



PT. SINAR CEMARAMAS ABADI

- VERCOPPER (ACID / CYANIDECOPPER)
- 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

HR 110

ELECTROLESS NICKEL PROCESS

1. DESCRIPTION

Is an autocatalytic electroless nickel process

follow characteristic:

- Free of lead
- Free of cadmium
- Free of ammonium
- Phosphorus concentration 10.5 – 12 %
- Self-regulating process
- High protection from corrosion (passes nitric acid test)
- Initial pH is automatically set up by preparation of the new solution
- One part make up

2. OPERATIONAL DATA

Parameter	Range	Optimum
Nickel	5.5 – 6.5 g/L	6 g/L
Sodium hypophosphite	27 – 33 g/L	30 g/L
pH	4.3 – 4.8	4.3 (at the make up)
Temperature	87 – 92 °C	87 °C (at the make up)
Deposition rate	9 – 11 µm/h	10 µm/h
Agitation	Moderate air agitation near the heaters, not directly below the work parts	
Bath life	36 – 42 g/L Nickel extracted, that means 6 – 7 metal turnovers	
Work load	0.5 – 2.4 dm ² /L (optimal) → 1.5 dm ² /L	

Head Office :

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The plated deposits pass the nitric acid test :

Immerse a plated part into concentrated nitric acid (approx 62%) for 30 seconds at room temperature (approx 22°C). No discoloration should appear.

3. SOLUTION MAKE – UP FOR 1 LITRE

Chemicals Required	Volume
HR 110 part A	400 ml
Deionised water	600 ml

a) Make up procedure

- 1) Fill a clean tank with deionised water to approximately 50 % of final volume.
- 2) Add HR 110 Part A with constant stirring and dilute to final volume with deionised water.
- 3) Check pH and if required adjust to 4.3 using either potassium carbonate solution (200 g/l) or diluted sulphuric acid (10 % v/v)

4. EQUIPMENT

- a) Tanks Plastic tanks made from PVDF or polished, unpigmented polypropylene having long-term temperature stability at least 95 oC.

Stainless steel tanks with anodic protection

The maximum applicable heating power is appr. 3 W/cm² when operated with vigorous agitation (i.e. separate air agitation below the heater). A limitation of heating power is necessary in order to avoid local overheating. If the electrolyte temperature directly around the heaters is too high. Spontaneous nickel reduction (plate out) or an overproportional oxidation loss of reduction agent may occur, which could result in electrolyte imbalancing.

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- b) Heating Indirect or direct heating is possible. For direct heating PTFE, glass or quartz heaters are recommended. Stainless steel heaters can also be used : they must be of highly polished quality and should be fitted with anodic protection.
- c) Filtration Continuous filtration, 8-10 bath turnovers per hour. Pour – size depends on application (between 1-10 pm). We recommend filter pumps with water seals or vertical pumps without sealing.

5. SOLUTION MAINTENANCE

The concentrations of nickel and hypophosphite must be kept in the range of +/- 10% of optimum!

For every gram of deposited nickel add;

13.5 ml *Nickless Mc Part B*

13.5 ml *Nickless Mc Part C*

1 ml <i>Nickless Mc Part B</i>	is equivalent to	0.4 g reducing agent
1 g reducing agent	is equivalent to	2.5 ml <i>Nickless Mc Part B</i>
1 ml <i>Nickless Mc Part C</i>	is equivalent to	0.074 g nickel
1 g nickel	is equivalent to	13.5 ml <i>Nickless Mc Part C</i>

Please note the following:

The pH should not exceed 4.8, as the co-deposition of phosphorus may fall below 11%. This may lead to reduced corrosion resistance.

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6. BARREL APPLICATION

When working with barrel application, the solution may have a lower stability compared to rack applications. To increase bath stability an addition of 0.8 – 1.5 ml/l of HR 110 Part B is recommended, prior to immersion of the plating barrel.

7. GENERAL

- a) pH control must be carried out electrometrically at room temperature.
- b) To adjust the pH, use only potassium carbonate solution (200 g/l) or diluted sulphuric acid (10% v/v) should be used.
- c) *HR 110 Part B* and *C* must not be premixed!
- d) The bath temperature must be reduced during prolonged idle periods. A tank lid is recommended to minimise evaporation losses
- e) Air injection should only be made using a side channel blower, sited under or near to the heaters
- f) Followed by any passivation (stainless steel tanks) or cleaning treatment (dissolving of nickel plate out) it is highly recommended to check for nitrate impurities during last rinsing step in order to avoid contamination. (I.e.: MERCK “Nitrate Test”, #1.10020.0001)

When ordering please use the following product descriptions:

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LIST OF PRODUCTS

Product Name
<i>Nickless Mc Part A</i>
<i>Nickless Mc Part B</i>
<i>Nickless Mc Part C</i>
<i>Nickless Mc Part D</i>

Electroplating chemicals and specialities can be corrosive, harmful and poisonous. Care should be taken with respect to appropriate storage, handling and utilization. When disposing such chemicals, the regulations regarding the treatment of waste water are to be strictly observed.

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