

# Accu-LABS INC.

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**A2LA Accredited ISO/IEC 17025:2005 Certificate # 2558.01**

## 325 OxyEtch

Accu-Labs 325 OxyEtch is a white, granular, free-flowing peroxygen powder that is a mildly acidic micro-etch that provides consistent copper etch rates from a stable and active solution that can be sprayed or used in dip applications.

### **Make-Up (WARNING! Refer to MSDS and Handling Considerations prior to Make-Up)**

Accu-Labs 325 OxyEtch is supplied as a single-component dry powder and is added to deionized water and sulfuric acid.

- Fill tank to approximately  $\frac{3}{4}$  volume DI water
- Add 0.5%-2.0% sulfuric acid (1.84 s.g.)
- Add 1/8 to 1/2 pound per gallon 325 OxyEtch
- Note: Etch rate is dependant upon the 325 OxyEtch concentration, acid concentration, and temperature

**DO NOT USE ANY ACID OTHER THAN SULFURIC ACID, AS TOXIC GASES MAY EVOLVE**

### **Typical Bath Operation**

- Dwell time is dependent upon the degree of etch desired, 1-5 minutes is typical
- Temperature 75°-85°F, etch rate will increase with temperature but will reduce bath life

### **Yield**

- For etched depths of 10 microinches, a typical yield of approximately 400 square feet of copper surface per pound of 325 OxyEtch may be expected, as the copper content approaches 15 g/l, the bath may be discarded or chilled to remove copper sulfate. The solution may then be decanted, filtered, analyzed for A.O.C. and replenished.

### **Bath Control**

- The etch rate of 325 OxyEtch is dependent upon the active oxygen content (A.O.C.) of the bath. Please refer to analysis and replenishment procedure.

### **A.O.C. Control Procedure**

#### **Reagents**

- Sodium thiosulfate, 0.1N
- Potassium iodide/EDTA solution (dissolve 100 g KI and 20 g EDTA) into distilled water, add one drop ammonia dilute to 1 liter
- Starch indicator
- Degassed water

**Procedure**

- Pipette 2.0 ml 325 OxyEtch bath into 250 ml E-flask
- Add 100 ml degassed water and 10 ml potassium iodide/EDTA solution & mix thoroughly
- Titrate with sodium thiosulfate to pale yellow/green color
- Add starch indicator and titrate to virtual colorless end point

**Calculation**

$$\text{A.O.C. g/l} = \text{ml Na}_2\text{S}_2\text{O}_3 \times \text{N Na}_2\text{S}_2\text{O}_3 \times 8 / \text{sample size}$$

**Replenishment**

To raise A.O.C. 0.1 g/l add 0.4 oz/gal of 325 OxyEtch

**Copper Control Procedure****Reagents**

- EDTA 0.05M
- Ammonium Acetate 20%
- Sodium Hydroxide Solution (350 g/l)
- Glacial acetic acid
- PAN indicator

**Procedure**

- Pipette 2.0 ml sample of 325 OxyEtch bath into 250 ml conical beaker
- Add sodium hydroxide while mixing until solution turns brown
- Bring to boil for 30 seconds until gassing ceases
- Add few drops DI water followed by glacial acetic acid until the copper oxide precipitate dissolves
- Add 10 ml ammonium acetate and dilute to 100 ml DI water
- Heat to 105° F and add 10 drops 0.1% PAN indicator, titrate with EDTA until pink color fades rapidly to a yellow-green

**Calculation**

$$\text{Copper g/l} = \text{ml EDTA} \times \text{M EDTA} \times 63.54 / \text{sample size}$$

**HANDLING** Wear eye protection and personal protective gear when working with or handling this material; refer to MSDS prior to use. Store material in a cool dry area away from other chemicals that are incompatible per the MSDS.

**Disclaimer**

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