TECHNICAL DATA SHEET

S.C.E.F. HARD CHROME PROCESS

SUPER CHROME ETCH FREE

S.C.E.F. Hard Chrome Process is an etch free high cathode efficiency hard chromium process to produce micro cracked chromium layers.

SALIENT FEATURES :

- Higher current efficiency (23-26 %).
- Better hardness (upto1100VPN) than conventional hard Chromium.
- Micro crack deposit greater than 40cracks/mm.
- No etching of steel and steel alloys.
- Ideally suitable for Interior Plating of cylinder liners as there is no cathodic attack on outside the cylinder. Hence there is no iron build up in the solution.
- Very smooth and bright deposits, Improved throwing power.
- Good metal distribution and a low risk of burning in high current density areas.
- Can work over a wide operating conditions and hence easy maintenance.

EQUIPMENTS :

TANKS :

Flexible CPVC lined tanks should be used. For lead lined tanks should be lined with CPVC.

ANODES :

Lead-tin alloy anodes. (93% lead, 7-9% Tin) are used. Anode must be removed when the bath is not in use. Lead silver, Platinised titanium anodes can also be used.

HEATING/COOLING :

Teflon, titanium and PVDF heaters / coils should be used for heating and cooling.

FUME EXTRACTION :

In all cases fume extraction is necessary.

It has to be sized, designed and operated in such a way that no health hazards arise from gases, vapours and sprays. Furthermore, care should be taken that the extracted, polluted air does not cause inconvenience, dangers or environmental hazards at the point of emission.

To avoid spraying of the electrolyte, we recommend our Mist FL Liquid.

RECTIFIER :

In most cases a rectifier voltage of 8-12 volts is sufficient. The residual ripple should be less than 5% over the complete current range.

Large-scale plants with corresponding electrode distance can have a rectifier voltage higher up to 15 volts.

SOLUTION COMPOSITION & MAKE UP:

For make - up of 100 liters we need :

The cleaned tank is filled up to 2/3rdwith clean water with a low sulphate and chloride content, which is heated up to about 50^{o}C.

25 kg. S.C.E.F. Hard Chrome Process, Make-up salt.

2 ltr. Make up Additive S

Add S.C.E.F. Hard Chrome Process make up salt in small quantities with stirring when the salt is dissolved fully add 2 lts of make up solution and make up the final volume by adding DM water.

Heat the solution to 50-55^{o}C and electrolyse using dummy at a CD of 30-40amps/dm^{2} for 2-3 hrs.

OPERATING CONDITIONS :

Current density, cathodic	:	20-60 A/dm^2, preferably 50 A/dm^2
Temperature	:	50-60^{o}C, preferably 55 ^{o}C
Rate of deposition	:	approximate 1 micron/minute at 50 A/dm^2
Voltage	:	up to 15 volts
Hardness of chromium layer	:	up to 1100 VPN
Agitation of parts	:	only in special cases

PRE-TREATMENTS OF PARTS :

The pre-treatment prior to chromium plating is dependent on the parts to be treated and the surface configuration. In general the usual pre-treatment methods for hard chromium plating are also valid in this case. Anodic etching of the parts should be preferably being done in a separate electrolyte. In this case we recommend our Bright Chrome Salt.

MAINTENANCE AND REPLENISHING :

REPLENISHING :

- The electrolyte operates at a make-up concentration of 220-280 gm/l, preferably 250 gm/l. of S.C.E.F. Salt
- Density should be maintained between at 21-27^0 Be.
- To increase the density by about 1 Be, add 15 gm/lts S.C.E.F. Salt
- Make up Additive S contains sulphate and is consumed only by drag out losses.
- The solution should be analysed and maintained by ratio 250-300 gm chromic : 2.5-3.0 gm sulphate.
- For neutralizing 1 gm of sulphate add barium carbonate 2 gm/l.

DISCLAIMER :

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