

# ETCHAL

LIQUID ALUMINUM ETCH

## INTRODUCTION

EtchAL is an economical alkaline liquid etch for aluminum providing rapid uniform metal removal. It is an ideal etch for surface prep in sequence for anodizing, conversion coating and zincating. EtchAL contains additives not only for producing uniform metal removal, but also prevents tank walls from scale build-up and allows high aluminum loading without sludging.

## BENEFITS

- Extremely effective etch for aluminum
- Provides uniform roughened surface for maximum adhesion
- High aluminum loading capacity with no sludging (up to 100 g/L)
- Does not leave scale build up on tank walls and heating elements
- Meets aluminium prep ASTM B253 modified caustic etch with additives
- Analysis includes product and aluminum concentration
- Liquid for ease of handling and replenishment

## SOLUTION MAKE-UP

EtchAL                    4 – 10% v/v (Optimum 8% v/v)

## OPERATING DATA

EtchAL	4 – 10% v/v (Optimum 8% v/v = 50 g/L caustic)
Temperature	100 – 160°F
Time	30 seconds – 5 minutes

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# EQUIPMENT

<b>Tanks</b>	Mild steel, Polypropylene, Polyethylene, Unplasticized PVC, Titanium.
<b>Heaters</b>	Teflon coated, PTFE or Titanium with thermostatic control.

## INSTALLATION

Equipment to be used for EtchAL should be cleaned thoroughly before any product is added. If there is any doubt as to the cleaning procedure contact Automated Chemical Solutions.

1. Add water to one-half tank volume.
2. Add the required amount of EtchAL and mix thoroughly.
3. Add to level with water and mix thoroughly.
4. Heat to operating temperature.

## PROCESS SEQUENCE

The following is a typical process sequence for cleaning aluminum which has been shown to give excellent results. If there is any doubt as to the correct process sequence, contact Automated Chemical Solutions.

1. Soak Clean (Cleaner 505)
2. Rinse
3. EtchAL
4. Rinse
5. Rinse
6. Continue dependent on application

## MAINTENANCE AND CONTROL

The solution should be regularly analyzed and replenished as necessary.

Evaporation losses should be replaced with water.

Concentration losses should be replaced with EtchAL.

The solution will tolerate up to 100 g/L aluminum without sludging.

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Page 2 of 4  
EAL-08/23  
NA-ISSUE 07

# ANALYSIS METHOD

The analysis of EtchAL concentration and aluminum are carried out at the same time:

## Reagents

20%w/v sodium gluconate solution  
10%w/v barium chloride solution  
Phenolphthalein indicator solution  
Potassium fluoride  
0.1N hydrochloric acid  
1.0N hydrochloric acid

## Method

1. Pipette a 1.0 ml sample of the working solution into a 250 ml Erlenmeyer flask and label as A.
2. Pipette a 2.0 ml sample of the working solution into a 250 ml Erlenmeyer flask and label as B.
3. Add 15 ml sodium gluconate solution and 10 ml barium chloride solution to each flask.
4. Add 50 ml DI water to each flask.
5. Add 1-2 ml of phenolphthalein indicator to each flask.
6. Titrate flask A with 0.1N hydrochloric acid to a colorless end point (result for A).
7. Add 5 g potassium fluoride to flask B.
8. Titrate with 1.0N hydrochloric acid to a colorless end point (result for B).

## Calculation

$$\text{EtchAL (mls/L)} = (8 \times A) - (10 \times B)$$

$$\text{Aluminum (g/L)} = 0.9 \times [(5 \times B) - A]$$

# STORAGE

Store in original containers above 40°F

# SAFETY

CAUTION! EtchAL concentrates and working solutions contain alkaline ingredients. Avoid contact with eyes, skin and clothing. Wear chemical handler's gloves, goggles and protective clothing when handling. Read and understand Material Safety Data Sheet before using this product.

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Page 3 of 4  
EAL-08/23  
NA-ISSUE 07

# PRODUCT GROUPS

The following products are referred to in this data sheet.

PRODUCT NAME	PRODUCT NUMBER
Cleaner 505	206001
EtchAL	206044

## NOTICE

The information and recommendations of PMD (UK), Ltd. and Automated Chemical Solutions, Inc., and its representatives, regarding this product are, to the best of our knowledge, true and accurate. We make no guarantee of results because the conditions of actual use are beyond our control. We assume no liability for damages or penalties resulting from the use of this product or following our recommendations. Our recommendations and suggestions for use of this product are not intended to grant license to operate under or infringe any patent.

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Page 4 of 4  
EAL-08/23  
NA-ISSUE 07