ANODAL® ETCH ADDITIVE C LIQUID

Anodal Etch Additive C Liquid is added to caustic etch baths to effectively eliminate the headaches associated with the precipitation of aluminum hydroxide. The benefits derived from this products use include:

- Prevents scale formation on the tank and heating coils.
- Improves matte finishes giving a more uniform appearance.
- Eliminates the need for frequent dumping of the etch tank
- Significantly reduces caustic consumption

PHYSICAL PROPERTIES:

Appearance:	Clear viscous liquid
Specific gravity:	1.28 (10.7 lbs/gal)

APPLICATION:

Described below are two distinctive methods used by the industry in running this product. In either case a new bath can be made up by adding 5 gallons Etch Additive C and 60 gallons liquid caustic (250 lbs flake) per 1000 gallon tank volume. Running conversions can be made by adding 10 gallons product per 1000 gallon tank volume.

1. Simply run the free caustic at in the range of 40-70 g/l (regardless of the dissolved aluminum level) and add Etch Additive C at a rate of 1 gallon for every 12 gallons of liquid caustic replenishment (70 lbs flake). This method consumes less caustic and provides a lower gloss finish at the expense of increased product consumption.
2. The alternative method is increase the concentration of "free" caustic as the dissolved aluminum increases in the aged bath. See the table below for target concentrations. If this method is adopted than replenishments are made by adding 1 gallon product for every 25 gallons of liquid caustic (150 lbs flake).

Dissolved Al (g/l)	0	20	40	60	80	100	120	140	160
Free caustic (g/l)	30	40	50	60	70	80	90	100	110

OTHER OPERATING CONDITIONS:

Temperature:	130° - 170° F
Immersion Time:	1 - 20 minutes as required
Agitation:	Air recommended

CONTROL METHOD:

1. Filter a sample of the etch bath through a suitable filter paper.
2. Pipette a 5 ml sample into a 250 ml flask, then add 50 ml of water.
3. Titrate with 1 **N** Hydrochloric acid to a cloudy end point. Record volume "A".
4. To the same flask, add 3 grams (approx.) of sodium fluoride and 3 drops of Phenolphthalein Indicator.
5. Continue to titrate the solution with 1.0 N HCl until the end point remains clear.
6. Add another 3 grams of sodium fluoride & repeat. Record volume "B".

Calculate: **Free Caustic (g/l) = A x 8.0**
Aluminum (g/l) = (B - A) x 1.35

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HANDLING:
The handling of this product does not pose a significant hazard in itself, however the caustic bath that the product is added to does. For this reason, face shield, protective gloves, boots & apron should be used when adding this product to the process bath.

WASTE DISPOSAL:
Caustic solutions containing Anodal Etch Additive C must be neutralized. The often used practice is to neutralize with the spent sulfuric from the anodize tank. To comply with most local ordinances the aluminum precipitate is removed by settling and subsequent de-watering by filtration.

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