
AUROMEX®

TECHNICAL INSTRUCTIONS

DATA SHEETS

FOTRONEX C95VT

INTRODUCTION

FOTRONEX C95VT is a high efficiency cobalt brightened acid hard gold electroplating process developed to facilitate the plating of printed circuits, contacts and connectors. The formulation produces fully bright, ductile, relatively hard deposits (110-150 Hv) and a contact resistance of 0.3 milliohms. Due to the high stability of the nickel complex in this electrolyte, the amount of co-deposition is extremely constant (0.16-0.2%) over a wide temperature and current density range. The deposit pore free at nominal thicknesses, and gives a high degree of resistance to corrosion, oxidation and galling. **FOTRONEX C95VT** electrolytes have a high cathodic efficiency – up to 80% - which produce considerable advantages over most electrolytes operated or around a pH of 4.5 with excellent metal distribution characteristics. In addition, **FOTRONEX C95VT** electrolytes will not attack any dry film resists on printed circuit boards.

FOTRONEX C95VT deposits possess all the essential mechanical, physical and chemical properties required by the electrical and electronics industries. They have passed the standard insection / eithdrawal specification test and conforms to MIL-G045204B Amendment 2 Type 1 Grade C, DTD 938 etc.

FEATURES

- * Extreme high cathodic efficiency and wide operating window.
- * High corrosion and wearing resistance.
- * Excellent throwing power and distribution.
- * Good solderability.
- * Good tolerant to metallic impurities.

DEPOSIT CHARACTERISTICS

Purity	: 99.8% Gold 0.1-0.2% Cobalt
Hardness	: 110-150 HV
Contact Resistance	: 0.3 milliohms
Internal stress	: 14 kgs / mm ²
For 1 μ deposit	: 175 mg / dm ² approx.

EQUIPMENT REQUIRED

Tank	Polypropylene or PVC glass fiber reinforced tanks are suitable.
Heater	Heating is required and temperature regulation is essential. Therefore, thermostatically controlled immersion heater are recommended.
Rectifier	A standard D C power supply should be used with an ampere output capacity sufficient to meet the requirements of the plating operation. The power supply should be equipped with a Voltmeter, ammeter and stepless control for accurate regulation of the current.
Filtration	The solution should be filtered continuously through polypropylene or cotton cartridges to maintain clarity.
Agitation	Moderate to vigorous agitation is necessary to maintain uniform metal distribution. Jet Stream and mechanical agitation at 7-14 m/min may be used.
Anodes	High quality stainless steel anodes should be used with an area sufficient to provide a maximum current density of 0.25A/dm^2 are recommended.

PREPARATION OF SOLUTION

The following instructions are for the preparation of 10 litres of Electrolytes.

Materials required :

Gold Potassium Cyanide (68.3%)	58.6 gms
FOTRONEX C95VT Make Up Salt	1.5 kgs
FOTRONEX C95VT Make Up Brightener	500 mls
FOTRONEX C95VT Acid	
Potassium Hydroxide	

Procedures :

1. Pour 5 litres of demineralised or distilled water into the clean plating tank.
2. Add in the 1.5 kgs Make Up Salt stir completely dissolved and then add the 500 mls Make Up Brightener
3. Check and adjust pH to 4.5 with 10% potassium hydroxide or **FOTRONEX C95VT** Acid Salt
4. Dissolve the gold potassium cyanide in a separate quantity of demineralised or distilled water and then add to the above solution.
5. Stir and check the pH again. Adjust to pH 4.5 if necessary with **FOTRONEX C95VT** Acid or potassium hydroxide.
6. Dilute the solution to 10 litres with demineralised or distilled water. The solution is then ready to use.

OPERATING CONDITIONS

	<u>Unit</u>	<u>Range</u>	<u>Optimum</u>
Gold Concentration	g / l	4 – 6	4
pH, electrometric		4 – 5	4.5
Temperature	°C	20 – 40	35
Current Density	A / dm ²	0.54 – 2.2	1.1
	A / ft ²	5 – 20	10
Solution Density	°Be	10 – 15	13
Anode : Cathode ratio		2 : 1 – 5 : 1	3 : 1
Agitation	m / min	3 – 20	8
Plating rate (mgm/Amp-min)		60 – 80	*
Time to deposit 1 μ at a A/dm ²	min	2	*

* Optimum current density and plating rate will depend upon metal concentration, agitation and equipment design.

BATH MAINTENANCE

Gold metal content of the solution should be maintained at the recommended concentration (4.0-6.0g/l) by periodic additions of gold potassium cyanide 68.3%. Replenishment Brightener is supplied as a liquid in units of 100 mls. One unit contains all the necessary agents to be added with the appropriate quantity of gold salts corresponding to 100 grams of gold metal.

Amp-min

1450

Gold consumed

100 grams

As drag out losses cannot be accounted for accurately, analytical checks should be performed periodically.

For every 100 grams deposit replenishment (147grams 68.3% PGC), add one unit (100mls) FOTRONEX C95VT Replenishment brightener.

CONDUCTIVITY :

Specific gravity of the solution should be maintained between 10-15 degree baume. If for any reason excessive drag out occurs, and the specific gravity of the solution drops below 10 degree baume, conducting salts should be added to the solution. For every 16 g/l addition of this conduction salt will increase 1°Be at 45°C.

pH ADJUSTMENT :

The pH of the solution is recommended to keep between 4.0-5.0. To lower or raise the solution pH by addition of 10% potassium hydroxide or FOTRONEX ACID.

PACKING

When ordering, reference should be made to the following code numbers:

FOTRONEX C95VT Make Up Salt	1.5Kgs. / drum
FOTRONEX C95VT Make Up Brightener	500mls. / pack
FOTRONEX C95VT Replenishment brightener	100 mls / unit
FOTRONEX C95VT Acid solution	1, 2, 5 litre / drum
FOTRONEX C95VT Conduction Salt	1, 2, 5 Kgs./ pack