

# Mirapic ME-815

Etching Solution for Copper

*Technical Data*

## GENERAL DESCRIPTION

**Mirapic ME-815** is a water soluble, dry powder containing acid salts. **Mirapic ME-815** is added to sulfuric acid to deoxidize and activate copper and copper alloys.

**Mirapic ME-815** contains no phosphate, fluorides, chromate, ammonia, nitrate, or chloride.

**Mirapic ME-815** will restore copper appearance on copper alloys, enhance the appearance of brass alloys that are dezincing at the surface, and be used as a chromate-free deoxidizer on certain aluminum alloys.

## NORMAL USE

### Copper Alloys

<b>Mirapic ME-815</b> Concentration	6 – 16 oz. per gallon (45 – 120 g per L).
Sulfuric Acid (66° Be) Concentration	5 – 10 % (v/v)
Temperature	60 - 100° F (16-32° C).
Time	30 seconds to 6 minutes.
Agitation	Air agitation accelerates action.
Equipment	316 Stainless Steel, Koroseal, Rubber, Polyethylene, Polypropylene, PVC.
Ventilation	Not required but is recommended with air agitation.

## NORMAL CONTROL

**Mirapic ME-815 - Analytical Method** (Equipment available from Chautauqua Chemicals Co.)

1. Pipette a 2 mL sample of **Mirapic ME-815** into a 250 Erlenmeyer flask.
2. Add 25 mL of distilled or deionized water and swirl to mix.
3. Add 10 mL of 0.20N ferrous ammonium sulfate. Swirl to mix and allow to stand for 1 minute.
4. Add 5 mL of 25% sulfuric acid and swirl to mix.
5. Titrate with 0.10N potassium permanganate until solution turns pink.
6. Record volume (mL) of 0.10N potassium permanganate used as "A".
7. Run a distilled or deionized water blank in a clean 250 mL Erlenmeyer flask following steps 2-5.
8. Record volume (mL) of 0.10N potassium permanganate used as "B".
9. Calculation: Concentration of **Mirapic ME-815** (ounces per gallon) =  $((\text{"B"} - \text{"A"}) \times 2.5) / 2$

**Sulfuric Acid - Analytical Method** (Equipment available from Chautauqua Chemicals Co.)

1. Pipette a 10 mL sample of **Mirapic ME-815** into a 250 Erlenmeyer flask.
2. Add 50 mL of distilled or deionized water and swirl to mix.
3. Add 2 drops of methyl orange indicator and swirl to mix. The solution will be a reddish-pink color.
4. Calculation: Percent Volume of Sulfuric Acid = mLs of 0.50N NaOH x 0.143

**Copper Metal - Analytical Method** (Equipment available from Chautauqua Chemicals Co.)

1. Pipette a 5 mL sample of **Mirapic ME-815** into a 250 Erlenmeyer flask.
2. Add 100 mL of distilled or deionized water and swirl to mix.
3. Add 5 mL of ammonium hydroxide. Swirl to mix, the solution will turn dark blue.
4. Add 5 drops of PAN indicator and swirl to mix.
5. Titrate with 0.10M EDTA.
6. Calculation: Concentration of Copper Metal (ounces per gallon) = (mLs of 0.10M EDTA x 0.84) / 5

## HANDLING AND SAFETY CONSIDERATIONS

Consult Safety Data Sheet for handling considerations, hazard information, and first aid procedures.

## OTHER INFORMATION

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