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A2LA Accredited ISO/IEC 17025:2005 Certificate # 2558.01

ZA-3 Non-Cyanide Liquid Zincate Pretreatment for Aluminum Alloys

Introduction

Accu-Labs ZA-3 was specifically formulated to produce high quality immersion zinc deposits on a wide variety of aluminum alloys, including highly finished aluminum alloys used in memory disc applications.

Accu-Labs ZA-3 is also superior for castings, unlike conventional zincate processes. Accu-Labs ZA-3 consistently produces thin, uniform, dense, fine-grained zinc deposits with minimal etching of the aluminum substrate. These deposit characteristics assure maximum adhesion of subsequent metal deposits including: electroless nickel, electrolytic nickel, and cyanide copper.

Benefits

- Usable for a wide variety of aluminum alloys.
- Zinc deposit characteristics, including minimal etching of aluminum, assuring maximum adhesion and pore-free electroless nickel coatings.
- Liquid concentrate for ease of makeup and replenishment.
- Long bath life for economy of operation.
- Dilute zincate solution for easy rinsing and reduced drag-out.
- Wide operating range, easy to use.

Operating Guidelines:

Concentration:	20-30% by volume for rack applications (25% opt) 45-55% by volume for barrel applications (50% opt)
Temperature:	60 - 110 °F (16 - 43 °C)
Immersion time:	15 seconds - 1 minute

Preparing ZA-3 Solution

- 1) Tanks used for zincating must be constructed from suitable material, such as polypropylene or PVC. Do not use plain steel tanks unless plastic liners are used or by electrically insulating the tank from the parts.
 - 2) Drain spent zincate solution. Clean and rinse all equipment.
 - 3) Fill tank approximately $\frac{1}{2}$ full with water.
 - 4) Add the required volume of ZA-3 Liquid Zincate.
 - 5) Fill tank to working volume and mix thoroughly.
 - 6) Heat tank to operating temperature.
- Solution is now ready for product

Typical process cycle for ZA-3

- Alkaline clean in a non-etch soak cleaner such as Accu-Labs 110-NC or 368-G.
- Rinse
- Hot alkaline etch with Accu-Labs 161 Super Etch or 366-G.
- Rinse
- Desmut with Accu-Labs DX-14 Desmut/Deoxidizer
- Rinse
- Accu-Labs ZA-3 Zincate as required (see operating conditions).
- Rinse
- Electroless nickel plate or electroplate

Note: If double zincating is necessary on a difficult to plate alloy the initial zincate layer will need to be stripped in a suitable acid solution followed by rinsing and re-zincating for ~20 seconds to apply a thin smooth coat of zinc prior to plating.

Control and maintenance of Accu-Labs ZA-3 Solution:

The concentration of ZA-3 at less than optimum levels may cause increased etching of the aluminum. Higher concentrations are more difficult to rinse and inhibit attack on the aluminum. The best control method is observation of a uniform zinc immersion coating. Typically one gallon of Accu-Labs ZA-3 operating solution will treat approximately 200-350 ft² of aluminum surface area. When noticeable gassing occurs on the aluminum surface, a 10% addition of original make-up is recommended.

Regular chemical analysis of your zincate solution will maximize performance and life:

Reagents:

- 0.0575M EDTA, Disodium Salt
- Triethanolamine, 50% by volume
- 1 gram Eriochrome Black T indicator ground with 100 grams NaCl
- Buffer Solution- 125 grams A.R. Grade ammonium chloride dissolved in 1.0 liter A.R. Grade concentrated ammonium hydroxide

Procedure:

- Pipette a 5 mL sample of ZA-3 working solution into a 250 mL Erlenmeyer flask
- Add 40 mL of 50% Triethanolamine
- Add 10 mL buffer solution
- Dilute to 100 mL with DI water
- Add 0.25-0.5 grams Eriochrome Black T indicator
- Titrate with standard 0.0575M EDTA until color changes from reddish-purple to blue

Calculation:

$$\text{mL EDTA} \times 1.33 = \% \text{ volume Accu-Labs ZA-3}$$

Specific Gravity Control Method (% concentration vs. specific gravity)

100%	-	1.440
75%	-	1.342
50%	-	1.244
25%	-	1.134

Safety and handling

Accu-Labs ZA-3 and its working solutions contain caustic soda. Avoid splashing onto skin and into eyes. May cause chemical burns and blindness. Use only with suitable protective gear. Wash thoroughly after any work with this product. Refer to Material Safety Data Sheet for more complete information. Handle this and all chemicals with care.

Non-warranty

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