

PROCIRC SP263

MICROETCH

INTRODUCTION

Procirc SP263 Microetch is a highly stable, persulphate based copper etchant which can be used in all print and etch, pth or inner layer process sequences. It comes as a solid which on make-up with water becomes ready for use, thus eliminating the need for sulphuric acid additions.

BENEFITS

Cost effective by consistent controlled etch rate.

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

Elimination of sulphuric acid additions.

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 SP263 Microetch 50 - 200 g/l (aqueous)

OPERATING DATA

Concentration	50 - 200 g/l (aqueous)
Temperature	25 - 35 deg C
Time	0.5 - 3 mins (or as required)
Agitation	Not essential
Extraction	Recommended

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OPERATING DATA CONTINUED

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

<u>Concn SP263</u>	<u>Etch Rate Micron/Min (Static Immersion)</u>	
	<u>25 deg C</u>	<u>35 deg C</u>
g/l		
100	0.4	0.7
150	0.5	1.0
200	0.6	1.3

EQUIPMENT

Tanks	Polypropylene, unplastised 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 SP263 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. Add the appropriate amount of Procirc SP263 Microetch and mix until fully dissolved.
3. Make up to operating volume with water and mix thoroughly.
4. Heat the solution to operating temperature

PROCESS SEQUENCE

Procirc SP263 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 30g/L.

ANALYSIS METHODS

Procirc SP263 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 SP263 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

$(A - B) \times 9.92 = \text{g/l Procirc SP263.}$

Replenishment

Add Procirc SP263 as required.

Copper Content

Reagents

0.1M (0.2N) EDTA (standard volumetric solution)

PAR Indicator

Buffer Solution (Make-up - dissolve 105g sodium acetate and 100ml glacial acetic acid in 1 litre DI water).

Method

1. Pipette 2 ml of Procirc SP263 Microetch working solution into a 250ml conical flask.
2. Add approximately 50 ml DI water.
3. Add 20 mls buffer solution and mix thoroughly.
4. Add 4-6 drops PAR indicator.
5. Titrate with 0.1M EDTA to a definite green colour.
6. Record titre = t mls.

Calculation

$t \times 3.175 = \text{g/l copper.}$

DISPOSAL

Dispose of in accordance with local authority requirements.

PRODUCT FAMILIES

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

<u>Product Name</u>	<u>Product Number</u>
Procirc SP263 Microetch	923003

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