

Luster-On Products

Technical Data Sheet

LUSTER-ON COPPERBRITE

I. GENERAL DESCRIPTION

Luster-On Copperbrite is an addition agent to obtain semi-bright copper deposits in cyanide copper plating solutions. This addition agent also acts as a grain refining and leveling agent. By minimizing anode polarization, Luster-On Copperbrite reduces the consumption of sodium cyanide and the formation of sodium carbonate. It can be used in barrel and still plating, for stop-off plating, and for a pre-plate prior to nickel-chrome. It is suitable as a substitute for Rochelle salts and liquids in the Rochelle type bath.

II. PHYSICAL FORM

Luster-On Copperbrite is a liquid of uniform composition with a slight odor and light brown in color.

III. BATH COMPOSITION COPPER STRIKE SOLUTION

Copper Cyanide	2.0 - 3.5 oz./gal.
Free Sodium Cyanide	1.5 - 2.0 oz./gal.
Caustic Soda	0 - 1/2 oz./gal.
Luster-On Copperbrite	2.0 - 4.0 percent
pH	11.0 - 12.5

IV. BATH MAKE-UP (100 gallons) COPPER STRIKE

Copper Cyanide	12 - 22 lbs.
Sodium Cyanide	24 - 36 lbs.
Caustic Soda	1/4- 3 lbs.
Luster-On Copperbrite	2 - 4 gallons

Luster-On Copperbrite (Cont.)

V. BATH COMPOSITION RACK COPPER PLATING SOLUTION

Copper Cyanide	4.5 oz./gal.
Free Sodium Cyanide	0.8 - 1.0 oz./gal.
Caustic Soda	1 oz./gal.
Sodium Carbonate	2 - 9 oz./gal.
Luster-On Copperbrite	4 - 6 percent
pH	12.5
Temperature	120 - 160 F.

VI. BATH MAKE-UP (100 gallons) RACK COPPER PLATING

Copper Cyanide	28 lbs.
Sodium Cyanide	36 lbs.
Caustic Soda	6 lbs.
Sodium Carbonate	12 lbs.
Luster-On Copperbrite	4 - 6 gallons

VII. BATH COMPOSITION COPPER BARREL SOLUTION

Copper Cyanide	6.0 oz./gal.
Free Sodium Cyanide	1.5 - 2.0 oz./gal.
Caustic Soda	1.5 - 2.5 oz./gal.
Luster-On Copperbrite	4 - 6 percent
pH	11.0- 12.0
Temperature	130-140° F.

VIII. BATH MAKE-UP (100 gallons) BARREL PLATING

Copper Cyanide	37 lbs.
Sodium Cyanide	51 lbs.
Caustic Soda	12 lbs.
Luster-On Copperbrite	2 - 4 gallons

IX. BATH MIXING INSTRUCTIONS

- A. Fill tank two-thirds with warm water.
- B. Dissolve sodium cyanide.
- C. Slowly add copper cyanide with continuous agitation.
- D. Dissolve sodium carbonate.
- E. Add Luster-On Copperbrite.
- F. Fill tank with water to operating level.
- G. Check analysis and add sufficient sodium cyanide to maintain free sodium cyanide range and adjust pH with Caustic Soda.

Luster-On Copperbrite (Cont.)

X. MAINTENANCE ADDITION

Luster-On Copperbrite should be maintained at 4 to 6 percent by volume. Check analysis sheet for control.

XI. PACKAGE

5 gallon drum.

XII. CAUTION

**DANGER! HIGHLY ALKALINE INDUSTRIAL PRODUCT
CAUSES BURNS OF EYES AND SKIN
HARMFUL IF SWALLOWED OR INHALED**

Avoid contact with eyes, skin, and clothing.

Wear rubber gloves, safety goggles or face shield, and suitable protective clothing when handling.

Wash thoroughly after handling.

Avoid breathing mist.

Use with adequate ventilation.

Do not take internally.

KEEP FROM FREEZING

Keep container closed when not in use.

When preparing new solutions or adding to existing solutions, slowly add to surface of solution while stirring to avoid spattering. Do not add large amounts of product to solution at any one time. Do not add to hot water or hot solution warmer than 110-120°F.

FIRST AID IN CASE OF CONTACT: Immediately flush eyes or skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. For eyes, get medical attention. Wash clothing and shoes before reuse.

IF SWALLOWED: Wash out mouth thoroughly with water. Give several glasses of water or milk to drink. Follow with diluted vinegar, lemon juice or other citrus fruit juice. Contact a physician.

KEEP OUT OF REACH OF CHILDREN

Luster-On Copperbrite (Cont.)

FOR INDUSTRIAL USE ONLY

This product is sold for industrial use only. Our suggestions for its use are based upon tests and procedures which from experience we believe to be reliable. Since the use is beyond our control, neither we nor our distributors can assume responsibility, either expressed or implied for the results and/or for violation of any patents or any claims resulting from such use.

LUSTER-ON[®] is a registered trade mark of **LUSTER-ON PRODUCTS, INC.**

NOTE: All gallon measurements are U.S. gallons.

