



RONAMERSE™ SMT CATALYST CF

For PWB Metallization Applications

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

Operating Parameters		
Parameter	Range	Recommended
Palladium	30–70 ppm	50 ppm
Sulphuric Acid	60–70 ml/l	65 ml/l
Temperature	26–30°C	28°C
Immersion Time	3–5 min.	4 min.
Agitation	Board movement to induce flow of solution through holes	

DESCRIPTION

Ronamerse SMT Catalyst CF is designed for activation of copper printed circuit boards to ensure complete and uniform coating of Ronamax™ SMT is produced. Non-conductive areas will not be coated, enabling selective metal deposition to be achieved.

BATH MAKE-UP (FOR 100 LITRES)

Chemical	Volume
Sulphuric Acid (SG 1.84)	6 litres
Ronamerse SMT Catalyst CF Concentrate	5 litres
DI Water	to 100 litres

- 1) Add 75% of final volume of DI water to a clean tank.
- 2) With continuous stirring add the sulphuric acid* followed by Ronamerse SMT Catalyst CF concentrate.
- 3) Dilute to final volume and mix well.

* Beware of excess heat generation

YIELD

Based on the make-up, replenishment and replacement figures quoted above, 1 litre of Ronamerse SMT Catalyst CF concentrate is sufficient to process a total area of 15.9 m².

SULPHURIC ACID PRE-DIP & POST-DIP

Operating Parameters		
Parameter	Range	Recommended
Sulphuric Acid (SG 1.84)	60–70 ml/l	65 ml/l
Temperature	23–27°C	25°C

MAKE-UP PROCEDURE (FOR A 100 LITRE TANK)

- 1) Add 70 litres DI Water to the tank.
- 2) Slowly add 6 litres of reagent or equivalent sulphuric acid and mix thoroughly.
- 3) Bring solution to operating volume with DI water and mix thoroughly.

ANALYSIS FREQUENCY AND SPECIFIC REPLENISHMENT

Follow analysis procedure.

DUMP AND REMAKE

Discard if copper content reaches 300 ppm. Copper limit is dependent on laminate material used and may be lower than the above limit if exotic materials are used.

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ANALYSIS—REPLENISHMENT

By Work Load

For every 1 m² (surface area) processed add 43 ml Ronamerse SMT Catalyst CF concentrate. The quantity required in practice may vary as a consequence of the surface area to be plated as a percentage of the total panel area and the volume of solution removed by dragout. For precise control regular analysis is recommended.

By Analysis

Replenish with Ronamerse SMT Catalyst CF concentrate and sulphuric acid as required by analysis to maintain optimum concentrations.

Palladium

a) By Atomic Absorption Spectrophotometer

b) By Colour Comparison

Pipette 50 ml of Ronamerse SMT Catalyst CF into a 250 ml beaker, add 1g of oxalic acid and dissolve. Add 3g of potassium persulphate and swirl until the solution becomes yellow/orange. Transfer to a suitable bottle and compare colour directly against standards to obtain the concentration of palladium. The resultant test solution must not be returned to the working solution.

c) By Spectrophotometer

Pipette 10 ml of Ronamerse SMT Catalyst CF into a 250 ml volumetric flask, add 5 ml of 50% hydrochloric acid and 2 ml of 20 vol. hydrogen peroxide. Swirl the flask to mix the solution until it becomes clear; if it is not clear, add further hydrogen peroxide then dilute to the mark with distilled water.

Measure the absorbance of the solution at a wavelength of 475 nm against water in the reference cell on a suitable visual range spectrophotometer. The test solution must not be returned to the working solution.

Read off the concentration of palladium in the solution from a calibration graph previously prepared using standards.

Standards, for either method, should be prepared by making the following solutions:

- 50 ml/l Ronamerse SMT Catalyst CF concentrate in deionised water
- 75 ml/l Ronamerse SMT Catalyst CF concentrate in deionised water
- 100 ml/l Ronamerse SMT Catalyst CF concentrate in deionised water
- 125 ml/l Ronamerse SMT Catalyst CF concentrate in deionised water

NB: 1 ml/l Ronamerse SMT Catalyst CF concentrate increases palladium concentration by 1 ppm.

Calculation

Palladium metal (ppm) = AA reading x 25

Target: 50 ml/l (0.05 g/l)

REPLENISHMENT

Ronamerse SMT Catalyst CF concentrate = (50 - analysis result) x bath volume (litres)

SULPHURIC ACID ANALYSIS

I. Equipment

- a) 10 ml pipette
- b) 100 ml graduated cylinder
- c) 250 Erlenmyer flask
- d) 50 ml burette

II. Reagents

- a) 0.5M Sodium hydroxide
- b) Phenolphthalein indicator

III. Procedure

- a) Pipette a 10 ml sample of working bath into a 250 ml Erlenmyer flask.
- b) Add 100 ml DI water.
- c) Add 0.5 ml (~5–8 drops) phenolphthalein indicator.
- d) Titrate with 0.5M sodium hydroxide to a pink end point.

IV. Calculation

ml/l Sulphuric acid =
ml of sodium hydroxide x molarity x 2.77

Target: 60 ml/l (SMT Catalyst, Pre-Dip and Post-Dip)

REPLENISHMENT

Sulphuric acid (ml) =
(60 - analysis result) x bath volume (litres)

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COPPER CONTENT

- I. **Equipment**
 - a) 5 ml pipette
 - b) 500 ml volumetric flask
 - c) Atomic absorption spectrophotometer
- II. **Reagents**
 - a) Hydrochloric acid (SG 1.18)
 - b) 2 ppm and 10 ppm copper standards
- III. **Procedure**
 - a) Pipette a 5 ml sample of working bath into a 500 ml volumetric flask.
 - b) Add 5 ml of hydrochloric acid (SG 1.18).
 - c) Swirl the flask to mix the solution.
 - d) Dilute to the mark with deionized water.
 - e) Using a 2 and 10 ppm copper standards for calibration, obtain the sample ppm reading on the atomic absorption spectrophotometer.
- IV. **Calculation**

Copper concentration (ppm) = AA reading x 100
Target: <300 ppm

REPLACEMENT

The solution should be replaced after a throughput of 5 m²/1 (surface area) or when the metallic impurities reach for 60 ppm iron or 300 ppm copper.

Note: Copper surfaces should be clean and activated prior to processing.

EQUIPMENT

- Tanks: Polypropylene, PVC or Polyethylene
Racks: PVDF-clad panel heaters with thermostatic control
Heaters: Recommended

PRODUCT DATA

Ronamerse SMT Catalyst CF Concentrate

- Appearance: Clear, amber liquid
pH: <1.8
Specific Gravity at 20°C: 1.03–1.06

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.

RONAMERSE SMT CATALYST CF



ELECTRONIC MATERIALS



Circuit Board Technologies



CMP Technologies



Microelectronic Technologies



Packaging and Finishing Technologies

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