



Technical Data Sheet

# BONDERITE C-AK ALMNX L AERO ALKALINE CLEANER

(KNOWN AS ALUMINUX ETCH L)

Issued 10/05/2020

## INTRODUCTION

BONDERITE C-AK ALMNX L AERO (known as ALUMINUX ETCH L) is a concentrated liquid alkaline product developed to produce a fine satin etch on aluminum and its alloys. BONDERITE C-AK ALMNX L AERO offers an exceptionally uniform etch and extended bath life.

## OPERATING SUMMARY:

<u>Chemical:</u>	<u>Bath Preparation per 100 gallons</u>
BONDERITE C-AK ALMNX L AERO	10 to 15 gallons
<b><u>General Operation and Control:</u></b>	
Concentration:	5 - 8 oz/gal as free caustic
Temperature:	100° - 160°F (37° - 72°C)
Time:	2 - 10 minutes (depending upon depth of etch desired)
<b><u>BAC 5786 Operation and Control:</u></b> <b>**For BAC 5786 use as an additive only**</b>	
Concentration:	0.5 - 12.4 fl oz/gal or 0.4 - 9.7% by vol.
Temperature:	120° - 150°F (49° - 65°C)
Time:	2 - 10 minutes (depending upon depth of etch desired)

### Note:

Maintain the Free Caustic concentration based on dissolved Aluminum as shown in the attached chart.

## TYPICAL OPERATING CYCLE

1. Clean using the appropriate Henkel cleaner
2. Water rinse
3. Etch in BONDERITE C-AK ALMNX L AERO
4. Water rinse
5. Desmut/deox in the appropriate Henkel product



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6. Water rinse

7. Anodize, bright dip, conversion coat, resistance weld, Zincate prior to plating, etc.

### MATERIALS

BONDERITE C-AK ALMNX L AERO

Testing Reagents and Apparatus

### EQUIPMENT RECOMMENDATIONS

Mild steel or 300 Series stainless tanks and heating equipment are suitable for BONDERITE C-AK ALMNX L AERO. Tank ventilation should be provided to exhaust the hydrogen gas generation and the caustic fumes from hot solutions.

### SURFACE PREPARATION

#### Cleaning:

To ensure uniform etching in the bath containing BONDERITE C-AK ALMNX L AERO, aluminum workpieces must be thoroughly cleaned using a non-silicated cleaner prior to being placed in the etch bath. An alkaline cleaner such as BONDERITE C-AK 298 AERO (known as Ridoline 298) is recommended.

#### Water Rinsing:

After cleaning, the metal must be thoroughly rinsed with water, preferably warm. The rinse should be overflowed continuously at a rate which will keep it clean and free from scum and other contamination.

### TREATING WITH THE BONDERITE C-AK ALMNX L AERO SOLUTION

#### Buildup:

Fill the tank about three-fourths full with cold water. Slowly add the proper amount of BONDERITE C-AK ALMNX L AERO and circulate. Add sufficient water to bring solution up to working level and heat to the desired operating temperature.

### TESTING AND CONTROL

#### Free Caustic Soda:

#### **New Bath Free of Aluminum:**

1. Pipette a 10 mL sample of etch bath to a 250 ml Erlenmeyer Flask.
2. Add 50 mL of water and 4 drops of Indicator 3 (Phenolphthalein). (solution should now be pink).
3. Titrate with Titrating Solution 60 (1.0N hydrochloric acid) until the pink color disappears.
4. Record the number of mL of Titrating Solution 60 required.

#### CALCULATIONS:

% by volume BONDERITE C-AK ALMNX L AERO = 1.0 x mL of T.S. 60

oz/gal Free Caustic Soda = 0.54 x mL of T.S. 60



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g/L Free Caustic Soda = 4.0 x mL of T.S. 60

### Used Bath Containing Aluminum:

1. Filter a sample of etch bath through #54 or # 541 filter paper.
2. Pipette a 10 mL sample of the clear, filtered solution.
3. Add 50 mL of water.
4. Titrate with Titrating Solution 60 until the first permanent cloudiness or turbidity is detected.

Note: A precipitate will form as the Titrating Solution 60 is added but will dissolve and leave the solution cloudy.

5. Record the number of mL of Titrating Solution 60 required to reach the turbid end point. Retain the sample "B" for checking Aluminum content.

### CALCULATIONS:

% by volume BONDERITE C-AK ALMNX L AERO = 1.0 x mL of T.S. 60

oz/gal Free Caustic Soda = 0.54 x mL of T.S. 60

g/L Free Caustic Soda = 4.0 x mL of T.S. 60

Note: It may be difficult to filter the etch bath after aluminum content exceeds 100 g/L. In this case, take a 50 mL sample of the etch bath, dilute with 50 mL of water and proceed as noted above. Multiply the mL of T.S. 60 required to reach the turbid end point by 2 to get the correct results.

