PALLMEX 850FX

PALLADIUM NICKEL ALLOY ELECTROPLATING PROCESS

INTRODUCTION

AUROMEX PALLMEX 850FX is a new formulated high palladium content nickel brightened alloying electroplating system. This high palladium content bright deposit process is specially designed to achieve the advantage of using nickel to produce a low stress, high ductility and extreme good corrosion resistance, suitable for the plating of connectors, contacts and other electrical components as well as decorative articles. **AUROMEX PALLMEX 850FX** is particularly suitable for use as substitutes or partial substitutes for several of the other precious metals, most notably gold and Rhodium plating thickness up to 10 microns. A palladium alloy undercoat for gold or Rhodium as a substitute for bright nickel improves the corrosion resistance of the coating.

PROCESS CHARACTERISTICS

* **Reduced Material Cost**
  - (Substitute for gold and Rhodium)

* **Proven Electrolyte**
  - Non-toxic electrolyte
  - Extreme economic
  - Easy maintenance
  - High tolerance to contamination
  - Stable process

* **Improved Deposit Characteristics**
  - Minimal hydrogen inclusion
  - High ductility (6-8% elongation)
  - Low internal stress
  - True alloy
  - Exceptionally low porosity
  - High hardness

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

DEPOSIT CHARACTERISTICS

Appearance	:	Fully bright, white
Purity	:	80-85% palladium, 15-20% nickel
Density	:	11.0-11.2 g/cc
Hardness	:	500-600 Hv20g
Ductility	:	Excellent
Porosity	:	Excellent
Internal stress	:	80-120 N/m㎡
Corrosion resistance	:	good (salt spray test)
Wearing resistance	:	good

EQUIPMENT REQUIRED

Tank : Polypropylene or PVC glass fiber reinforced tanks are suitable

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 step less 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 metal 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/d㎡ are recommended.

MAKE UP INSTRUCTION

Palladium Complex :
For the preparation and maintenance of the solution, palladium is added in the form of Diammino-palladium complex (50% pd metal) or Tetra-palladium complex (40% pd metal)

Preparation of the solution :
PALLMEX 850FX make up is supplied as a ready for use electrolyte, it contains all the necessary agents to make up the bath, but does not contain Palladium.

Materials required : for 10 litres of electrolyte

Palladium complex (50% pd metal)	60 grammes
PALLMEX 850FX Make Up electrolytes	10 litres
PALLMEX 850FX Brightener	as required
PALLMEX 850FX Wetting Agent	as required
Ammonium Hydroxide	as required

OPERATING CONDITIONS

	Unit	Range	Optimum
Metallic Palladium Content	g/l	2 – 4	3
Metallic Nickel Content	g/l	4 – 6	5
Temperature	℃	25 – 35	30
Density	°Be	8 – 16	12
pH		8.0 – 9.0	8.5
Cathode current density	A/dm²	0.5 –1.5	1 (Vat)
		0.3-0.5	0.4(barrel)
		0.5-5.0	* (jet)
Anode-to-Cathode Ratio		or higher	4 : 1
Agitation	m/min	3 – 5	4
Plating Rate	mgm/Amp-min	20 – 30	25
Time to deposit 1u at 1 A/dm²	min	3.8 – 4.5	4.2

** the higher operating current density and cathode efficiency are depended on the jet speed and plating equipment design

BATH MAINTENANCE

The Palladium metal content should be maintained at the recommended concentration (3 g/l) by periodic additions of Palladium complex, 850FX Replenisher Brightener R and stabiliser salt, as a guide, 100 gms palladium metal or 200 gms 50% palladium complex should be added together with one unit **PALLMEX** 850FX Replenisher Br. (300 mls/unit) for every 4700 Amp-min.

The **PALLMEX 850FX** conducting salt should only be used to increase electrolyte specific gravity in high drag-out situations, which should be 12 °Be at 30℃. An addition of 20 g/l of conducting salt will increase the solution density by 1 °Be .

The **PALLMEX 850FX** wetting agent is used as an anti-pitting agent. The **PALLMEX** Brightener is the basic brightener which affect the brightness and levelling of the deposit and is best replenished on the basis of deposit of deposit appearance.

pH CONTROL

The pH of electrolyte should be checked regularly and can be increased or deceased by the addition of 50% Ammonium Hydroxide or **Pallmex 850FX** acid adjustment solution..

PACKING

Pallmex 850FX Make Up Solution	10 & 20 litre/ drum
Pallmex 850FX Replenisher Br. R	300 mls/unit
Pallmex 850FX Stabiliser salt	1 Kg /unit
Pallmex 850FX Complexer salt	1 Kg /unit
Pallmex 850FX Wetting Agent	1,2 & 5 litre/bottle
Pallmex 850FX Conducting salt	5,10 & 20 kgs./pack
Pallmex 850FX Brightener	1,2 & 5 litre/bottle
Pallmex 850FX Nickel Concentrate (50g/l)	1,2 & 5 litre/bottle