LEGOR JEWELRY PLATING

TECHNICAL SHEET

AG-ECO1

ECO SILVER – CYANIDE FREE SILVER PLATING SOLUTION 1L (READY-TO-USE)

GENERAL INFORMATION

ECO-Silver is a silver plating electrolyte for bath plating which provides for a new and completely cyanide-free approach to silver electroplating . When comparing to traditional silver plating methods which can contain up to 200 grams of potassium cyanide per liter, this plating solution provides a perfect resolution to common cyanide restrictions immerging from place to place throughout in the international community. Moreover the complete absence of cyanide provides for healthier working conditions for plating operators as well as reduces environmental concerns in the form of waste water and waste water treatment. ECO-Silver is a two part process commercially available in a kit. Part A being the silver solution and Part B being the post treatment. The solution works at low current densities and can obtain a plating thickness up to 20 micron. The final deposit is bright, 99.9% pure silver, and does not have to be polished after deposition. This silver plating solution can be used in both decorative and technical plating applications.

Product form	
Product's pH	Neutral
Metal concentration	25 g/l (Ag)
Solution form	Ready-to-use
Plating solution color	Transparent
Storage time	2 years
Volume	1 liter
Deposit data	
Solution appearance	Glossy
Purity (%)	100.0
Hardness [HV 0.01]	80
Density [g/cm³]	10.5
Plating solution color	Silver
Thickness range [µm]	1,0 - 20.0

Operating data	**RANGE**	**OPTIMAL**
Solution density (°Bé)		12.0
pH	10-11	10.5
Voltage [V]	0.1-1.0	0.5
Current density [A/dm²]	0.1-2	1.0
Working temperature [°C]	20-30	25
Exposure time (sec)	1 - 30 mins	0.0
Cathode efficiency [mg/Amin]	69	
Anode-cathode ratio	2:1	3:1
Anode type	99.98 Silver	
Agitation	Moderate	

Metal concentration	**METAL**	**RANGE (g/l)**	**OPTIMAL (g/l)**
	Silver	20 - 40	25.0

Color coordinates	
L*	97.7
a*	-1.2
b*	2.7
c*	2.9

Print Date 03/12/2019

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PREPARATION

AG-ECO1 is a ready-to-use plating solution at the concentration of 25 g/l. No preparation is required.

EQUIPMENT

Working vessel: Pyrex glass / PVC / polypropylene.
Power supply: DC current rectifier with low residual AC (<5%).
Heating element.
Anode Type Platinized Titanium [1.5-2.5 µm].
For larger bath volumes:
Magnetic driven filter pumps with 5-15 µm cartridge (before use, boil and wash the cartridges with demineralized water for 3 hours to prevent organic contamination).
Amp/min counter.

PRE TREATMENT

·To maximize the **AG-ECO1** silver plating process we strongly recommend that the pieces, especially nickel plated, should be pre treated with a pre-silver process or pre-palladiated.
·In case of pre-silver plated pieces which show tarnish on the surface, we recommend to dip them in the cleaning antioxidant liquid STEP1 prior to apllication of the silver.

POST TREATMENT

It is extremely important after the silver plating to follow these steps:
Pieces come out from the silver solution greyish after plating so you must always follow the silver plating process with the mandatory post treatment process by dipping the pieces just silver plated inside the AG-ECO1B solution at 60°C for 30 seconds. THIS SOLUTION WORKS IN ABSENCE OF CURRENT.
In order to maximize the performance of the posttreatment solution AG-ECO1B, it is advisable to dilute it 20 times: prepare 1 liter ready-to-use post treatment solution by diluting with 950 ml of D.I. water 50 ml of AG-ECO1B solution.
FOR THE POST TREATMENT PROCESS WE RECOMMEND the following procedure:
·After the silver plating, wash with current water
·Wash 1-2 times in deionized water at room temperature
·Submerge in AG-ECO1B post plating solution at 60°C leaving the silver plated pieces inisde for 30 seconds
·Remove the pieces form the post treatment solution
·Then appearing bright and shiny Double wash again in deionized water
·Passivate worked items with **T-PRO**. **If this step will not be done, the silver plated surfaces will suffer tarnish in a short time**

WATER PURITY

To prevent contamination of the bath both during its preparation and any subsequent replenishing operations, use demineralized water with a conductivity of less than 3 µS/cm (containing no traces of organic compounds, Chlorine, Silicon, or Boron).

BATH MAINTENANCE

AG-ECO1 ready-to-use solution is set for 1 liter of bath. As consequence, the bath has to be used until its complete consumption. Furthermore, light exposition may promote silver precipitation in form of dust, that reflects a more darker aspect of the solution itself. This problem is easily resolved by filtering the silver oxide dust from the solution by using a simple funnel and a filter paper system. In any case to limit this problem store the solution in an environment well repaired from light.

SUITABLE SUBSTRATES

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AG-ECO1 can be deposited directly onto Silver, Palladium, Gold, Nickel and its alloys. An intermediate deposit or precious metal plating strike (Ag or Au) is necessary before depositing onto Tin, Lead, Zinc, Cadmium, Aluminum and Iron.

SUPPLEMENTARY INFORMATION

The product is sold in a kit form made of two 1 liter bottles each of them containing ready to use solutions: AG-ECO1A and AG-ECO1B.

·AG-ECO1A is the really cyanide free silver plating solution;

·AG-ECO1B is the post silver solution, essential to maximize the final result of the cyanide free silver plating solution.

IMPORTANT: Avoid the direct exposure of the AG-ECO1A solution to the external light when it is not working in order to prevent silver precipitation as oxide from the solution.

As the process works at lower current density values, we recommend the use of a rectifier which permits to set low values of both voltage and amperage with good sensibility. The items to be plated have to be prepared according with the normal practice. Generally we suggest to start with a ultrasonic degreasing process followed by rinse and subsequent electrolytic degreasing step (i.e. SGR1) at 5-6 V for 1-2 minutes. Neutralize them by dipping the items in acidic solution 5% sulphuric acid or with something similar (i.e. NEUT1) and then rinse again with pure water.

SAFETY INFORMATION

AG-ECO1 process is a chemical solution totally cyanide free and for this reason is not particularly dangerous for the operator neither for the external environment. In any case we can not exclude completely possible irritating effects on the skin, eyes and mucous membranes. Caution must be observed while using the product avoiding direct contact with eyes and skin. For further information please refer to the relative Material Safety Data Sheets.

DISCLAIMER

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