Product Bulletin
Product Name: Laser ACB 33
Product Code: 2341005
Revision Date: September 27, 2024

Laser ACB 33

Laser ACB 33 is a highly stabilized peroxide/sulfuric acid system that replaces bichromate, chromic acid, or nitric-sulfuric acid pickles commonly used for pickling copper, brass and bronze alloys.

As a pre-pickle, Laser ACB 33 is an effective process that quickly dissolves heavy oxides to produce a uniform surface that is well suited for subsequent metal drawing, rolling or sheet operations.

Laser ACB 33 contains 33% by weight hydrogen peroxide and is therefore not subject to reporting under Homeland Security regulations.

Features & Benefits

- Waste treatment simplified
- Economical
- No need for fume scrubbers
- Normal effluent treatment is effective
- Stability when not in use
- Does not contain complexing agents

Typical Applications

- Deoxidizing of copper wire and sheet stock
- Cleaning and deoxidizing of brazed joints
- Produce a matte surface on copper alloys
- Activate a copper alloy for plating

Product Bulletin

Product Name: Laser ACB 33
Product Code: 2341005
Revision Date: September 27, 2024

Pre-Pickle Make-Up

Make up in the following order:

Component	Concentration
Water	79.9% by volume
Copper Sulfate	2.0 oz/gal
Sulfuric Acid, 66° Be'	15% by volume
Laser ACB 33	5.1% by volume

Note: Care should be taken when adding the sulfuric acid, as the solution will become very hot.

Make-up procedure

1) Fill tank three-quarters full with water.
2) Dissolve 2 oz/gal copper sulfate pentahydrate if 300 series stainless steel equipment is being used.
3) Carefully add required amount of sulfuric acid 66 Be', technical grade and mix well.
4) Allow bath to cool below 120□F.
5) Add required amount of Laser ACB 33 and mix well.
6) Bring up to final volume with water.

Operating Conditions

	Range	Optimum
Laser ACB 33	2 to 6% (vol)	5.1% (vol)
Sulfuric acid	10 to 20% (vol)	15% (vol)
Temperature	100° - 120°F	110°F
Immersion time	1 - 4 minutes	

Laser ACB 33 is a concentrated peroxide solution that completely removes oxides, scales, and smuts from copper alloys and restores these metals to their original color. Inhibitors contained in this concentrate serve to minimize attack on the base metal and also retard tarnish formation after processing.

Equipment

Stainless steel or plastic tanks that have provision for heating and cooling are recommended:

Stainless steel (type 304 or 316 pre-passivated)
pvc (type 1)
pvdc
Polyethylene
Polypropylene (molded or extruded)

BATH CONTROL PROCEDURE FOR DETERMINING CONCENTRATIONS OF LASER ACB 50, SULFURIC ACID AND COPPER METAL

Chemicals required:

- Sulfuric acid solution, 50% volume

- Ferroin indicator:
  - Mix 1.3 grams 1,10 phenanthroline with 0.7 grams ferrous sulfate heptahydrate and dissolve in 100 ml distilled water.

- Standard ceric solution 0.1N:
  - Slowly add 30 ml concentrated sulfuric acid to 500 ml distilled water with constant stirring, then add 63.25 grams of ceric ammonium sulfate dihydrate and mix until dissolved; add distilled water to 1 liter in volumetric flask.

1) Pipette 1 ml of bath into 500 ml Erlenmeyer flask and add approx¬imately 300 mls of distilled water. Swirl to mix.
2) Add 5 ml sulfuric acid solution and mix.
3) Add 1 ml ferroin indicator.
4) Titrate with standard ceric solution from pale red to pale blue.

mls of titrant x 0.40 = % by volume **Laser ACB 33**

Sulfuric Acid Concentration

1) Pipette 1 ml of bath solution into 250 ml Erlenmeyer flask.
2) Add 3 drops of methyl orange indicator.
3) Titrate with 1N sodium hydroxide solution until a yellow green color is observed.

MLS OF 1N SODIUM HYDROXIDE TITRANT X 2.8 = % BY VOL SULFURIC ACID

Product Bulletin
Product Name: Laser ACB 33
Product Code: 2341005
Revision Date: September 27, 2024

Copper Concentration

Chemicals required

- Pan indicator, makeup:
  Dissolve 0.1 gram of pan indicator (1-(2 pyridylazo) -2 napthol) in 100 mls of methylalcohol.

- 0.0575 M EDTA disodium salt solution, make-up:
  Dissolve 21.40 grams of M EDTA disodium salt in 10 mls of concentrated ammonium hydroxide and 100 mls of distilled water, make up to 1 liter with distilled water.

