



FOCUS TECH PROCESS CHEMICALS

Technical Data Sheet

Focus Tech ME-550

Copper Microetch

Product Description

ME-550 is a stabilized, powder persulfate microetch that simply out performs all other proprietary powdered microetches. ME-550 provides superior etch rates, copper holding capacity, surface quality and operating cost when compared to other leading products. Proprietary stabilizer and etch rate enhancing additives increase bath life, provide more consistent etch rates and lower operating costs.

Physical Properties

Specific gravity: 1.1-1.4
Appearance: white, granular solid
Odor: none

Compatible Materials of Construction

Plastics	PVC, CPVC, PVDF, polypropylene and polyethylene
Metals and alloys	Titanium
Elastomers	EPDM, Viton and Buna-N

Bath Make-Up

30 – 120 g/L μ ETCH ME-550
2% v/v sulfuric acid
Balance DI water

Operating Parameters

Copper loading: 2 - 4 oz/gal (15 – 37.5 g/L)
Dwell time: 1 – 2 minutes
Temperature: 80 °F – 110 °F

Weight Loss Calculation

1. Weigh a copper coupon to the nearest 0.001g (W_i).
2. Process through microetch at standard operating conditions.
3. Dry coupon thoroughly and reweigh (W_f).

Calculation:

$$\text{Microinches removed } (\mu\text{in}) = \frac{(W_i - W_f)}{\text{*Surface area (in}^2\text{)}} \times 7000$$

* Include both sides of coupon i.e. a 3" X 3" is 18 in²

Analytical Procedures

Copper concentration

Materials required:

1. 250 ml Erlenmeyer flask
2. 2 ml pipette
3. 0.1M EDTA
4. 25% ammonium hydroxide
5. methanol
6. PAN indicator

Procedure:

1. Pipette 2 mls of working etchant into the Erlenmeyer flask and add 100 mls of DI water.
2. Add 20 mls of 25% ammonium hydroxide.
3. Add 10 mls of methanol.
4. Add 5 drops of PAN indicator.
5. Titrate with EDTA from purple to a green endpoint.

Calculation:

$$\text{Copper concentration (oz/gal)} = \text{mls 0.1M EDTA used} \times 0.418$$

Analytical Procedures (continued)

ME-550 concentration

Materials required:

1. 250 ml Erlenmeyer flask
2. 1 ml pipette
3. 10 ml pipette
4. 15% v/v sulfuric acid
5. 0.1 N ceric ammonium sulfate
6. 0.2 N ferrous ammonium sulfate
To prepare 1 liter in DI water
Dissolve:
80 g ferrous ammonium sulfate in 200 mls of 25% v/v sulfuric acid
DI water to 1 liter
7. ferroin indicator

Procedure:

Blank Titration

1. Add 50 mls of DI water to the Erlenmeyer flask.
2. Add 10 mls of 15% v/v sulfuric acid.
3. Add 10 mls of 0.2 N ferrous ammonium sulfate
4. Mix and let stand for 1 minute.
5. Add 5-7 drops of ferroin indicator.
6. Titrate slowly with 0.1 N ceric ammonium sulfate to a bluish endpoint.
7. Record mls of ceric ammonium sulfate used as A.

Sample Titration

1. Add 50 mls of DI water to the Erlenmeyer flask.
2. Pipette 1 ml of working solution into the Erlenmeyer flask.
3. Add 10 mls of 15% v/v sulfuric acid.
4. Add 10 mls of 0.2 N ferrous ammonium sulfate
5. Mix and let stand for 1 minute.
6. Add 5-7 drops of ferroin indicator.
7. Titrate slowly with 0.1 N ceric ammonium sulfate to a bluish endpoint.
8. Record mls of ceric ammonium sulfate used as B.

Calculation:

$$\text{ME-550 concentration (g/L)} = (A - B) \times 11.91$$

Analytical Procedures (continued)

Sulfuric acid concentration

Materials required:

1. 250 ml Erlenmeyer flask
2. 5 ml pipette
3. 1.0N sodium hydroxide
4. methyl orange indicator

Procedure:

1. Pipette 5 mls of working etchant into the Erlenmeyer flask and add 100 mls of DI water.
2. Add 5 drops of methyl orange indicator.
3. Titrate with sodium hydroxide from red to yellow-orange endpoint.

Calculation:

Sulfuric acid concentration (% v/v) = mls 1.0N NaOH used X 0.572

Storage

Store in original containers above 40 °F.

Safety

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.

Notice

The information and recommendations, contained herein, 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.