Prime Chemicals-Pakistan

HENE-1000 CATALYST

A UNIQUE NON FLUORIDE CATAYLST FOR
BRIGHT CHROMIUM PLATING

HENE-1000 CATALYST is specially designed to be used for bright chrome plating process. This additive should be used to prepare the initial working bath along with Chrome Salt and also for regular replenishment.

Salient Features

- Higher Cathode efficiency 15-18% resulting in saving of expensive electrical power by 30-40%.
- Increased Wear Resistance by 20-25% results in longer life of the plated compounds.
- Produces micro-cracked deposits (600-1000 cracks per linear cm) resulting in better corrosion resistance.
- Easy to maintain the constituent of the bath as the chemical products used are well balanced and are in liquid form.
- Bath operates satisfactorily within a wide range of operating parameters without affecting the deposit characteristics.
- Wide cathode C. D. operation 10-20A/dm².

Bath Make-up

	Unit	Optimum	Range
Chromic Acid	gm/lit.	250	225-275
Catalyst HENE-1000 Part I	ml/lit	5	3-5
Catalyst HENE-1000 Part II	ml/lit.	30	20-40

Note: After the above addition the operating solution should be analysed for chromic acid and sulphate. For the chromic acid adjustment, add 12 g/lit Chromic Acid for 1°Be rise. If required, sulphate should be adjusted by adding proportionate quantities of Catalyst HENE-1000 Part I. Addition of 2 ml/lit Part I would increase 1.0 gm/l of sulphate in the operating solution.

OPERATING CONDITIONS		
Density	20° Be	20 - 22° Be
Temperature	40° C	40 - 45° C
Cathode Current Density	12 A/dm²	10 - 20 A/dm²

Anode Current Density	6 A/dm²	5 - 10 A/dm²
Voltage	6	4 – 12 Volts

It is advisable that for getting good chromium deposit, the current density and temperature both are maintained at optimum levels although this process gives consistent quality results with wide operating condition.

SOLUTION PREPARATION

The preparation of plating solution is very simple and is given as under:

1. Fill the cleaned plating tank with D.M. water to almost one-third of the operating level.

2. Add the calculated quantity of Chromic Acid with stirring. The salt should be added in small quantities and continue stirring to ensure complete dissolution of the added salt. Then add corresponding quantity of Catalyst HENE-1000 Part I and HENE-1000 Part II.

3. Add DM water with constant stirring upto the density 21°Be which will maintain the working level and stir for another 2-3 hours.

4. When the solution becomes homogenous, heat the solution to 40° C. Place the anodes and electrolyze the bath for 3-4 hours at a current density of 10-15 amps./ dm². It is very much important to achieve usual ‘chocolate brown’ film on the anodes during initial electrolysis for smooth and trouble-free production.

EQUIPMENT

Chlorinated, flexible PVC lined mild steel tanks are suitable. Lead lined tanks are not suitable and if tanks are lead lined, they should further be lined with flexible grade PVC.

The plating tanks should be equipped with a suitable heating device and thermostat control to maintain the temperature within the specified range. Suitable exhaust system with scrubber facilities should be provided to keep the environment clean. Cooling/heating is required to control the temperature of the

solution. For direct heating and cooling titanium coils are normally used. Teflon or PVDF coils are also suitable for heating and cooling.

ANODES

The Anodes should be 7-10% tin / 93-90% lead alloy. Corrogated flat anodes are normally preferred. When the bath is not in use, anodes must be removed. Lead-Tin-Silver (93:6:1) anodes have longer life than Lead-tin anodes.

Platinized titanium anodes can also be used. But care should be taken that these are completely covered with lead dioxide film (brown black layer).

POWER SUPPLY

A direct current source at 6-12 volts depending on the current density requirements is suitable for use with this plating process. The rectifiers used should be of 3 phase rectification preferably with oil cooling and provided with stepless voltage control between 0 - 100%. The residual ripple must be below 5 %. The current carrying capacity of all electrical connections, busbars and plating jigs must be designed to carry the required amount of current.

SOLUTION MAINTENANCE

The solution be analyzed regularly and maintained as under :

Chromic Acid	:	225 – 275 g/l
Sulphate	:	2.25 – 2.9 g/l

The solution concentration can be maintained on the basis of hydrometer reading and the solution density can be maintained by regular additions of Chromic Acid. Usually a maintenance addition of 175 gm per 1000 Amp.-hr. of Chromic Acid should automatically maintain the electrolyte composition. However, it is always advisable to analyze periodically the sulphate and chromic acid content and maintain the electrolyte accordingly.

To maintain the proper concentration of HENE-1000 Part II CATALYST is advisable to add the same at the rate of 30 ml per one kg. of Basic Salt being added to maintain the Chromic Acid content in the working bath.

To increase the sulphate content, add calculated amount of HENE-1000 Part I.

We do not recommend any addition of Chemicals other than specified in this instruction manual as this may adversely affect the performance of the bath.

Guarantee

Our guarantee extends to the continuous quality of our products as they leave our factory and not to their usage in the field. Our technical service will be pleased to answer any question you may have concerning operation and use of our products:

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