1) Pipette 1 ml of pre-pickle solution into 500 ml Erlenmeyer flask.
2) Add 2 mls of concentrated ammonium hydroxide.
3) Add 100 mls of distilled water and about 4 drops of pan indicator.
4) Titrate with 0.0575 M EDTA disodium salt solution until an end point color changes from purple to green.

MLS OF 0.0575 M EDTA TITRANT X 0.48 = OZ/GALLON COPPER

Copper Sulfate Recovery

At operating temperature of 105□- 115□F and sulfuric acid concentration of 13 - 17 fl oz/gal, as much as 10 oz/gal of copper can be contained in the bath without salting out.

At room temperature the saturation point of the bath lies somewhere between 5 to 6 oz/gal copper (20 -24 oz/gal copper sulfate) given the same operating concentrations above. Any concentrations above 6 oz/gal will crystallize out of solution after 12 hours of shut down at room temperature.

Thus if operating concentration is at 10 oz/gal of copper, upon cooling 4 oz/gal of copper or 16 oz/gal copper sulfate crystals would be formed after 12 hours. If the bath in question were 100 gallons, this would represent 25 lbs of copper sulfate pentahydrate crystals.

By using the control procedure for copper concentration daily, the operator can determine by established production figures at what time he will have to shut down before saturation develops and can plan his schedule for the 12 hours shutdown.

During shut down and after crystallization of the excess copper sulfate, the bath is decanted into an extra tank, necessary chemicals are added to bring chemistry back up to operating range and

the bath again is put into full production.

The copper sulfate crystals are dumped out of first tank and collected and sold to the copper reclaim market.

If the production is such that shut down is impractical (3 shifts), then two operating tanks should be put in line. One is used as a back up while the other is shut down.

Storage And Handling

Laser ACB 33 is a hydrogen peroxide mixture and should be stored in original vented container in a dry location, out of sun and away from heat. Empty containers should be diluted with large quantities of water and discarded. A spill or leak should be quickly flushed away by flooding with water.

Avoid contamination from any source, including metals, dust and especially organic materials. Avoid contact with combustible materials. Do not get in eyes - wear goggles. Avoid contact with skin - wear neoprene, butyl rubber or vinyl gloves. Wash thoroughly after handling. Do not breathe mists or vapors; adequate ventilation should be provided.

In the event the Laser ACB 33 drums begins to vent, immediately apply a cold water spray to cool the drum. Do not physically handle the drum. Also, contact HUBBARD-HALL INC. for further assistance.

First Aid

In case of contact with skin immediately flush with water for at least 15 minutes while quickly removing contaminated clothing and shoes. For eyes immediately flush with water for at least 15 minutes and call a physician.

Product Bulletin
Product Name: Laser ACB 33
Product Code: 2341005
Revision Date: September 27, 2024

Waste Disposal

Spent solutions contain hydrogen peroxide and sulfuric acid (although to varying degrees). They will contain dissolved metals - copper, zinc, lead, etc. They do not contain chelators.

Laser ACB 33 solutions can be treated with other waste streams or they can be segregated and batch treated independently. If a clarifier is used in the separation of solids and liquids, the batch method is preferred. Small gas bubbles produced by peroxide destruction can lift previously precipitated sludge and cause "floaters". If membrane filters, cartridge filters, sand filters, filter presses, etc., are used, then everything can be mixed.

Hydrogen peroxide is generally unstable on the alkaline side. Since laser solutions are acidic, they require adjustment with caustic, caustic potash, lime, soda ash, etc. When the ph rises above 8.0, effervescence will occur. This will vary with the concentration of peroxide. Certain dissolved metals like iron, lead, or copper - will accelerate this.

This breakdown should be allowed to run to completion - as evidenced by the absence of gassing. If the dwell time is very short, sodium bisulfite can be used to expedite the process.

When the ph was raised, the various metals will precipitate in their hydroxide forms. If the laser solution is mixed with chelate-containing wastes, some can remain in solution. Care should be taken to prevent this.

After metal precipitation and peroxide breakdown are complete, the waste stream can be handled in the normal fashion. The addition of coagulants and flocculants can proceed as normal.

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 203.756.5521 or email: techservice@hubbardhall.com

Hubbard-Hall holds certifications for **ISO 9001:2015**, Responsible Distribution, as accredited by the **ACD** (Alliance for Chemical Distributors) and as a **Women-Owned Small Business**, as well as maintaining an association with **Omni-Chem**[136].