Rev. 3/27/01

Luster-On Products

Technical Data Sheet

DETERMINATION OF COPPER CYANIDE BATH

Cyanide Copper Plating Solution

A. Solutions:

Potassium Iodide	100 g/l KI C.P.
Silver Nitrate	13 g/l AgNO ₃ C.P.
Hydrochloric Acid	0.1 N or 8.24 ml/l HCl
Barium Chloride	100 g/l BaCl ₂ ·2 H ₂ O C.P.
Disodium Salt of E.D.T.A.	0.060 M or 22.34 g/l E.D.T.A.
Solid Ammonium Persulfate	Reagent Grade
Ammonium Hydroxide, 6 N	400 ml NH ₄ OH diluted to 1 liter
Pan Indicator	(1-(2-pyridylazo)-2 naphthol)0.1% Alcoholic Solution
Sulfuric Acid	(1.N) H ₂ SO ₄ - 28.4 ml/l conc. H ₂ SO ₄

B. Method:

Free Sodium or Potassium Cyanide

1. Pipette a 10 ml sample into a 250 ml Erlenmeyer flask.
2. Add 100 ml of distilled water and 5 ml of 10% (KI) potassium iodide.
3. Titrate with standard silver nitrate (13 g/l AgNO₃) to yellow opalescent color.

ml titration x 0.100 = oz./gal. NaCN

ml titration x 0.133 = oz./gal. KCN

Luster-on Products Inc., Springfield, MA - 800-888-2541, Fax 413-731-5549

www.luster-on.com E-MAIL sales@luster-on.com

DETERMINATION OF COPPER CYANIDE BATH (Cont.)

B. Method (Cont.)

Caustic:

1. Pipette a 10 ml sample into a 250 ml Erlenmeyer flask.
2. Add 100 ml of distilled water.
3. Add 8 drops of LaMotte's Sulfo-Orange indicator.
4. Titrate sample in standard 1N sulfuric acid to match color of blank sample.

$$\text{ml H}_2\text{SO}_4 \text{ standard} \times 0.752 = \text{oz/gal KOH}$$

$$\text{ml H}_2\text{SO}_4 \text{ standard} \times 0.526 = \text{oz/gal NaOH}$$

Sodium or Potassium Carbonate:

1. Pipette a 5 ml sample into a 250 ml Erlenmeyer flask.
2. Add 100 ml water and heat to a boil. Add 30 ml of 10% barium chloride solution (BaCl_2).
3. Allow to settle.
4. Filter through No. 41 Whatman paper and wash barium carbonate precipitate with hot water.
5. Carefully return the filter paper to original container and add 100 ml hot distilled water.
6. Add few drops of methyl orange-xylene cyanol indicator and titrate with 1N HCl to a greenish purple endpoint.

$$\text{ml titration} \times 1.42 = \text{oz/gal sodium carbonate (Na}_2\text{CO}_3)$$

$$\text{ml titration} \times 1.85 = \text{oz/gal potassium carbonate (K}_2\text{CO}_3)$$

Copper Metal

1. Pipette a 1 ml sample into a 250 Erlenmeyer flask. Add 0.5 - 1.0 grams ammonium persulfate (1/4 teaspoon leveled off) and agitate.
2. Add 6N ammonium hydroxide until the solution turns a bright clear blue.
3. Add 100 ml of water and add 6 - 10 drops of Pan indicator.
4. Titrate with 0.060 Molar E.D.T.A. until the solution becomes green.

$$\text{Cu (g/l)} = 3.812 \times \text{ml E.D.T.A.}$$

$$\text{Cu (oz/gal)} = 0.509 \times \text{ml E.D.T.A.}$$

$$\text{CuCN (g/l)} = 5.374 \times \text{ml E.D.T.A.}$$

$$\text{CuCN (oz/gal)} = 0.717 \times \text{ml E.D.T.A.}$$

Luster-On Products

Technical Data Sheet

DETERMINATION OF LUSTER-ON COPPERBRITE

CAUTION: STEPS 1 - 9 MUST BE PERFORMED UNDER HOOD

1. Pipette 5 ml sample into 250 ml Erlenmeyer flask.
2. Add 10 ml concentrated H_3PO_4 and about 20 ml of water.
3. Boil on hot plate for 15 minutes with boiling beads to get rid of Hydrogen Cyanide.
4. Filter through Whatman #41 filter paper into 500 ml Erlenmeyer flask.
5. Add 30.0 cc of 0.5 N sodium chromate from a burette.
6. Add 15 cc concentrated sulfuric acid.
7. Dilute with water to 200 ml.
8. Add boiling beads and bring to a boil. Boil for 15 minutes.
9. Cool to room temperature.
10. Add 10 ml of 10% KI solution.
11. Titrate quickly to avoid loss of iodine with 0.5N sodium thiosulfate to a clear yellow green.
12. Add 1 - 2 ml of starch solution and titrate to a clear green.
13. Calculations:

% by volume of Luster-On Copperbrite = (0.54)(30.0 - mls of Sodium thiosulfate used)

Luster-on Products Inc., Springfield, MA - 800-888-2541, Fax 413-731-5549
www.luster-on.com E-MAIL sales@luster-on.com