

# CEE-BEE® A-661



## DEOXIDIZER FOR ALUMINUM ALLOYS

CEE-BEE® A-661 is a chrome free deoxidizer that effectively desmuts and etchs aluminum alloys; excellent for pre-treating surfaces prior to non-destructive examinations, anodizing, resistance welding, and conversion coating.

### BENEFITS

- Chromium free
- Can be applied in spray and immersion applications
- Effectively removes surface oxides, discolorations from heat treatments, and smut resulting from alkaline etching or chemical milling
- Can be used to strip anodizing films
- Easily monitored with titrations
- No heat application required

### PHYSICAL PROPERTIES

Appearance	Liquid	Solubility	Water soluble	Flammability	Non-flammable
Colour	Colourless	pH	< 1	Density	1.34 g/ml
Odor	Strong acidic odour	Flash Point	N/A		

### AVAILABLE FORMATS



20L

20CB661P

208L

20CB661D

1000L

20CB661T

### APPROBATIONS

- AMS 1626B
- MIL-W-6858C, paragraph 4.2

### LEGISLATION

- WHMIS Regulated

### SAFETY & HANDLING

- Refer to Safety Data Sheet (SDS) for additional information
- Dispose of container and its contents in compliance with all applicable regulations.

• WARNING! Avoid eye and skin contact; can cause severe burns. Wear face shield, safety glasses, gloves, boots and other personal protective equipment, that will sufficiently cover body from any chemical contact. • In case of accidental contact, flush affected areas with water for at least 15 minutes. Seek prompt medical attention if irritation persists. • Avoid splashing nearby personnel and incompatible chemicals during spray rinsing. • Avoid breathing spray mist. Handle and operate with adequate ventilation.

Information and recommendations regarding this product are presented in good faith. However no guarantees are associated with the data presented in this document, and no such guarantees should be interpreted from the information and expected results presented. We do not assume any liability for damage, loss or injury, direct or indirect, related to the use of this product.

## USE PROCEDURES

### EQUIPEMENT:

Process tank, piping, pumps, and other tank equipment accessories, should be fabricated from stainless steels (preferably 316L), and/or acid resistant plastics. All pump seals, valve seats, and other elastomers which come into contact with the solution should be Ethylene, Propylene, Diene, Monomer (EPDM), Teflon, or Viton.

### BATH SOLUTION PREPARATION:

1. At ambient temperature, fill 50 % of the tank's volume with clear water.
2. Slowly and cautiously add technical grade nitric acid to establish a 25 %, by volume, bath concentration.
3. While mixing, slowly add CEE-BEE® A-661 into the bath to establish a 15 %, by volume, bath concentration.
4. Add water to establish working bath's final volume.
5. Agitate solution, either with air, or mechanically, for 50–60 minutes.

### OPERATING INSTRUCTIONS:

Operate bath solution within temperature range of 18–30 °C (65–85 °F). Generally, the etching (metal removal) rate will increase with temperature. A freshly prepared bath solution will generate heat (exothermic); however, will stabilize over a couple of days. Mixing and air agitation of bath will reduce heat generation.

Processing Times: Will vary with alloy, bath temperatures; amount of oxide, smut, and discoloration on the surface. Typical processing times are: 2–10 minutes for immersion, and 30 seconds to 5 minutes for spray applications.

Post Rinsing: Immediately rinse parts in cold water by immersing in tank equipped with air agitation, or by spraying. To reduce build up of contaminants, tanks should be overflowing while operating.

## SOLUTION CONTROL

### REAGENTS AND EQUIPEMENT FOR DETERMINATION OF NITRIC ACID BATH CONCENTRATION:

● 250 mL Erlenmeyer flask, 50 mL graduated cylinder ● 5 mL Volumetric pipette, 25 %, by volume, potassium fluoride (KF) solution. ● Phenolphthalein indicator, 1.0 N NaOH titrating solution. ● Deionized or distilled water.

### PROCEDURE

1. Add 50 mL of deionized, or distilled water, into a 250 mL Erlenmeyer flask.
2. Pipette a 5 mL bath sample into the flask.
3. Add 15 mL of 25 % KF solution, and 5 drops of phenolphthalein indicator, into the bath.
4. Titrate flask solution with 1.0 N NaOH until solution becomes uniformly pink.
5. Calculation: mL of 1.0 N NaOH used X 1.2 = nitric acid concentration expressed as % volume.

### REAGENTS AND EQUIPEMENT FOR THE DETERMINATION OF CEE-BEE® A-661 BATH CONCENTRATION:

● Erlenmeyer flask, 50 mL graduated cylinder. ● 5 mL Volumetric pipette, 50 %, by volume, sulfuric acid solution ● 50 %, by volume, HCl solution, 10 %, by volume, Potassium Iodide (KI) solution. ● 0.1 N sodium thiosulfate, 0.5 % starch solution. ● 10 mL volumetric pipette, deionized, or distilled water.

### PROCEDURE

1. Pipette a 5 mL bath sample into a 250 mL Erlenmeyer flask.
2. Also add 10 mL of deionized water (or distilled) and 5 mL of 50 % sulfuric acid solution into the flask.
3. Within a fume hood, heat solution until dense white fumes are observed.
4. Cool heated solution to room temperature, and then add 10 mL of HCl solution.
5. Add 30 mL of 10 % KI solution to the flask, and place in the dark for 5 minutes.
6. Titrate solution with 0.1 N sodium thiosulfate until a golden colour appears. Then add several drops of the starch solution; a blue, blackish colour should appear.
7. Continue titration until the solution turns colourless. This should be recorded as the endpoint.

mL of 0.1 N sodium thiosulfate X 1.15 = bath concentration of CEE-BEE® A-661, expressed as volume %.

### ETCH RATE

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

Etch Rate =  $(I - F) / (Th \cdot 30)$  = mm(mil) / surface/hour

(I) (I.T.)

I = Initial mass (grams)

F = Final mass (grams)

Th = Initial Thickness (mils)

I.T. = Immersion Time (minutes)

A 2024 clad panel immersed in a non-agitated solution of CEE-BEE® A-661 should exhibit an etch rate of 0.1 – 0.4 mils/side/hour. The Etch rate can be maintained by periodic additions of HF, or ABF along with undiluted CEE-BEE® A-661.