NEUTRONEX NT 1000

INTRODUCTION

NEUTRONEX NT1000 gold plating process is a neutral gold electrolyte formulated specially to produce a high purity gold deposit (99.9%) having excellent physical properties. Deposits produce by this process are smooth, lustrous, highly ductile and free from porosity. The process particularly useful for bonding operations and where exceptional Solder ability is required.

NEUTRONEX NT 1000 maintains this high purity level consistently under practical electroplating control procedures, and produce stress-free deposits up to any desirable thickness making them ideal for those electronic applications (ie.: Printed Circuit Board, Semi-Conductor and connector industries). Suitable for both rack and barrel plating, no special conditions are required and the process is simple to operate.

NEUTRONEX NT 1000 produce deposits which conform to MIL-G-45204B, class 00 to class 6, Types 1,2,3, Grade B.

PROCESS FEATURES

* Ultra-pure gold deposit (99.9%)
* Excellent bonding characteristics
* Stress free, low porosity
* Uniform distribution
* Exceptional throwing power
* Easy to operate
* High coating thick nesses

DEPOSIT CHARACTERISTICS

Appearance	Semi bright, lustrous deposits
Purity	99.99%
Hardness	70 – 110 mHV20
Specific resistivity	0.3 milliohms (using the cross wire method with a 200 gram load)
Porosity	Relatively pore free deposits are obtained at thickness of 1-1.25 microns.
Tranish resistance	Deposits at a thickness 1-1.25 microns are capable of withstanding Heat treatment at 425℃ for 5 minutes without discoloration when plated over nickel or nickel based alloys.

AUROMEX ® CHEMICALS CORPORATION
UNIT NO. 2, 4/F., INTERNATIONAL PLAZA, 20 SHEUNG YUET ROAD, KOWLOON BAY, KOWLOON, H.K.
TEL: 2796 7238 FAX: 852-2796 7117

EQUIPMENT REQUIRED

Tank	Polyproplyene or PVC glass fibre reinforced tanks are suitable.
Heater	Heating is required and temperature regulation is assential. 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	Insoluble anodes should be used, Platinised Titanium anodes 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 gm
NEUTRONEX NT 1000 Make Up Salt (Code 1010)	1.7 kgs
NEUTRONEX NT 1000 Make Up Brightener (Code 1015)	100 mls
NEUTRONEX NT 1000 Acid (Code 1030)	
Potassium Hydroxide	

Procedures :

1) Pour 6 litres od deminalised or distilled water into the clean plating tank.
2) Add in the 1.7 kgs Make Up Salt (Code 1010), Stir until thoroughly dissolved and then add the 100 mls Make Up Brightener (Code 1015)
3) Check and adjust pH to 6.0 with 10% potassium hydroxide or NEUTRONEX NT 1000 Acid.
4) Dissolve the Gold Potassium Cyanide (68.3%) in a separate quantity of demineralised or distilled water and then add to the above solution.
5) Stir and check the pH again of necessary.
6) Dilute the solution to 10 litres with demineralised or distilled water. The solution is then ready to use.

OPERATING CONDITIONS

	Unit	Range	Optimum
Gold concentration	g/l	2-6	4.0
pH , electrometric		5.5-6.5	6.0
Temperature	℃	55-70	65
Current Density	A/d㎡ (rack)	0.5-1.5	*
	(barrel)	0.05-03	*
Solution Density	°Be	10-20	12
Agitation		Vigorous	Vigorous
Plating rate (mg/Amp-min.)		110	*
Time to deposit 1 μ at 0.5 A/d㎡		3'30"	*

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

BATH MAINTENANCE

Replenishment should be based on regular analysis but under optimum operating conditions, NEUTRONEX NT 1000 process deposit metal at the following rates

Amp-min.	Gold deposited
1000	110 grams
909	100 grams

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

For every 100 grams gold replenishment (147 grams 68.3% PGC), add one units (100 mls) NEUTRONEX NT 1000 Replenisher Brightener (Code 1020).

Specific Gravity : To counter the effect of excessive drag out, NEUTRONEX NT 1000 Conducting Salt (Code 1024) should be added to maintain the specific gravity at the optimum value.
For every 14 g/l addition of this conducting salt will increase 1°Be at 50℃.

pH adjustment : In order to maintain the pH value of NEUTRONEX NT 1000 between 5.5-6.5 electrometric, proceed as follows :
To decrease pH, add NEUTRONEX NT 1000 Acid.
To increase pH, add Potassium Hydroxide.

CONTROL OF IMPURITIES

In general, any metallic contamination could interfere with the operation of the NEUTRONEX NT 1000 bath although, in fact, these processes have a high tolerance to impurities. Introduction of metallic impurities into the bath should be prevented by proper rinsing of the parts to be plating and the use of a gold strike prior to gold plating is recommended.

PACKING

When ordering, reference should be made to the following Code Number :-

NEUTRONEX NT 1000 Make Up Salt (Code 1010)	1.7 kgs
NEUTRONEX NT 1000 Make Up Brightener (Code 1015)	100 mls
NEUTRONEX NT 1000 Replenisher Brightener (Code 1020)	100 mls
NEUTRONEX NT 1000 Conducting Salt (Code 1024)	1,2,5 kgs / pack
NEUTRONEX NT 1000 Acid (Code 1030)	1,2,5 litre / pack