

CEE-BEE A-504-NP ALKALINE ETCHANT



d a t a s h e e t

CEE-BEE A-504-NP is a powdered, alkaline etchant for aluminum where cleaning and etching are required. This product produces a fine etch on aluminum and its alloys.

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 of about 2 mil/surface/hour.

CONFORMS TO

- **BOEING BAC 5786 “Etch Cleaning of Aluminum Alloys”**
- **LOCKHEED MARTIN STM32-303 rev. C**
- **LOCKHEED MARTIN EMAP – Item Number G32.222**

**NOTE: To place an order, call or FAX Customer Service at
800-932-7006 / FAX 1-216-441-1377
Cee-Bee A-504-NP Product Code # 21016**

NOTES PRIOR TO HANDLING

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

EQUIPMENT

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.

MAKE UP INSTRUCTIONS

1. Fill the tank 50% full with clear, ambient temperature water.
2. Slowly add between 2-4 ounces per gallon (15 to 30 gram/liter) Cee-Bee A-504-NP
3. Mix to ensure complete dissolution of the product.
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 ° Fahrenheit. Heating is necessary to achieve etch rates of 1.3 – 2.2 mil/surface/hour. At the lower end of the temperature scale, the etch rate will be about 1.3 mil/surface/hour. At the high end, the rate will exceed 4 mil/surf/hour.

Processing Time – Processing times will vary with alloy, condition of bath, amount of oxide/discoloration/smut on the part, and temperature. Generally speaking, 2-10 minutes for immersion.

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 and Equipment for Cee-Bee A-504-NP

250 ml Erlenmeyer Flask	100 ml graduated cylinder
10 ml Volumetric pipet	Sodium Fluoride, reagent grade
Phenolphthalein Indicator	0.5 N Sulfuric Acid
Deionized or distilled water	

Part A – Determination of “Total” Cee-Bee A-504-NP

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-504-NP to the flask.
3. Add 5 drops of phenolphthalein indicator.
4. Titrate the sample with 0.5N Sulfuric Acid until the pink color disappears. **KEEP SOLUTION FOR USE IN PART B.**
5. ml of 0.5 N Acid x 0.416 = Total ounces/gallon of Cee-Bee A-504-NP
6. ml of 0.5 N Acid x 3.12 = Total g/l of Cee-Bee A-504-NP.

Part B – Determination of Consumed Cee-Bee A-504-NP

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 0.5 N Sulfuric acid until pink color disappears.
3. ml of 0.5 N acid x 0.262 = ounces/gallon of “used” Cee-Bee A-504-NP.
4. ml of 0.5 N acid x 1.965 = grams/liter of “used” Cee-Bee A-504-NP

Etchant Control

Ounces/gallon of “Total” Cee-Bee A-504-NP (part A) minus Ounces/gallon of “Consumed” Cee-Bee A-504-NP (part B) = “Available” Cee-Bee A-504-NP in ounces/gallon.

Add Cee-Bee A-504-NP to bring “Available” A-504-NP to 3.0 ounces/gallon

Grams/liter of “Total” Cee-Bee A-504-NP (part A) minus Grams/liter of “Consumed” Cee-Bee A-504-NP (part B) = “Available” Cee-Bee A-504-NP in grams/liter.

Add Cee-Bee A-504-NP to bring “Available” A-504-NP to 22.5 grams/liter.

The solution should be dumped when “Consumed” Cee-Bee A-504-NP reaches 8.0 ounces/gallon or 60 grams/liter.

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)

A 2024 bare panel immersed in a non-agitated solution of Cee-Bee A-504-NP should exhibit an etch rate of 1 - 4 mils/side/hour.

PROPERTIES

- A white, free-flowing powder.

PRECAUTIONS

- **WARNING!** This product contains sodium 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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