

## BC-20

### Alkaline Aluminum Etch

**DESCRIPTION:** **BC-20** is an alkaline composition formulated specifically for simultaneous cleaning and etching aluminum. It gives a fine grained etch which is ideal for subsequent bright dipping, anodizing, or chromating.

BC-20 was specifically developed to meet 4 objectives (1) maximum attractiveness of finish, (2) no excess foam, (3) no alkali spray mist and (4) no build up of sludge or scale.

#### FEATURES & BENEFITS:

1. Low volume of foam
2. No alkali spray during etching. Thus no messy, troublesome operating conditions.
3. Elimination of irregularity of etch and skips caused by local retarding action of oil droplets or films.
4. Uniform fine grained " satin" finish etch. Better quality work is assured.
5. No adhering sludge forms on the bottom or sides of the tank. Maintenance costs are reduced.
6. Completely and rapidly removes identification ink markings. Simpler cycle, lower operating costs.
7. Ideal etch for decorative aluminum.

#### PHYSICAL & CHEMICAL PROPERTIES

##### Alkalinity

BC-20 is a carefully balanced formulation of alkaline materials which gives a uniform fine grained etch in the minimum amount of time.

##### Cleaning Ability

Although BC-20 has good cleaning properties for removing mill oils, in most cases precleaning is recommended in order to promote a uniform etch. The amount of metal removed can be readily controlled by the operating conditions of concentration, time and temperature.

To insure a uniform etch, temperature, time and concentration should be constant.

##### Foam Characteristics

The low foam blanket produced during the actual etching operation quickly subsides when the aluminum is removed from the solution.

#### OPERATING CONDITIONS:

Concentration	15-120 g/L (2 to 16 oz/gal)
Temperature	50-93°C (122-200°F)
Time	30 seconds to 3 minutes or longer
Equipment	Steel tank and heater

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- TYPICAL CYCLE:**
1. BC-19
  2. Cold water rinse
  3. BC-20
  4. Cold water rinse
  5. Deoxidize or desmut
  6. Cold water rinse
  7. Dry, bright dip, electropolish, electroplate or anodize
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**ANALYTICAL  
PROCEDURES:**

**Analysis of BC-20**

**Aluminum Etchant Analysis**

- (A) 1. Pipette a 10 mls of cooled BC-20 into a 250 ml flask.
1. Add about 50 mls of water and 3-5 drops of phenolphthalein indicator
  2. Titrate with 0.5N HCl until pink color disappears.
  3. Record mls of 0.5N HCl as **A** titration.
- (B) 1. Add 30 mls of 10% KF solution. If pink color does not reappear, the bath has essentially no dissolved aluminum. Use calculation 2 below.
2. If pink, rezero buret and titrate with 0.5N HCl until pink color is gone.
  3. Repeat Step B1 and B2 (do not rezero). If pink color does not appear within 30 seconds, do not titrate any further. If pink color appears, continue titration. Record mls. of 0.5N HCl as **B** titration.

**Calculation:**

1. BC-20 concentration (oz/gal) = (Titration **A** x 0.42) - (Titration **B** x 0.15)
  2. Dissolved aluminum (g/L) = Titration **B** x 0.45
  3. Sodium Aluminate (oz/gal) = Dissolved Aluminum (oz/gal) x 3.04
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