



# PT. SINAR CEMARAMAS ABADI

- VERCOPPER (ACID / CYANIDE COPPER)
- VERNICKEL
- VERCHROME
- VERZINC ACID / CYANIDE ZINC
- CLEANER (ELEKTRO / SOAK)
- PHOSPHATING
- CHROMATING
- ELECTROLESS NICKEL

## FOR HIGHTECT ELECTROPLATING :

- ELECTROLESS NICKEL PLATING FOR ALUMINIUM AND ZINC DIE CAST, MAGNESIUM
- GOLD PLATING
- PTFE FORELECTROLESS NICKEL
- HARDCHROM
- SAND CAST ALUMINIUM ALLOYS PLATING
- MAGOXID – COAT FOR PROTECTING MAGNESIUM SUBSTRATES

- KEPLA – COATING FOR ALUMINIUM AND TITANIUM ALLOYS
- ELECTROLESS NICKEL PLATING WITH INTEGRATED SILICON CARBIDE PARTICLES (SIC)

- GLISS – COAT  
A CLEAN SOLID FILM LUBRICATION FOR A MAINTENANCE FREE PERMANENT LUBRICATION OF ALL KIND OF FRICTION PAIRINGS
- SEPA – COAT  
(ANTI ADHESIVE COATING AND ACTIVATOR) FOR THE REMOVAL OF PART FROM MOULDS

## NITEC SB

### SULPHUR FREE SEMI-BRIGHT NICKEL PROCESS

#### 1. DESCRIPTION

The NITEC SB semi- bright nickel process gives ductile deposits with the following characteristics:

- Sulphur free deposits (car, bicycle, motorcycle and all parts, when high corrosion resistance is required)
- ideal for four step nickel deposits for aluminium plating due to CASS
- ductile deposits
- very active deposits
- depends on the quantity of replenishing solution (Nitec SB Brightener) brilliant deposits.

The process can be used in both rack and barrel applications and has an exceptional throwing power.

#### 2. SOLUTION MAKE – UP

##### a) Bath Make Up

	optimum.	range
Nickel Sulphate (NiSO <sub>4</sub> x 6 H <sub>2</sub> O)	300 g/l	250 to 300 g/l
Nickel Chloride (NiCl <sub>2</sub> x 6 H <sub>2</sub> O)	30 g/l	25 to 40 g/l
Boric Acid (H <sub>3</sub> BO <sub>3</sub> )	40 g/l	35 to 45 g/l
NITEC SB Make up	4 ml/l	3 to 5 ml/l
NITEC SB Brightener	1 ml/l	0,8 to 1,5 ml/l
Wetting agent M * (mechanical agitation)	3,5 ml/l	3 to 4 ml/l
Wetting agent L * (air agitation)	1,5 ml/l	1 to 2 ml/l

\*mechanical or air agitation possible

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## b) Make up procedure:

- 1) Fill hot deionised water up to approximately 60% tank volume.
- 2) While stirring, add slowly and carefully the required quantity of Nickel chloride into the water. (Attention!: Nickel chloride must be fully dissolved!).
- 3) While continue stirring, add slowly and carefully the required quantity of boric acid into the water. (Attention!: Boric Acid must be fully dissolved!).
- 4) 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!).
- 5) 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.
- 6) 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.
- 7) Top working tank with water up to operation level and switch on air agitation (if possible).
- 8) Measure and adjust the pH with diluted (1:10) sulphuric acid to operation range (3,8 to 4,4; optimum 4,0). The operating pH of the NITEC SB semi-bright nickel process is of prime importance to obtain maximum results in brightness, levelling and structure of the deposit.
- 9) Add the necessary quantity of additives.
- 10) Adjust operation temperature.
- 11) Dummy plate for approximately 1 ampere hours per litre.
- 12) Solution is ready for start up.

