

Cee-Bee® A-525L

Cee-Bee® A-525L is a liquid, alkaline etchant for aluminum where cleaning and etching are required. Cee-Bee® A-525L produces a fine etch on aluminum and its alloys.

Conforms To

- Lockheed Martin
- United Launch Alliance

Benefits

- Provides a fine etch on aluminum and its alloys.
- Cleans and removes scale from aluminum prior to further operations.
- Produces a foam blanket to control sodium hydroxide mist and hydrogen that is generated during the etching process.
- Etch rates can be controlled as needed using concentration and/or temperature.

Properties

- Transparent, pale yellow liquid

Notes Prior to Handling

Before using your Cee-Bee® products, all safety and operating instructions should be read and understood. If you have any questions, please contact your Cee-Bee® representative before proceeding.

Use Procedure

Equipment Recommendation

- The process tank, all piping, pumps, and associated equipment should be fabricated from stainless steel (316L preferred) or acid resistant plastic. All pump seals, valve seats, and other elastomers which come in contact with the solution should be EPDM, Teflon, or Viton.

Tank Make Up Instructions

1. Fill the tank 50% full with clear, ambient temperature water.
2. Slowly add between 5 – 15% by volume Cee-Bee[®] A-525L
3. Mix to ensure bath uniformity.
4. Add water to bring bath up to final working volume.
5. Agitate solution (either air or mechanical) for 50-60 minutes.
6. Bring to operating temperature.

Use Instructions

Operating Temperature

- Operate solution within a temperature range of 120-160°F (48-71°C). Heating is necessary to achieve etch rates of 1.3 – 9.0 mil/surface/hour (0.02 – 0.15 mil/minute/side).

Processing Time

- Processing times will vary with alloy, desired etch rate, condition of bath, amount of oxide/discoloration/smut on the part, and temperature. Generally speaking, 2-10 minutes for immersion. Typical times are about 10 minutes.

Etch Rate

- For a 10-minute emersion, a typical etch rate for a fresh 6.25% Cee-Bee[®] A-525L bath operated at 130°F (54°C) is about 4 mil/surface/hour (0.07 mil/surface/minute). For a 10-minute emersion, a typical etch rate for a fresh 12.5% Cee-Bee[®] A-525L bath at 130°F (54°C) is about 8 mil/surface/hour (0.13 mil/surface/minute).

Rinsing

- Immediately rinse parts in cold water by immersion with air agitation or by spray. These tanks should be overflowed to control build up of contaminants.

Solution Control

Reagents & Equipment for Cee-Bee® A-525L Analysis

- 250 ml Erlenmeyer Flask
- 10 ml Volumetric Pipette
- Phenolphthalein Indicator
- Deionized or Distilled Water
- 100 ml Graduated Cylinder
- Sodium Fluoride, Reagent Grade
- 1.0 N Sulfuric Acid

Part A - Determination of Cee-Bee® A-525L

1. Add 100 ml of deionized or distilled water into a 250 ml Erlenmeyer flask.
2. Pipet a 10 ml bath sample of Cee-Bee® A-525L to the flask.
3. Add 5 drops of phenolphthalein indicator.
4. Titrate the sample with 1.0N Sulfuric Acid until the pink color disappears.
 - a. **NOTE:** Keep solution for use in part B.
5. Calculation:

$$\text{ml of 1.0 N Acid} \times 2.41 = \% \text{ by volume Cee-Bee}^{\circledR} \text{ A-525L}$$

Part B - Determination of Aluminum in Cee-Bee® A-525L

1. Add 1 gram of sodium fluoride to the Part A solution. The solution should turn pink again as aluminum releases hydroxide back into the solution.
2. Titrate with 1.0 N Sulfuric acid until pink color disappears.
3. Calculation:

$$\text{ml of 1.0N acid} \times 0.674 = \text{grams/liter of aluminum in the bath}$$

Etch Rate

- The etch rate of the bath can be measured using the formula below:

$$\text{Etch Rate} = \frac{(I - F)(Th)30}{(I)(I.T.)} = \text{mil/surface/hour}$$

I = Initial mass (grams)

F = Final mass (grams)

Th = Initial Thickness (mils)

I.T. = Immersion Time (minutes)

Solution Control (Continued)

Etchant Control

- Cee-Bee[®] A-525L is best controlled by etch rate. If the determination of Cee-Bee[®] A-525L (part A above) indicates a decrease, Cee-Bee[®] A-525L should be replenished to bring it back to its starting value.
- As Aluminum builds in the bath, the etch rate will slow down. If additions of Cee-Bee[®] A-525L cannot bring the etch rate back to its desired rate, then the bath may have to be dumped.

Safety, Handling, and Precautions

- **WARNING!** This product contains potassium hydroxide. It can cause severe burns to eyes and skin.
- Wear face shield, gloves, boots and other proper protective clothing sufficient to avoid contact with eyes and skin. Proper eye protection is always absolutely essential.
- In case of accidental contact, flush area with water for at least 15 minutes. Seek medical attention promptly if irritation persists.
- Avoid splashing nearby personnel during spray rinsing.
- Avoid breathing spray mist. Use adequate ventilation.

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