PREPOSIT™ ETCH 748

For PWB Metallization Applications

Regional Product Availability			
N. America	Japan/Korea	Asia	Europe
✔	✔	✔	

DESCRIPTION

For use in the Circuposit™ 3000 Process.

Preposit Etch 748 is a mildly-acidic micro-etch that promotes excellent copper innerlayer adhesion. Unlike other persulfate-based micro-etch systems, baths prepared from Preposit Etch 748 are stable and active for considerably longer periods of time with consistent etch rates.

ADVANTAGES

- Uniform micro-etch characteristics assure maximum innerlayer adhesion
- Produces a matte pink finish with high surface area to enhance bond
- Improved bath stability—active bath life measured in weeks, rather than days
- Consistent and controlled etch rates
- No ammonium ions means simple waste treatment
- Replenishable through A.O.C. (Active Oxygen Content) analysis
- Room temperature operation
- No surface scum as with ammonium persulfate etchants
- Solution life up to 4 times ammonium persulfate etchants

BATH MAKE-UP

WARNING! Refer to handling precautions prior to making up bath.

Preposit Etch 748 is supplied as a one-component dry powder and is added to water and sulfuric acid.

Add in order listed with thorough mixing between additions.

Bath Make-up — Metric (for 100 liters)	
D.I. Water	80 liters
Sulfuric Acid (S.G. 1.84)	2 liters
Preposit Etch 748	6 kg
Bring to final volume with D.I. Water	

Important Note: DO NOT use any acid other than sulfuric acid, as toxic gases may be evolved.

Bath Make-up — U.S. (for 100 gallons)	
D.I. Water	80 gallons
Sulfuric Acid (S.G. 1.84)	2 gallons
Preposit Etch 748	50 lbs.
Bring to final volume with D.I. Water	

Important Note: DO NOT use any acid other than sulfuric acid, as toxic gases may be evolved.

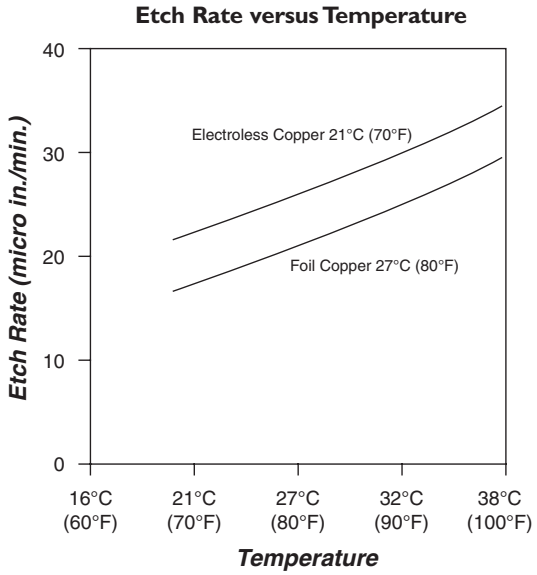
PREPOSIT ETCH 748

BATH OPERATION

The etch rate of Preposit Etch 748 is approximately 18 millionths of an inch of foil copper per minute at 27°C (80°F), which is consistent over the normal range of use. Optimum operating conditions are:

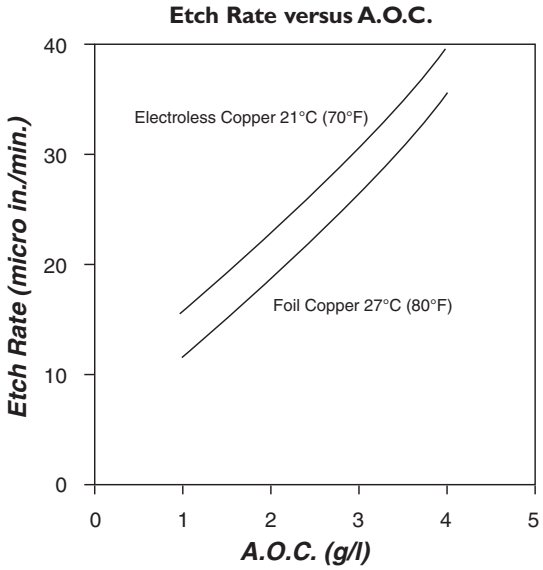
Time: 2–4 minutes, depending upon degree of etch required

Temperature: 24°–29°C (75°–85°F); etch rate increases by approximately 20% for each 6°C (10°F) increase in temperature; bath life is substantially reduced if operated above these temperatures



BATH CONTROL

The etch rate of the Preposit Etch 748 is proportional to the A.O.C. of the bath.



YIELD

For etched depths of 20 millionths of an inch, a yield of 190 square feet of copper surface per lb. of Preposit Etch 748 concentrate may be expected.

PRODUCT DATA

Preposit Etch 748

Appearance:	White, odorless, free-flowing granular crystals
pH (1% solution):	(approx.) 2

EQUIPMENT

Use tanks constructed of polyethylene or polypropylene, PTFE heaters and racks of suitable plastic or 316 Stainless Steel.

ACTIVE OXYGEN CONTENT CONTROL PROCEDURE

I. Principle

A sample is reacted with iodine solution, and the iodine produced is titrated with sodium thiosulfate using starch indicator. EDTA is added to reduce interference from copper.