## 3. OPERATING PARAMETERS

	Optimum	Range
Temperature	55 °C	55 to 60 °C
pH	4,0	3,8 to 4,2
Cathode current density:		
• mechanical agitation	2,5 A/dm <sup>2</sup>	0,5 to 5 A/dm <sup>2</sup>
• air agitation	3 A/dm <sup>2</sup>	0,5 to 7 A/dm <sup>2</sup>
Anode current density	under 2,5 A/dm <sup>2</sup>	

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## Nominal consumption (per 10 KAh)

NITEC SB Brightener	1,5 – 2,5 litres
Wetting Agent L	0,2 – 0,5 litre
or Wetting Agent M	0,5 – 0,8 litre

## 4. Equipment

- Tanks** SM steel with hard rubber or synthetic lining. Synthetic tank.
- Heating** Hardglass or porcelain immersion heater. Eventually indirect heating. It is essential to use controlled heating.
- Filtration** For high capacity semi bright nickel baths a continual filtration is necessary. The electrolyte should be rotated at least once per hour. A continual filtration over active carbon is recommended.
- Anodes** If the nickel anodes have the prescribed degree of purity (at least 99.7 %) any kind may be employed. To keep sludge and other impurities away from the electrolyte, the anodes should be packed in Titanium baskets with polypropylene anode bags. New anode bags should be treated in a 5 % sodium carbonate solution. Afterwards they must be rinsed very thoroughly. Furthermore, the bags are to be dipped into HCl (10 % sol.) and again very well rinsed.  
  
New tanks lined with hard rubber must be first cleaned with HCl 10 % before bath make up. Useful is the addition of 1 ml/l Wetting agent M to dissolve eventual lining impurities. Afterwards rinse thoroughly with cold water.

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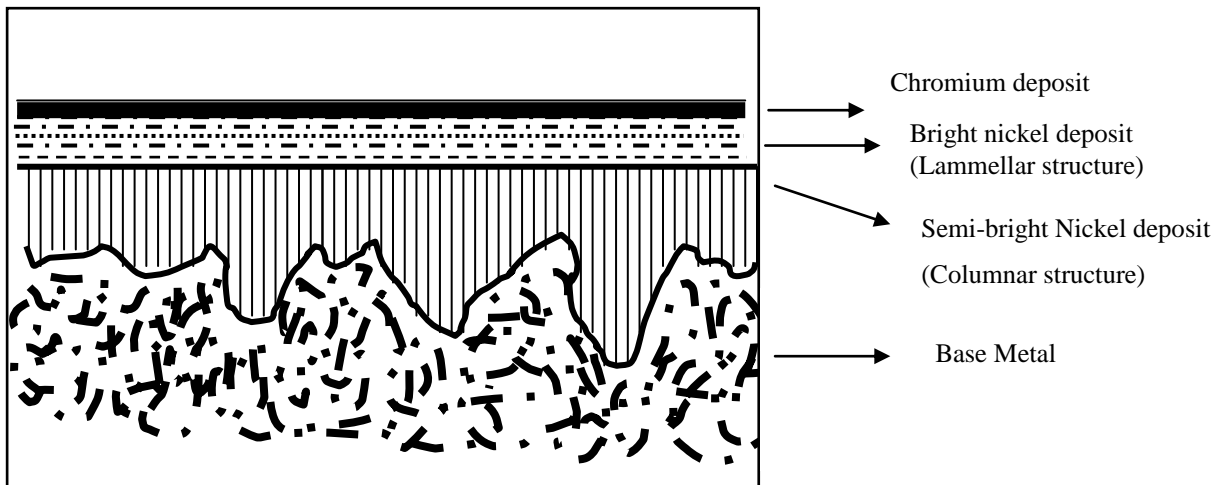
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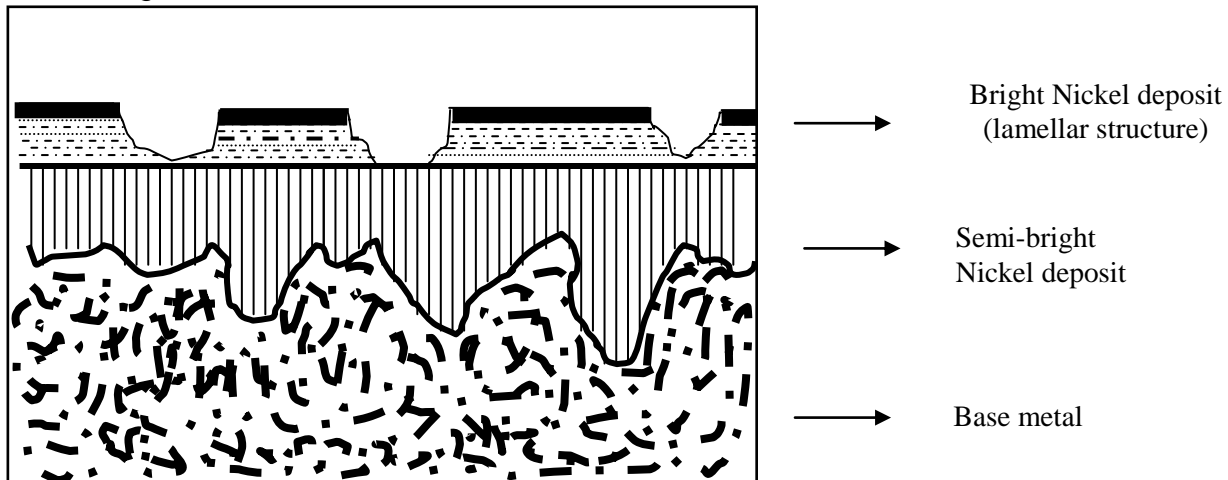
## 5. Metallic contamination