### Aluminum Content:

1. To the retained sample of "B" add 4 drops of Indicator 3.
2. Re-zero the burette.
3. Titrate with Titrating Solution 60 until the pink color disappears. Record the number of mL of Titrating Solution 60 used to reach this end point.

### CALCULATIONS:

g/L of Aluminum = 2.67 x mL of T.S. 60

oz/gal of Aluminum = 0.36 x mL of T.S. 60

### STORAGE REQUIREMENTS

BONDERITE C-AK ALMNX L AERO should be stored in sealed containers located in a cool dry area away from contact with excessive heat or humidity. Do not mix with acids. Avoid contact with flammable liquids, organic halogens or soft metals including aluminum and zinc. Keep containers tightly closed when not in use.

### WASTE DISPOSAL INFORMATION

BONDERITE C-AK ALMNX L AERO may require neutralization to a specified pH range depending on Federal, State, and local waste treatment regulations.

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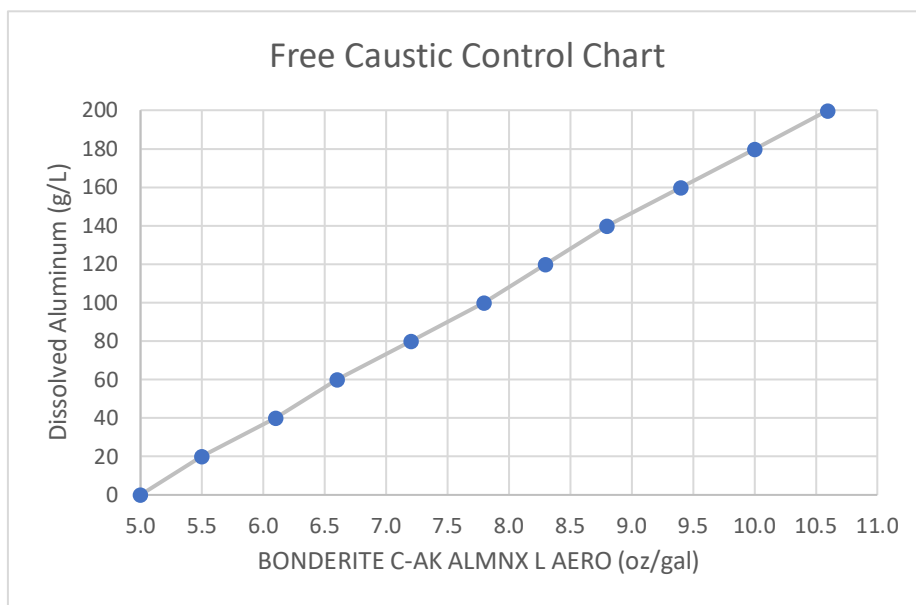
**BONDERITE C-AK ALMNX L AERO  
ALKALINE CLEANER**

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**PRECAUTIONARY HANDLING INFORMATION**

BONDERITE C-AK ALMNX L AERO contains highly alkaline hydroxides and is, therefore, corrosive. Contact with the skin or eyes may cause irritation or burns. The same safety precautions should be observed as when handling caustic type materials. Personnel should wear eye protection, rubber gloves and an apron or other protective clothing when working with BONDERITE C-AK ALMNX L AERO. Tanks used for BONDERITE C-AK ALMNX L AERO should be provided with an adequate exhaust system to protect workers against irritating or corrosive airborne contaminants. A Safety Data Sheet is available upon request from Henkel.

BONDERITE C-AK ALMNX L AERO (oz/gal)	5.0	5.5	6.1	6.6	7.2	7.8	8.3	8.8	9.4	10.0	10.6
Dissolved Aluminum (g/L)	0	20	40	60	80	100	120	140	160	180	200



\*Note: This chart estimates the amount of dissolved aluminum the bath can hold per concentration.

**NOTICE:**

The above information and recommendations concerning this product are based upon our laboratory tests and field use experience. However, since conditions of actual use are beyond our control, any recommendations or suggestions are made without warranty, express or implied. Manufacturer's and seller's sole obligation shall be to replace that portion of the product shown to be defective. Neither shall be liable for any loss, damage, or injury, direct or consequential, arising out of the use of this product.



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**TESTING REAGENTS AND APARATUS**

(Order only those items which are not already on hand)

Code	Quantity	Item
592477	1	Burette assembly, 25 mL automatic
89000-794**	2*	Flask, Erlenmeyer, 250 mL
41579LH***	1	Indicator dropping bottle
8003-350**	2*	Pipette, 10 mL volumetric
53497-009**	1	Pipette filler
28479-060**	1pk	#541 Filter paper
53600-108**	1	Pitcher, graduated, plastic
30250****	1	Thermometer, floating
592398	250 ml	Indicator 3 (Phenolphthalein)
592440	4.0 L	Titration solution 60 (1.0N HC1)

\*Includes one more than actually required, to allow for possible breakage.

\*\*VWR Part # - vwr.com or 800-932-5000

\*\*\*Consolidated Plastics Part #

\*\*\*\*Thomas Scientific Part #

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