

# PMD (UK) LTD PROCESS DATA

911-02/00

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

ISSUE 3

PREV 2

## PROCIRC 911 MICROETCH/CLEANER

### INTRODUCTION

Procirc 911 Microetch/Cleaner is a highly effective cleaner which removes soils and tarnish, whilst giving a controlled microetch on copper.

### BENEFITS

Excellent Cleaning.

Controlled Microetch.

Cost Effective - supplied as a concentrate.

Anti-Tarnish Properties - surface is protected against tarnishing for several hours.

### SOLUTION MAKE-UP

Procirc 911 Microetch/Cleaner 50% v/v

### OPERATING DATA

Temperature	25 - 40 deg C
Time	1 - 5 minutes.
Agitation	Mechanical work movement recommended.
Extraction	Recommended.

Copper Etch Rate:- (Typical figures on laminate copper).

50% v/v Procirc 911 @ 40 deg C. 0.3 microns/minute.

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### **EQUIPMENT**

Tanks	Polypropylene, Unplasticised PVC, Titanium.
Heaters	PTFE, Titanium, Teflon Coated, all with thermostatic control.

### **INSTALLATION**

It is essential that the tanks to be used for Procirc 911 are thoroughly cleaned and leached before any chemistry is introduced.

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

1. Fill the clean empty tank with the appropriate volume of water.
2. Add the Procirc 911 Microetch/Cleaner and mix thoroughly.
3. Heat to operating temperature.

### **PROCESS SEQUENCE**

1. Procirc 911 Microetch/Cleaner.
2. Rinse.
3. Rinse.
4. Continue dependent upon application.

### **MAINTENANCE AND CONTROL**

The solution should be regularly analysed and replenished as necessary.

Evaporation losses should be replaced using water.

Concentration losses should be replaced with Procirc 911 Microetch/Cleaner.

The solution should be discarded when the copper content reaches 20 g/l.

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## ANALYSIS METHODS

### Procirc 911 Microetch Cleaner Concentration

#### Reagents

1.0N Sodium Hydroxide (Standard Volumetric Solution).  
Methyl Orange Indicator.

#### Method

1. Pipette 50 ml working solution into a 250 ml conical flask.
2. Add 50 ml water and mix thoroughly.
3. Add 4 - 5 drops of Methyl Orange Indicator.
4. Titrate with 1.0N Sodium Hydroxide to a yellow end-point.
5. Record Titre = t mls.

#### Calculation

$t \times 3.425 = \% \text{ v/v Procirc 911.}$

#### Replenishment

For every 1% drop in concentration add 10 ml/l Procirc 911 Microetch/Cleaner.

### Copper Concentration

#### Reagents

Concentrated Sulphuric Acid.  
Hydrogen Peroxide - 100 vol, 27.5% w/w.  
Ammonia Solution, 50% v/v.  
Buffer Solution, (105 g/l Sodium Acetate, 100 ml/l Acetic Acid in Aqueous Solution).  
Alizarine Indicator (0.5 w/v, 3 - aminomethylalizarin - NN - diaacetic acid, in dilute ammonium acetate).  
0.1M EDTA Solution (Standard Volumetric Solution).

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#### Method

1. Pipette 10 ml working solution into a 250 ml conical flask.
2. Slowly with constant mixing, add 20 mls Concentrated Sulphuric Acid and mix thoroughly.
3. Boil the solution until dense white fumes fill the flask and the solution turns black.
4. Allow to cool and add Hydrogen Peroxide dropwise, until the solution appears clear.
5. Slowly add 100 mls water and mix thoroughly.
6. Slowly add 50% Ammonia Solution until the solution just turns dark blue.
7. Add Buffer Solution until the solution turns a light blue/green colour.
8. Add 8 - 10 drops of Alizarin Indicator.
9. Titrate with 0.1M EDTA solution to a green end-point.
10. Record titre = t mls.

#### Calculation

$$t \times 0.6354 = \text{g/l Copper.}$$

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#### **DISPOSAL**

Dispose of in accordance with local authority requirements.

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#### **PRODUCT FAMILIES**

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

<u>Product Name</u>	<u>Product Number</u>
Procirc 911 Microetch Cleaner	917001

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