



HCR 421

INTRODUCTION

RRR's mixed catalyst system plating process is specially formulated for hard chromium plating baths. The mixed catalyst system enables you to operate at higher current densities and the deposition rate is high. Besides having good tolerance to impurities, there is lesser deposition on edges. This chrome plating process also provides good activation for plating on stainless steels.

BATH PREPARATION

Take deionized water up to 75% of the final bath volume and dissolve the chromic acid under mechanical stirring, taking proper precautions. After all the chromic acid has dissolved, top up the volume with deionized water. Heat the solution to the working temperature and add the required amount of sulphuric acid. Measure the sulphate content (see below). Introduce the anodes into the tank. Run a dummy plate for about 6 to 8 hours in order to allow the bath ingredients to reach an equilibrium, keeping the voltage at 6V.

BATH OPERATING CONDITIONS

The following bath parameters which have to be maintained are given in the following table:

Parameter	Ideal	Range
Chromic acid, g/L	250	150 – 370 g/L
Ratio chromic acid to sulphate	200:1	125 to 250:1
Bath temperature, deg. C.	55°C.	50 to 66° C
Cathode current density, A/sq.dm.		16.0 to 90.0 A/sq.dm.

Deposition speed

The deposition speed varies directly according to the current density and inversely according to the temperature. At a fixed current density, lower operating temperature increases the deposition speed and this is accompanied by more

uniform throwing power. Higher plating speeds are achievable at higher current densities. In general, the plating speeds are higher than for plating from conventional chrome plating baths. At 50A/sq.dm., for example, the plating rate is 5.6 microns/hour at 54°C. and 5.3 microns/hour at 66° C. Similarly, at 90A/sq.dm., the plating rate is 9.5 microns/hour at 54°C. and 8.9 microns/hour at 66°C.

Please contact our technical staff for values at other current densities.

BATH MAINTENANCE

The electroplating bath can easily be maintained by bath analysis and with the help of the **HCR 421**. It is important to avoid the drag-in of organic and inorganic, metallic and non-metallic impurities, including various metal ions and sulphate. Maintaining the chromic acid content and its ratio to sulphate keeps the bath functional for a long time. Chloride ions are not tolerated by the HCR Hard Chrome Plating Process.

PLATING EQUIPMENT AND ACCESSORIES

PVC-lined tanks are recommended, while lead-lined tanks should be avoided. Rectifiers with 9 to 18 Volts D.C. output with ripple of less than 5% must be employed. Tin-lead alloy anodes with about 7% tin are recommended.

BATH ANALYSIS

Chromic acid content can be analyzed by any standard procedure. If you do not have one, please contact us.

The determination of sulphate ion must be carried out gravimetrically, preferably using the centrifuge method. Please consult our laboratory for more information.

The **HCR 421** is a specially formulated product whose concentration in the bath has to be maintained properly. Apart from maintaining the **HCR 421** concentration based on ampere-hour consumption, we recommend you to send a sample regularly to our technical services laboratory located in your region.

EFFLUENT TREATMENT

Hexavalent chromium is a known carcinogen. Proper care must be taken while disposing ANY solution containing hexavalent chromium. All local laws and regulations must be complied with. Please ensure that all occupational safety steps are followed. MSDS for the HSCA Additive can be sent upon written request.

Warranty: The above information is based on our knowledge and experience and is given in good faith. RRR does not have control over the goods and over their

usage, once they leave our premises. The normal precautions while handling chemicals must be followed (hand gloves, spectacles and so on), even when no hazard label is evident on the packing. The local regulations for treatment and discharge of chemicals must be followed. No liability arises out of handling or use.

RANE RAO RESHAMIA LABORATORIES PVT. LTD.

*Plot 80, Sector 23, CIDCO Industrial Area
Turbhe Naka, Navi Mumbai – 400 705 INDIA*

Tel. +91 22 2768 3175 & 2768 4646

Fax +91 22 2783 4814

rrrlabs@rrrlabs.com; www.rrrlabs.com

An ISO 9001:2008 certified company