PMD (UK) Ltd, Broad Lane, Coventry, CV5 7AY, England. Telephone 024 7646 6691 Fax 024 7647 3034
Web Site: www.pmdgroup.co.uk Email: sales@pmdgroup.co.uk

923-12/02
ISSUE 4
PREV 3

PROCIRC 923

MICROETCH

INTRODUCTION

Procirc 923 Microetch is a highly stable, persulphate based liquid copper etchant which can be used in all print and etch, pth or inner layer process sequences.

BENEFITS

Cost effective by consistent controlled etch rate.

Liquid concentrate for ease of handling.

Ease of control - etch rate can be varied to suit application.

Versatility - will handle most etching operations in pcb manufacture.

Stable - will not suddenly become aggressive.

Ideal for immersion or spray use.

SOLUTION MAKE-UP

Procirc 923 Microetch	10 - 40% v/v
Sulphuric Acid (1.84 SG)	1 - 2% v/v

OPERATING DATA

Concentration	10 - 40% v/v
Sulphuric Acid (1.84 SG)	1 - 2% v/v
Temperature	25 - 35 deg C
Time	0.5 - 3 mins (or as required)
Agitation	Not essential
Extraction	Recommended.

Copper etch rate:- (Typical figures on laminate copper)

Concn 923 %	Etch Rate Micron/Min (Static Immersion) 25 deg C	35 deg C
10	0.4	0.6
20	0.6	1.0
30	1.0	1.6
40	1.1	1.7

EQUIPMENT

Tanks	Polypropylene, unplasticised PVC, 316 stainless steel or titanium.
Heating	PTFE or silica sheathed with thermostatic control.

INSTALLATION

It is essential that the tanks to be used for Procirc 923 are thoroughly cleaned and leached before any chemistry is introduced.

Contact PMD (UK) Limited Technical Department for appropriate procedure.

1. Half fill the clean empty tank with water.
2. Slowly add, with constant stirring, the appropriate volume of sulphuric acid. NB the solution will become warm.
3. Add the appropriate amount of Procirc 923 Microetch and stir until fully mixed.
4. Make up to operating volume with water and mix thoroughly.
5. Heat the solution to operating temperature.

PROCESS SEQUENCE

Procirc 923 can be used in all print and etch, pth and inner layer processes, but in general adequate rinsing after processing is essential for optimum results.

MAINTENANCE AND CONTROL

The solution should be regularly analysed and replenished as necessary.

The solution should be discarded when the copper levels reach approximately 30 g/l.

ANALYSIS METHODS

Procirc 923 Microetch Concentration

Reagents

0.1N potassium permanganate (Standard volumetric solution)
0.2N ferrous ammonium sulphate solution, make-up:-

(a) Dissolve 19.6 g of ferrous ammonium sulphate in 100 ml of D.I. water.
(b) Add 35 ml of ortho-phosphoric acid.
(c) Transfer to a 250 ml volumetric flask, with washing, and make up to the mark with DI water.

Method

1. Pipette 20 ml of ferrous ammonium sulphate solution into a 250 ml conical flask.
2. Add approximately 50 ml DI water.
3. Titrate with 0.1N potassium permanganate to the first permanent faint pink colour.
4. Record titre = A mls.
5. Pipette 2 mls of Procirc 923 Microetch solution into a 250 ml conical flask.
6. Add approximately 50 ml DI water.
7. Pipette 20 ml of ferrous ammonium sulphate solution into the flask and mix thoroughly.
8. Allow the solution to stand for 5 minutes minimum.
9. Titrate with 0.1N potassium permanganate to the first permanent faint pink colour.
10. Record titre = B mls.

Calculation

(A - B) x 1.19 = % Procirc 923.

Replenishment

Add Procirc 923 as required.

For 1% drop in concentration add 10ml/l Procirc 923

Procirc 923 Microetch Copper Content

Reagents

0.1M (0.2N) EDTA (standard volumetric solution)
PAR Indicator
Buffer Solution (Make-up - dissolve 105g sodium acetate and 100 ml glacial acetic acid in 1 litre DI water).

Method

1. Pipette 2 ml of Procirc 923 Microetch working solution into a 250 ml conical flask.
2. Add approximately 50 ml DI water.
3. Add 20 mls of buffer solution and mix thoroughly.
4. Add 4-6 drops of PAR indicator and mix thoroughly.
5. Titrate with 0.1M EDTA to a definite green colour.
6. Record titre = t mls.

Calculation

t x 3.175 = g/l copper.

DISPOSAL

Dispose of in accordance with local authority requirements.

PRODUCT FAMILIES

The following products or product families are referred to in this data sheet,

Product Name	Product Number
Procirc 923 Microetch	927001

Whilst every endeavour has been made to ensure that the information given in this data sheet is correct, PMD (UK) Limited gives no warranty, express or implied, relating to the use of this product.