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Eisen-Golden Laboratories EG-PCB-8/1

Eisen-Golden Laboratories PCB Etchant Dry Powder Instruction Manual

Model: EG-PCB-8/1

1. Product Overview

The Eisen-Golden Laboratories Printed Circuit Board (PCB) Etchant is a dry powder designed for etching copper from circuit boards. The active ingredient is Ammonium Persulfate ((NH4)2S2O8). This etchant is formulated to remain transparent during the etching process, allowing for clear monitoring of progress. It does not require heating or agitation and is effective at room temperature.

- **Weight:** 8 Ounces (227 Grams)
- **Mix Ratio:** 1 (Powder) : 4 (Water)
- **Odor:** Odorless
- **Texture:** Fine Crystals
- **By-Products:** Pure Oxygen



Image 1.1: The product bottle displaying key information such as mix ratio (1:4), mixing with H2O, dry crystal texture, and active ingredient (Ammonium Persulfate).

2. Safety Information

WARNING: This product is a strong oxidizer and can cause irritation. Always handle with care and follow safety precautions.

- Avoid contact with eyes and skin.
- Do not ingest.
- Keep out of reach of children.
- If contact occurs, rinse immediately with plenty of water for at least 15 minutes. Seek medical attention if irritation persists.
- Wear appropriate personal protective equipment (PPE) such as gloves and eye protection when handling the powder and solution.
- Use in a well-ventilated area.
- Dispose of spent solution responsibly according to local regulations.



Image 2.1: The product bottle showing the NFPA hazard diamond indicating a strong oxidizer, along with a caution for skin contact.

3. Setup and Mixing Instructions

To prepare the etching solution, follow these steps:

1. Ensure you are in a well-ventilated area and wearing appropriate safety gear (gloves, eye protection).
2. Measure the desired amount of dry etchant powder.
3. Mix the powder with water at a ratio of 1 part powder to 4 parts water. For example, 4 ounces (by weight) of powder should be mixed with 16 fluid ounces (448 mL) of water.
4. Stir the mixture until the powder is fully dissolved. The solution should be clear.
5. Allow the solution to reach room temperature if the water used was not already at room temperature.



Image 3.1: Dry etchant powder being dispensed, illustrating its crystalline texture before mixing with water.

4. Operating Instructions: Etching Process

Once the etching solution is prepared, you can proceed with etching your PCB:

1. Ensure your PCB is clean and prepared with the desired resist pattern.
2. Submerge the PCB completely into the prepared etching solution.

3. The etchant works effectively at room temperature and does not require heating or agitation.
4. Monitor the etching process visually. The solution remains transparent, allowing you to observe the copper dissolving.
5. Etching time typically ranges from 5 to 15 minutes, depending on factors such as copper thickness, solution concentration, and temperature.
6. Once all unwanted copper has been removed, carefully remove the PCB from the solution using plastic tongs or tweezers.
7. Rinse the etched PCB thoroughly with clean water to remove any residual etchant.

Note: 16 fluid ounces of solution can etch approximately 280 square inches of circuit board.

5. Maintenance and Disposal

Proper handling and disposal of spent etchant solution are crucial for safety and environmental protection.

- **Neutralization:** Spent etchant solution contains Copper Sulfate. It can be neutralized by adding Baking Soda (Sodium Bicarbonate) until the solution stops fizzing. This process helps to precipitate the copper.
- **Disposal:** After neutralization, the solution should be disposed of according to local environmental regulations for chemical waste. Do not pour spent etchant down the drain without proper treatment. Contact your local waste management facility for specific guidelines on chemical disposal.
- **Storage:** Store unused dry powder in its original space-saver bottle in a cool, dry place, away from direct sunlight and incompatible materials. Ensure the cap is tightly sealed.

6. Troubleshooting

If you encounter issues during the etching process, consider the following:

- **Slow Etching:**
  - Ensure the solution concentration is correct (1 part powder to 4 parts water).
  - Verify the solution is at room temperature. While no heating is required, very cold temperatures can slow the reaction.
  - Check the age of the solution. Freshly mixed solution is most effective.
  - Confirm the copper surface is clean and free of oils or contaminants that could inhibit etching.
- **Incomplete Etching / Uneven Etching:**
  - Ensure the PCB is fully submerged and the solution is evenly distributed over the surface.
  - Check for any air bubbles trapped on the PCB surface, which can prevent the etchant from reaching the copper.
  - Verify the resist material is properly applied and cured, preventing the etchant from attacking protected areas.

7. Product Specifications

Feature	Detail
Brand	Eisen-Golden Laboratories
Model Number	EG-PCB-8/1

Feature	Detail
Item Form	Powder
Active Ingredient	Ammonium Persulfate ((NH4)2S2O8)
Item Weight	8 Ounces (227 Grams)
Item Volume	8 Fluid Ounces (bottle volume)
Mix Ratio (Powder:Water)	1:4
Etching Time	5-15 minutes (at room temperature)
Etching Capacity	16 fl oz solution etches ~280 sq inches
Material Features	Transparent in action, effective at room temperature, no agitation required
UPC	640052709232

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