solution.
- Topcoat deposits of chromium should first be anodically stripped in the appropriate Hubbard-Hall electro-cleaner.
- Organic coatings, such as lacquers, paints, and powder coatings, should first be stripped in the appropriate Hubbard-Hall stripping solution.
- To strip very passive nickels (such as electroless nickel), use a ratio of 2.5 to 7.5 of water to sulfuric acid. Activating the passive nickel before immersion in the Stripol solution may be supplemented by either:

1. Cathodic treatment in a suitable Hubbard-Hall Inc., electro-cleaner.
2. Immersion in 10-20 % v/v Hydrochloric Acid solution at 75°F to 80ºF (24°C to 27ºC).

Titration Method

Stripol & Sodium Cyanide Bath Analysis

Stripol and Sodium Cyanide are typically consumed in the immersion stripping process. Drag out of the stripping bath and replenishment with water also dilutes the working solution. Regular maintenance additions of Stripol in ratio with Sodium Cyanide are recommended to replenish the bath. This can be accomplished by observing quality of stripping & speed and making appropriate additions per requirements of the process. Alternatively, the stripping bath can be analyzed to determine the concentration of free sodium cyanide, to determine appropriate additions of Stripol and sodium cyanide to restore the balanced ration of the stripping bath components.

Titration Procedure for Stripol & Sodium Cyanide Bath

1. Pipette a 5 mL sample of the stripping bath into a 250 mL Erlenmeyer flask.
2. Add 50 to100 mL of distilled water.
3. Add 10 mL of 10% w/v Potassium Iodide Indicator solution.
4. Titrate with 0.1 N Silver Nitrate to permanent white/yellow cloudy endpoint.
5. Record mL used.

Calculation

Free Sodium Cyanide (oz/Gal) = mL 0.1 N $AgNO_3$ x 0.26

Refer to recommended Application Stripper Bath (page 2) for ratio additions of Sodium Cyanide and Stripol.

Stripol & Sodium Hydroxide Bath Analysis

Stripol and Sodium Hydroxide are typically consumed in the immersion stripping process. Drag out of the stripping bath and replenishment with water also dilutes the working solution. Regular maintenance additions of Stripol in ratio with Sodium Hydroxide are recommended to replenish the bath. This can be accomplished by observing quality of stripping & speed and making appropriate additions per requirement of the process. Alternatively, the stripping bath can be analyzed to determine the concentration of sodium hydroxide, to determine appropriate additions of Stripol and sodium hydroxide to restore the balanced ration of the stripping bath components.

Titration Procedure for Stripol & Sodium Hydroxide Bath

1. Pipet a 5 mL sample of the stripping bath into a 250 mL Erlenmeyer flask.
2. Add 25 mL of distilled water.
3. Add 5 mL of Sulfo Orange Indicator solution.
4. Titrate with1.0 N Hydrochloric Acid to yellow colored solution endpoint.
5. Record mL used.

Calculation

Sodium Hydroxide (oz/Gal) = mL 0.1 N HCl x 1.067

Refer to recommended Application Stripper Bath (page 3) for ratio additions of Sodium Hydroxide and Stripol.

Waste Disposal

Procedure for discarding Stripol-Sodium Cyanide solution

1. Calculate the total amount of sodium cyanide present in the tank.
2. For each lb. of sodium cyanide add 8 lbs. of commercial calcium hypochlorite. The hypochlorite must first be dissolved in water and then added slowly to a room temperature solution of Stripol.

Procedure for discarding Stripol-Sulfuric Acid solution

Neutralize the Stripol-Sulfuric Acid solution to a pH between 6 to 8 with either soda ash or caustic soda. Discharge the neutralized solution to sewer or settling lagoon. In order to be completely informed on the latest waste disposal regulations for your area, please contact the local authorities.

Caution

Please read and understand the Stripol Safety Data Sheet before handling and using this product.

WARRANTY: THE QUALITY OF THIS PRODUCT IS GUARANTEED ON SHIPMENT FROM OUR PLANT. IF THE USE RECOMMENDATIONS ARE FOLLOWED, DESIRED RESULTS WILL BE OBTAINED. SINCE THE USE OF OUR PRODUCTS IS BEYOND OUR CONTROL, NO GUARANTEE EXPRESSED OR IMPLIED IS MADE AS TO THE EFFECTS OF SUCH USE, OR THE RESULTS TO BE OBTAINED.

Our people. Your problem solvers.

For more information on this process please call us at
1-800-648-3412
or techservice@hubbardhall.com