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PROCIRC 9550

CIRBOND

INTRODUCTION

Procirc 9550 Cirbond is a new generation chemistry specially formulated for improved bonding of layers in the manufacture of multilayer printed circuit boards.

The two component solution can be auto dosed to enable steady state process control.

The surface treatment leaves an even brown surface with an excellent etched profile, allowing good bond strengths and high resistance to micro delamination during drilling and thermal cycling tests.

BENEFITS

Simple auto dose control.

Consistent etch rate.

Horizontal or vertical application. (Spray, flood immersion, dip)

Thin material treatment (horizontal process).

Uniform dark brown finish.

Low process cost.

High yield (thin material).

SOLUTION MAKE-UP

Procirc 9550 Cirbond Part A.	20% v/v
Procirc 9550 Cirbond Part B.	6.5% v/v
DI water.	To volume

Note: For feed and bleed operations, Procirc 9790 Acid Copper Concentrate is added at 30% v/v.

OPERATING DATA

Procirc 9550 Cirbond Part A	20%. ± 2%
Procirc 9550 Cirbond Part B	6.5%. + 1/ -0.5%
Time	1 min horizontal application. 1 - 2 min vertical application.
Temperature	25 - 35°C.
Extraction	Essential.

EQUIPMENT

Tanks	Polypropylene, unplasticised PVC.
Heaters	Metallic parts 316 stainless steel.
Cooling Coils	Metallic parts 316 stainless steel.

INSTALLATION

It is essential that all tanks are cleaned and leached thoroughly before introducing chemistry.

If in any doubt as to the cleaning procedure, please contact PMD (UK) Limited Technical Department.

1. Fill the cleaned empty tank to 30% of the final volume with DI water.

2. Add the required volume of Procirc 9550 Cirbond Part A.

3. Add the required volume of Procirc 9550 Cirbond Part B.

4. Add the required volume of Procirc 9790 Acid Copper Concentrate (feed and bleed operations only).

5. Make up to final volume with DI water.

6. Check by analysis for concentrations of Procirc 9550 Cirbond Part A and Part B; adjust if necessary.

7. Heat solution to operating temperature.

PROCESS SEQUENCE

		Typical contact time (horizontal)	Temp °C
1.	Acid or alkali cleaner.	30 sec	50
2.	Rinse.		
3.	Rinse.		
4.	Procirc 9026 Conditioner.	1 min	40
5.	Rinse.		
6.	Rinse.		
7.	DI Rinse (optional).*		
8.	Procirc 9550 Cirbond.	1 min	35
9.	Rinse.		
10.	Rinse.		
11.	Dry.	1 min	60 - 70

* Dependent upon water quality.
* Steps 1-3 may be omitted dependent on board condition.

MAINTENANCE AND CONTROL

The solution should be regularly analysed and replenished as necessary.

Auto dose based on throughput can be implemented using either board sensors or by colourimetric control.

Under certain conditions, the etch rate may be increased by the addition of Procirc 9551 Etch Additive.

Please discuss your requirements with PMD (UK) Limited Technical Department.

ANALYSIS METHODS

1. **Procirc 9550 Cirbond Part A (% concentration)**

Reagents

1.0N sodium hydroxide (standard volumetric solution).
Methyl red indicator.

Method

1. Pipette a 5ml sample of working solution into a 250ml conical flask.
2. Add approximately 100ml of deionised water.
3. Add 2-3 drops of methyl red indicator.
4. Titrate to green* end point with 1.0N sodium hydroxide solution.
5. Record titre = t ml.

* Note. The end point on a new solution without copper will be yellow.

Calculation

% Procirc 9550 Cirbond Part A = t x 1.48.

Replenishment

For every 1% drop in concentration add 10ml/l Procirc 9550 Cirbond Part A.

2. **Procirc 9550 Cirbond Part B (% concentration)**

Reagents

0.1N potassium permanganate (standard volumetric solution).
25% v/v sulphuric acid.

Method

1. Pipette a 2ml sample of working solution into a 250ml conical flask.
2. Add approximately 50ml of deionised water and 10ml of 25% v/v sulphuric acid.
3. Titrate to permanent pink end point with 0.1N potassium permanganate.
4. Record titre = t ml.

Calculation

% Procirc 9550 Cirbond Part B = t x 0.28.

Replenishment

For every 0.1% drop in concentration add 1ml/l of Procirc 9550 Cirbond Part B.

3. **Copper content**

Reagents

0.1M EDTA.
Acetate buffer (105g/l sodium acetate, 100ml/l acetic acid).
PAR indicator.

1. Pipette a 2ml sample of the working solution into a 250ml conical flask.
2. Add 80ml of deionised water and 4-6 drops of PAR indicator.
3. Add 20ml of acetate buffer.
4. Titrate to a green end point with 0.1M EDTA.
5. Record titre = t ml.

g/l copper = t x 3.175.

Note Where copper content is less than 5g/L use a 5ml sample and a titration factor of 1.27.

DISPOSAL

Dispose of in accordance with local authority requirements.

PRODUCT FAMILIES

The following products are referred to in this data sheet.

Product Name	Product Number
Procirc 9026 Conditioner	905002
Procirc 9550 Cirbond Part A	957003
Procirc 9550 Cirbond Part B	957004
Procirc 9790 Acid Copper Concentrate	977009
Procirc 9551 Etch Additive	952001

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