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**A2LA Accredited ISO/IEC 17025:2005 Certificate # 2558.01**

## **159 Liquid Zincate** *pretreatment for aluminum alloys*

### **Introduction**

**159 Liquid Zincate** deposits a fine-grained immersion zinc film which promotes adhesion of subsequent plate. In many cases, a double zincate is not required, reducing time, chemical, and equipment costs. And its liquid concentrate is easy to use and safer for employees.

### **Features and Benefits**

Liquid product	Easier and safer to measure, mix
Fine-grained zinc deposit	Improves plating quality
Cyanide-free formula	Simplifies waste treatment

### **Operating conditions for 159 Zincate**

Concentration	20 % by volume
Temperature	80 - 120 °F (25 - 50 °C)
Immersion time	15 seconds - 1 minute

### **Preparing 159 Zincate solution**

- 1) Tanks used for zincating must be constructed from suitable material, such as polypropylene or PVC. Do not use plain steel or polyethylene construction.
- 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 **159 Liquid Zincate**.
- 5) Fill tank to working volume and mix thoroughly.
- 6) Heat tank to operating temperature. We have found that most alloys can be suitably zincated at 85 - 100 °F (30 - 40 °C) with an immersion time of 20 - 45 seconds. Your experience is the best guide for temperature and time.
- 7) Solution is now ready for production.

## Typical process cycle for 159 Liquid Zincate

Mild alkaline cleaner:	<b>368-G Aluminum Soak Cleaner</b>
Caustic etch:	<b>161 Super Etch or #366-G</b>
Deoxidize-desmut - wrought alloys:	<b>142 Desmut or #DX-14</b>
- cast alloys:	75 % HNO <sub>3</sub> /16 oz/gal <b>216 Acid Salts</b>
Zincate :	<b>159 Liquid Zincate</b>
<i>If double zincating is desired, continue with</i>	
Nitric acid strip	50 % by volume nitric acid
Second zincate solution	<b>159 Liquid Zincate</b>

Double zincating is commonly used to yield a finer-grained, more uniform zinc film. However, on certain alloys, a silicon film may remain after stripping the first zincate. This film may reduce the quality of the second zincate, rather than improving it. Your process cycle may require some fine-tuning to achieve the quality finish your customers expect.

Proper and sufficient rinsing, while not listed here, is a highly critical aspect of the finishing operation. Make sure that all rinses are replenished as necessary.

## General guide for best results from 159 Zincate

- 1) As alloys and workloads vary widely between operations, no single combination of conditions will work in all applications. It is best to review existing production guidelines before charging up a new solution.
- 2) Consider all aspects of the finishing line to determine exactly what is required in terms of performance. Your process line, as well as the chemicals, must accommodate your production requirements.
- 3) **159 Zincate** solutions are somewhat viscous. Thorough rinsing is essential after zincating.
- 4) Maintaining the temperature of the etchant within the operating range is very important. Zincate films can vary significantly with temperature and alloy.
- 5) When double zincating is used, it is best to use separate acid strip and zincate solutions. This improves both the work flow and zincate film quality.
- 6) After rinsing, transfer work quickly to the electroless nickel or cyanide copper strike solution. Zincate films are very thin and can deteriorate rapidly in the corrosive atmospheres of most plating shops.

## Analytical control

- 1) Draw a representative sample of the solution and allow cooling.
- 2) Draw a 5-ml sample and place into a clean Erlenmeyer flask.
- 3) Add 50 ml deionized or distilled water and 1 ml sulfo-orange indicator.
- 4) Titrate against 1.00 N hydrochloric acid from orange to cloudy yellow endpoint.
- 5) Titration x 1.4 equals percent by volume of **159 Liquid Zincate**.

## **Safety and handling**

**159 Liquid Zincate** 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 clothing. 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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