



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 2014

HIGH PERFORMANCE BRIGHT CHLORIDE ZINC PROCESS

Physical Properties : HR 2014 Carrier* : Brown Liquid

HR 2014 Brightener* : Yellowish Liquid

A. DESCRIPTION

HR 2014* is a new bright chloride zinc process. This process is designed to produce bright ductile deposits over wide current density range.

The system can be used for both rack and barrel operations. Other advantages are high cathode efficiency, economy of operation.

The new process offers the maximum benefits to the user and displays special properties otherwise unobtainable in both vat and barrel operations. Besides producing bright level zinc deposits, the HR 2014* process offers the following outstanding features:

1. HR 2014* additives and brighteners have unsurpassed solution solubility and no oil out problems, even at higher temperatures.
2. HR 2014* process produces outstanding brilliant, level, ductile zinc deposits.
3. This process has an improved yellow chromae adhesion due to excellent solubility of additives and brightner in the bath.
4. HR 2014* bath readily plates substrates such as malleable iron, castings, heat treated and carbo-nitrided steels.
5. Due to the wide current density plating range the process can plate easily complex shapes with both high and low current density areas on vats and also in barrels.
6. The process can be operated regularly under warm conditions to facilitate working at higher current densities especially suitable for continuous plating of wire or strip and for barrel plating.

Head Office :

Kompleks Pergudangan Meiko Abadi B 17-19, Ds. Wedi, Kec. Gedangan – Sidoarjo, East Java, Indonesia
Telp. (031) 8014717, 8014718, 8015320; Fax. (031) 8014534, E-mail : sca_sda@yahoo.co.id

Branch Office :

Jl. Agung Niaga VI Blok G 6 No. 46, Sunter Agung Podomoro – Jakarta, Indonesia
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B. BATH MAKE – UP :

AMMONIA-BATH :

CHEMICALS	BARREL	RACK
Zinc chloride	52.25 g/l	62.7 g/l
Ammonium chloride	175 g/l	200 g/l
HR 2014 Carrier	35 ml	40 ml
HR 2014 Brightener	0.4 – 0.6 ml	0.4 – 0.6 ml

POTASSIUM-BATH :

CHEMICALS	BARREL	RACK
Zinc chloride	50 – 70 g/l	80 g/l
Potassium chloride	180 – 240 g/l	200 g/l
Boric Acid	25 g/l	25 g/l
HR 2014 Carrier	35 ml	40 ml
HR 2014 Brightener	0.4 – 0.6 ml	0.4 – 0.6 ml

C. OPERATING CONDITIONS

Cathode current density	1-5 A/sq.dm (Vat & Barrel)
Anode current density	1-3 A/sq.dm
Voltage	1 (Vat); 4 – 9 (Barrel)
pH (electrometric)	5.0 – 5.6
Filtration	Continuous at least 2 turnover per hour.
Agitation	Air agitation recommended. If air agitation is not available solution agitation is recommended.
Anodes	Pure zinc 99.99% special high grade
Temperature	20 – 45 °C

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D. CHEMICAL COMPOSITION

CHEMICALS	RACK	BARREL
Zinc metal	28.0 – 32.0 gm/l	20.0 – 24.0 gm/l
Total chloride	130 – 140 gm/l	120 – 135 gm/l

E. FUNCTION OF SOLUTION COMPONENTS

1. Zinc metal

The recommended range should be maintained in order to get desired optimum results. Weekly analysis of zinc metal concentrations should be made and the necessary daily additions to be done based on this analysis.

Low concentration of zinc causes burning at high current density areas. High concentrations of zinc will reduce the brightness in low current density areas. To overcome this HR 2014 Carrier* and HR 2014 Brightener* is to be added to improve the low current density range.

2. Total chloride

Routine analysis and daily additions are necessary to maintain the total chloride within the recommended range.

3. HR 2014 Carrier*

HR 2014 Carrier* is normally consumed by drag-out, the addition should be made based upon the Hull-cell test. Low concentration of HR 2014 Carrier* can cause dark film on the plated components, dull plating in high current density areas, and may result in clouding of the plating solution. Higher concentration of HR 2014 Carrier* may reduce the overall brightness and thus increase the consumption of HR 2014 brightener* to get the desired results.

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4. HR 2014 Brightener*

This is mainly responsible for getting the overall brightness and this gives the desired results in combination with HR 2014 Carrier*. Addition of brightner is normally controlled by the Hull-cell test. HR 2014 Brightener* is consumed by electrolysis and dragout. Additions can be made based on ampere hours once a consistent routine has been established. The bath can be maintained by adding regularly **150 – 175 ml HR 2014 Brightener* and 100 – 125 ml of HR 2014 Carrier* Consumption Per 1'000 Ah.** The consumption rate given above should be taken as a rough guide for maintaining the brightner balance in the bath. However, the consumption of the HR 2014 Brightener* and HR 2014 Carrier* depends upon the degree of brightness required, type of base metal and its operating conditions such as pH, temperature, and the drag-out losses.

F. OPERATING CONDITIONS

1. pH

the optimum pH of the bath is 5.2 and should be checked and corrected daily. After additions of chloride, the pH should be checked, and if necessary, add more hydrochloric acid (diluted). Low pH, below 4.5 is usually a result of adding an excess of acid, and will result in misplating and matte deposits. High pH causes burning and dull deposits.

2. Temperature

The temperature range for operating this solution is 20 – 45 °C. Higher temperature operation is suitable for continuous plating of wire and strip. To maintain the temperature within optimum range titanium cooling coils are recommended.

3. Current density

The recommended current density range for barrel plating is 0.2 to 1.5 amps per square dm. voltages, 2 to 10 volts. For rack plating, the average current density is 2.0 amps per square dm. with rack plating, sufficient air agitation is necessary to plate at higher current densities without burning.

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4. Agitation

Agitation for rack plating can be supplied with cathode rod, air or solution circulation via filter pump. For rack plating cathode rods movement should be at a rate of 4 to 10 feet per minute. Low pressure will cause excess foaming but insufficient agitation will result in burning at high current density areas.

5. Tanks

Acid resistant plastic lined tanks, such as polypropylene or polyethylene are suitable. Rubber lined tanks are not suitable for bright chloride zinc solution.

6. Filtration

Filtration of this solution is necessary for both barrel and rack installations to remove iron contamination. The filter should have the capacity to turn over the solution 2 to 3 times per hour. The filter should not contain metal parts that will come into contact with the solution. To remove iron hydroxide, a micron filter is recommended.

7. Anodes

The anodes should be 99,99% zinc. When using zinc slabs, and titanium is used for anode hooks. Anode area of a.5 times cathode area or greater, is recommended.

8. Cooling

Cooling coils of titanium or Teflon are recommended. Making the titanium coil slightly anodic is recommended, to avoid under the influence of cathodic current.

G. SAFETY PRECAUTIONS

HR 2014* additives and plating solutions are poisonous. Necessary safety precautions should be adhered at all times.

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H. GUARANTEE

Above Instruction 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 usage in the field, which is a factor beyond the control of a supplier.

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