

## E-KLEEN™ 120

### Combination Electrolytic and Soak Cleaner for Steel and Copper

**E-Kleen 120** is a heavy duty, strong alkaline, highly conductive electrolytic cleaner for steel and copper. It is most effective when used as a reverse current (anodic) cleaner, although it may also be used cathodically. The current density ranges from 50 amp per square foot to 125 amp per square foot with a concentration of 8 to 16 ounces per gallon of water and operating temperatures of 160° to 210°F. At concentrations of 12 to 16 ounces per gallon, the conductivity of the solution will be increased and will facilitate more rapid cleaning and smut removal (anodic).

**E-Kleen 120** also makes an excellent **soak cleaner** for steel or copper because it is very free rinsing, effective in hard water and is buffered to maintain its alkalinity and produce long solution life.

**E-Kleen 120** is the preferred soak cleaner to be used without an intervening water rinse prior to an electrolytic solution of **E-Kleen 120**.

The required cleaning time will depend upon the type and degree of soil on the steel surfaces and on the concentration and temperature of the solution as well as the current density when used electrolytically. Typical times are from 3 to 6 minutes.

#### EQUIPMENT

Tanks should be constructed of mild steel or stainless steel. Racks, baskets and barrels must be compatible with other metal finishing solutions used thereafter. Do not use galvanized steel, bronze, copper, tin or aluminum. Immersion heaters may be of mild steel. Adequate forced ventilation must be provided.

#### SOLUTION MAKE-UP

Dissolve the powdered **E-Kleen 120** in warm water while stirring. When charging a production tank, pre-mixing in a partially filled tank is recommended.

The **E-Kleen 120** solution concentration is maintained with periodic additions of cleaner to replace that consumed by removing soils and by dragout. When making replenishments to a hot cleaning solution they should be made cautiously to avoid spattering of the solution due to heat being generated when the chemicals are dissolved.

The strength of the solution is determined chemically with either a burette titration or dropping bottle test. When the cleaning solution becomes excessively contaminated with soils, it should be dumped and a new cleaning solution made up.

## **SOLUTION CONTROL**

### **A. Titration Method**

1. Take a sample of the **E-Kleen 120** solution and cool to room temperature.
2. Pipette 25 ml of the sample into a clean 125 ml Erlenmeyer flask. Add 25 ml water.
3. Add five drops of Methyl Orange Indicator to produce a yellow solution.
4. Titrate with 1.0N Hydrochloric Acid (HCl) to an orange-pink color.
5. Calculation:  
Concentration of **E-Kleen 120** (oz/gal) = ml HCl x 0.3 x Normality of HCl

### **B. Dropping Bottle Method** (Test Kit Available from **EPI**)

1. Take a 10 ml sample of the cleaner solution and add along with 10 ml of water to a 150 ml beaker.
2. Add 4 to 5 drops of Phenolphthalein Indicator to beaker.
3. Add dropwise 5N Sulfuric Acid from dropping bottle while counting the number of drops and swirling the solution.
4. Stop adding drops when the color changes suddenly from pink to colorless.
5. Calculation:  
Concentration of **E-Kleen 120** (oz/gal) = number drops acid x 0.214

## **CAUTION**

**THIS MATERIAL CONTAINS CAUSTIC SODA. MAY CAUSE SEVERE BURNS.** Do not get in eyes, on skin or on clothing. Avoid breathing dusts or mists. Do not take internally. When handling, wear goggles or face shield. While making up solutions, or adding powder to solutions, add slowly to surface of solution to avoid violent spattering. In case of contact, immediately flush skin or eyes with plenty of water for at least 15 minutes. For eyes, call a physician.

**Do not** mix **E-Kleen 120** with acidic materials, or any other chemical substances. **Do not** work with **E-Kleen 120** without first reading and understanding the **MATERIAL SAFETY DATA SHEET** furnished by **EPI**.

100 lb and 400 lb (net) in plastic lined, non-returnable containers. Keep lid on when not in use. Store indoors in a dry area.