II. Reagents

a) Sodium thiosulfate solution, 0.1N, standardized

b) Potassium iodide/EDTA solution; dissolve 100g of Kl and 20g of EDTA (disodium salt) in distilled water, add one drop of ammonia (S.G. 0.88) and dilute to 1 liter

c) Starch indicator

d) Degassed water; use boiled-out deionized

III. Procedure

a) Pipette 2.0 ml of Preposit Etch 748 Bath into a 250 ml Erlenmeyer flask.

b) Add 100 ml of degassed water and 10 ml of potassium iodide/EDTA solution and mix.

c) Titrate with sodium thiosulfate (0.10N) to a pale yellow/green color.

d) Add starch indicator and titrate to the almost colorless end point.

IV. Calculation

Active Oxygen Content g/l =

$$\frac{\text{ml } Na_2S_2O_3 \times \text{N } Na_2S_2O_3 \times 8}{\text{sample size (2 ml)}}$$

PREPOSIT ETCH 748

V. Replenishment

For 100 liter (100 gallon) Bath Volume	
A.O.C. (g/l)	**Addition of Preposit Etch 748 To Replenish A.O.C. to 2.5 g/l**
2.6	0
2.5	0
2.4	0.3 kg (2.5 lbs.)
2.3	0.6 kg (5.0 lbs.)
2.2	0.9 kg (7.5 lbs.)
2.1	1.2 kg (10 lbs.)

To raise A.O.C. 0.1 g/l, add 0.4 oz/gallon (3.0 g/l) of Preposit Etch 748.

COPPER CONTROL PROCEDURE

I. Principle

The copper is determined complexometrically with EDTA using an acetate buffered solution at pH 6 and PAN indicator. The sample is boiled at pH 12 first to destroy the interference from the oxidant present.

II. Reagents

a) EDTA 0.05M; dissolve 18.61g of EDTA disodium salt in deionized water and dilute to 1 liter; standardize with copper solution

b) Ammonium acetate, 20%; dissolve 200g of ammonium acetate in deionized water; adjust the pH to 6 with glacial acetic acid, and dilute to 1 liter

c) Sodium hydroxide solution, 350 g/l, in a dropping bottle

d) Glacial acetic acid, in a dropping bottle

e) PAN indicator, 0.1%; dissolve 0.1g of 1-(2-pyridylazo)-2-naphthol in ethanol and dilute to 100 ml

III. Procedure

a) Pipette 2.0 ml of Preposit Etch 748 Bath into a 250 ml conical beaker.

b) Add sodium hydroxide (350 g/l) dropwise mixing until the solution just stays brown.

c) Boil for 30 seconds until the gassing stops. (Do not boil dry.)

d) Add a few drops of deionized water, then glacial acetic acid dropwise until the copper oxide precipitate has dissolved.

e) Add 10 ml of ammonium acetate (20%) and dilute to about 100 ml with D.I. water.

f) Warm to about 40°C (105°F), add 10–12 drops of 0.1% PAN indicator and titrate with EDTA (0.05M) until the pink color rapidly fades to yellow-green.

IV. Calculation

$$\text{Copper g/l} = \frac{\text{ml EDTA} \times \text{M EDTA} \times 63.54}{\text{sample size (2 ml)}}$$

$$\text{oz./gal.} = \text{g/l} \times 7.5$$

HANDLING PRECAUTIONS

Before using this product, consult the Material Safety Data Sheet (MSDS)/Safety Data Sheet (SDS) for details on product hazards, recommended handling precautions and product storage.

CAUTION! Keep combustible and/or flammable products and their vapors away from heat, sparks, flames and other sources of ignition including static discharge. Processing or operating at temperatures near or above product flashpoint may pose a fire hazard. Use appropriate grounding and bonding techniques to manage static discharge hazards.

CAUTION! Failure to maintain proper volume level when using immersion heaters can expose tank and solution to excessive heat resulting in a possible combustion hazard, particularly when plastic tanks are used.

STORAGE

Store products in tightly closed original containers at temperatures recommended on the product label.

DISPOSAL CONSIDERATIONS

Dispose in accordance with all local, state (provincial) and federal regulations. Empty containers may contain hazardous residues. This material and its container must be disposed in a safe and legal manner.

It is the user's responsibility to verify that treatment and disposal procedures comply with local, state (provincial) and federal regulations. Contact your Rohm and Haas Electronic Materials Technical Representative for more information.

ROHM AND HAAS ELECTRONIC MATERIALS

Circuit Board Technologies

CMP Technologies

Display Technologies

Microelectronic Technologies

Packaging and Finishing Technologies

For locations and information please visit **www.rohmhaas.com**

UNITED STATES
Marlborough, MA
Tel: 800.832.6200
Fax: 508.485.9113

JAPAN
Tokyo
Tel: +81.3.5213.2910
Fax: +81.3.5213.2911

ASIA
Hong Kong
Tel: +852.2680.6888
Fax: +852.2680.6333

EUROPE
Esslingen, Germany
Tel: +49.711.553.6500
Fax: +49.711.553.650.77