Copper and zinc can be removed by dummy plating. Recommended current density is  $0,3 - 0,5 \text{ A/dm}^2$ .

Drawing No.1



Drawing No. 2



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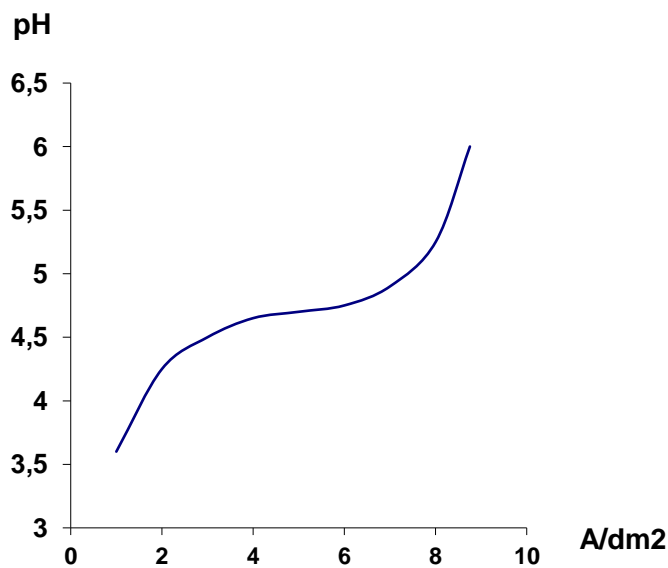
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Corrosion of a semi-bright (Sulphur-free) nickel deposit and bright nickel deposit.

60 % of deposit semi-bright nickel

40 % of deposit bright nickel deposit

## Structure of the deposit



Structure of a semi-bright nickel deposit in dependence of pH value and current density.

Ideal value:   pH               3,8 – 4,4  
                  A/dm<sup>2</sup>       0,5 – 7,0

For semi bright, sulphurfree nickel deposit (specially for multilayered nickel deposit. It is very important to have a columnar structure).

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## 6. Effluent treatment:

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

## 7. Guarantee

The technical information and recommendations in the working instruction are based on practical testing and are reliable, but are given without warranty or guarantee. The use of our products might vary according to local conditions and materials to be processed.

We reserve the right to change or amend the working instruction based on technological advances.

The sale of our products is subject to the sales condition of our company.

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