Galvano Mondo
surface treatment & finishing systems

TÜV AUSTRIA HELLAS
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TECHNICAL DATASHEET

PERLA 1800

Bright Nickel Process for Rack & Barrel Plating

Contents

Process Information

Satin-nickel process Perla 1800 is used for rack plating applications on automotive and other decorative parts such as faucets, handles, push- buttons, handheld PC housing etc. . An aluminium like deposit can be obtained too when adding small doses of additives. The process operates over a very long period without deterioration of effect. It achieves a good adhesion of the metal layers that are plated on top. Regeneration in form of warm filtration or carbon polishing can be done batch wise daily or via a bypass continuously.

Make-Up

	optimum	range
NiSO4*6H2O	500 g/l	450 to 520 g/l
NiCl2*6H2O	50 g/l	45 to 60 g/l
H3BO3	45 g/l	40 to 45 g/l
(i) Base Brightener A	10 ml/l	8 to 12 ml/l
(ii) Base Brightener B	10 ml/l	8 to 15 ml/l
(iii) Satinizer Ni silk 11	1,5 ml/l	1 to 2 ml/l
(iv) Or Satinizer Ni silk 12	1,5 ml/l	1 to 2 ml/l
(v) Or Satinizer Ni silk 15	1,5 ml/l	1 to 2 ml/l
1) Corrector Ni silk C	0 ml/l	0 to 4 ml/l

Make up procedure:

There are 3 different Satinizers available. Lab tests must be done to determine which satinizer is the most suitable for customer specific application.

Make up procedure:

- Into a separate and clean tank, hot water is filled up to approximately 60 % tank volume.
- While stirring, add slowly and carefully the required quantity of Nickel chloride into the water. **(Attention !: Nickel chloride must be fully dissolved!)**.
- While continue stirring, add slowly and carefully the required quantity of boric acid into the water. **(Attention !: Boric Acid must be fully dissolved!)**.
- While further stirring, add slowly and in small quantities the required quantity of Nickel sulphate into the water. **(Attention !: Nickel sulphate must be fully dissolved!)**.
- Add 3 g/l activated carbon powder into the solution and stir for at least 30 minutes, then stop all agitation and allow carbon to settle down.
- Filter the solution through a 5 micrometer mesh filter media into the working tank. Make sure no active carbon particles are in the working solution.
- Top working tank with water up to operation level and switch on air agitation.
- And adjust the pH to 4.4 (range is 4.2 to 4.6) with diluted (1:10)sulphuric acid or a thin NaOH solution (1% NaOH in water) to operation range.
- Add the necessary quantity of Base Brighteners A and B and stir.
- Switch on circulation pump (do not use a filter).
- Adjust operation temperature if necessary to operation range (48 to 52 ^{o}C)
- Dummy plate for approximately 2 ampere hours per litre.
- Dilute satinizer Ni silk 1:10 with water and add into working tank and stir gently.
- Allow 30 minutes for homogenization.
- Solution is ready for start up.

Working Parameters

Agitation	Necessary, Preferably with mechanical cathode bar agitation with knock down function. Avoid air agitation.
Electrolyte circulation	Continuous, without Filter, 1 tank volume per hour, tank with overflow compartment, use slow motion piston pump.
Filtration	Discontinuous, only for regeneration once a day after work with 5 to 10 micrometer mesh active carbon filter media.
Cathodic current density	Up to 6 A/dm^2
Temperature	48^{o}C to 52^{o}C
Anodes	Bagged Nickel anode pieces in titanium baskets. In case using auxiliary anodes for plating complicated shaped parts, use either platinized Titanium or mix-oxide coated titanium.
Plating speed	1 micron per minute at 5 A/dm2
Tank ventilation	necessary

Maintenance

Every day after production, the whole electrolyte has to be filtered to remove the Satinizer Ni-silk (11,12 or 15). Then, on the next morning a full 100% dose of Satinizer Ni-silk has to be added (see make up procedure, 13, 14 and 15). In some cases the lifetime is longer than one day, then do the filtration every second or third day etc. .

Under standard production conditions dosing of the **Base Brighteners A and B** to the electrolyte is done according to Ampere hours. In case Ampere hours are not known, additions of **Base Brighteners A and B** should not exceed 5 ml/l at once. It is recommended to make corrective additions in small doses. Addition of **Satinizer Ni silk 11,12 or 15** can become necessary depending upon the desired satin effect and is done in small dose not exceeding 0,5 m/l at once;(remember: the additive must be diluted first 1:10 or higher with cold water). Additions should be made slowly into the overflow compartment. Regular addition of **Corrector Ni silk C** is optional.

