AUROMEX®

TECHNICAL INSTRUCTIONS

DATA SHEETS

CYANIDE SILVER PROCESS AG-2000

PHYSICAL PROPERTIES :

AG – 2011 : Clear Liquid.
AG – 2012 : Clear Liquid.
AG – 2013 : Clear Liquid.

DESCRIPTION :

AG – 2000 is an alcaline cyanide process involving silver and antimony.
AG – 2000 is suitable for rack and barrel operation and is aimed at all application that do not involve electrical H.F. conductivity.

MAKE – UP PER 1 LITRE :

Potassium Cyandie	125	g / l
Silver Cyanide	45	g / l
Potassium Carbonate	5	g / l
Rochelle Salt	10	g / l
MAKE – UP BRIGHTENER AG – 2011	15	cc / l
WETTING AGENT AG – 2013	3.5	cc / l

Either pure quality of potassium cyanide should be used, or carbon treated grade.

ANALYSIS :

Silver Metal	35	g / l

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ANALYSIS :

Current Density , cath	0.1 – 8 A/dm²
Rack	1 – 2 A/dm²
Barrel	0.3 – 0.7 A/dm²
Temperature	15 – 25℃ (20℃)
Deposition	5 microns in 7.5 min. at 1 A/dm² ; 100% cathode efficiency at all normal current densities. 1 A/dm² = 0.067 g Ag

CONSUMPTION :

Add the following per 100 g silver metal plated (25 Ah) :

AG – 2012 Replenisher	- 15 mls
AG – 2013 Wetting Agent	- 5 mls

EQUIPMENT :

Tanks	Either translucent white polyethylene or polyethylene, or PVC.
Filtration	Constant whenever possible. Woven nylon or polypropylene filters or filter paper stacks (capacity = 1 – 2 times tank volume per hour). We recommend the use of a cellulose flock filter. Do not use Kieselguhr.
Heating	Under normal circumstances, this is not necessary. However, immersion heaters sheathed in aluminous porclain and equipped with simmerstat or thermostat controls can be used.
Power Supply	Barrel 8 Volts ; Rack 4 Volts, preferably variable control plus an Ampere hour meter.
Agitation	Regular agitation of the cathodes (5m/min.), filter pump.
Anodes	Extruded, fine grain 99.9% silver, preferably with woven polypropylene anode bags.

SPECIAL INFORMATION :

Deposit :
This process produces a bright to semi – bright deposit which is conditional on the condition of substrate and the concentration of the brightener.

Composition :	99.2 – 99.6% silver
Density :	10.5 g/cc , 1.1 mg / cm^2 = 1 micron
Hardness :	120 – 160 VPN
Conductivity :	0.1 megaohm / cm
Internal stress :	3.000 psi (2.1 kg / mm^2) tensile
Wear resistance :	Excellent
Solderability :	Excellent

If maximum brilliance of the deposit is essential, sodium ions can replace 20% or more of the potassium ions. Use sulphur – free quality only.
For economical processing, it is possible to lower the silver content to appr. 18 g/l, especially in barrel plating to save drag – out losses. However, it is vital to maintain free potassium cyanide concentrations higher than 100 g/l.

New solutions or conversions must be treated with activated carbon if satisfactory, uniform results are to be achieved. When filtering is constant, carbon treatment is not usually necessary, because **Wetting Agent AG – 2013** will be removed.
Carbon does not remove **Replenisher AG – 2012**, however.

If the brightness is largely insufficient, this can be corrected by adding :

5 ml / l **Make – Up Brigthener AG - 2011**
0.5 ml / l **Wetting Agent AG - 2013**

Always use a silver strike before starting to plate silver.

For example a bath of :
1.5 – 3.5 g/l Silver Cyanide
100 – 120 g/l Free Potassium Cyanid

running with : 0.5 A/dm^2 , at a temperature of 20℃ , for 30 – 60 seconds.

SAFELY PRECAUTIONS : See Material Safely Data Sheet

GUARANTEE :

Above instructions and recommendations are the result of intensive testing and shop experiences. They are for your information only.
Our guarantee extends to the continuous quality of our products as they leave our factory and not to their useage in the field, which is a factory beyond the control of a supplier.

AG – 2000 TROUBLESHOOTING

PROBLEMS AND THEIR CAUSE

Most of the problems can be duplicated and corrected in the Hull – Cell at :
0.5 A, 5 minutes , 20℃

PROBLEM	CAUSE	CORRECTION
Deposit dullness in LCD	Temperature too high	Increase cooling
	Replenishment too high	Reduce Replenishment
	Free KCN too low	Add KCN
	Current density too low	Increase current density
	AG – 2011 too low	Add ml/l **AG – 2011**
Burned Deposit	Metal content too low	Increase metal content
	Temperature too low	Adjust temperature
	Replenishment too low	Add 5 – 10 ml/l **AG – 2012**
	Current density too high	Lower current density
	Low agitation	Increase agitation
	Carbonate content too high	Reduce current or dilute Bath
Pitting	**AG – 2013** too low	Add 2 ml/l **AG – 2013**
	Organic impurities	Purify by carbon filtration and add 2.5 ml/l **AG – 2013**
Roughness		Poor filtration Improve filtration
Deposit dullness all over	Temperature too high	Increase cooling
	Replenishment too low	Add 5 – 10 ml/l **AG – 2012**
	Free KCN too low	Increase KCN