Consumption per 10 KAh:

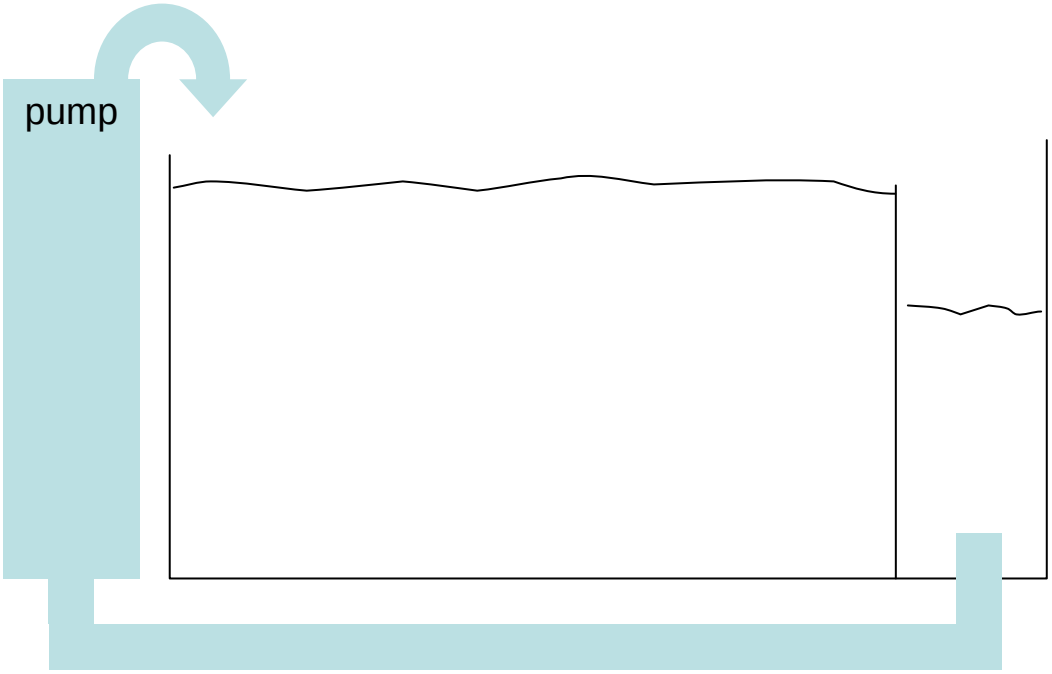
Base Brightener A	**2.5 to 3.5 liter**
Base Brightener B	**0.6 to 1.2 liter**

Hul lcell tests (2A, 5 min, 50^{o}C, no agitation) on site (to avoid electrolyte performance deterioration it is needed to do Hull cell test within 20 minutes of taking a sample) are carried out to control performance. Make sure no particles float on electrolyte surface.

Trouble-shooting:

- Blackish spots in the deposit indicate that the emulsion droplets are too large caused by overheating, overdosing of satinizer Ni silk or too long service time without regeneration. Filter the solution and add 80 % to 100 % new make up quantity of Satinizer Ni silk.
- Scars in the deposit or even unplated areas indicate that the satinizer additive was added undiluted or that the time for homogenization was too short. It also indicates that the electrolyte surface is not clean due to floating dirt and large chunks of satin additive and the overflow compartment not working properly.
- Too shiny deposits are a result of lack of satinizer Ni silk or too thin deposits. As corrective measure add a small quantity of diluted satinizer Ni silk to the electrolyte.
- Fading satin effect during a week time indicate that nickel content may be too low.

Minimum tank requirement = overflow compartment and filterless circulation piston pump



Effluent treatment:
All concentrates and rinsing waters have to be treated according to local regulations.

Health and Safety

Material Safety Data Sheets are available for all GALVANO MONDO products, they are normally issued with relevant quotations and Technical Data Sheets. They explain hazards associated with the product following classification by European Statutory Requirements. Normally more than one product will be used in a process. Risk evaluation of the process is the users responsibility because the user controls men, materials, methods and machines. The user must consider all of the substances present in the solution, whether they present a risk to people and the environment, whether abatement measures are needed.