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CL- BRIGHT NICKEL HL PLUS

PROPERTIES

CL Bright nickel HL Plus is a bright nickel process designed to produce highly brilliant
consistant ductile nickel deposits and superior brightness over a wide current density range.The process exhibits outstanding levelling using either air agitation or cathode movement.
The chromium receptivity of the deposits produced by the CL Bright Nickel HL Plus is exceptional.

EQUIPMENT

Tank:	the working tank should have a special rubber lining
Heating:	various heating systems are possible for example: immersion Bath heaters, heat exchangers, heating coils etc.
Heating material:	porcelain, titanium or Teflon
Anodes:	pure nickel anodes. The use of anode bags is a must to ensure that the anode sludge does not reach the cathode area of the nickel electrolyte. Anode bags have to be treated with 2 – 3% hydrochloric acid before application.
Filtration:	continuous. The capacity of the filter must allow at least four rotation of the electrolyte volume.
Exhaust device:	necessary

MAKE-UP FOR 100 LTR. ELECTROLYTE

6,00 kg nickel chloride x 6H20
4,00 kg boric acid
30,00 kg nickel sulphate x 6H20
0,01 – 0,03 l. CL Brightener HL Plus (Optimum 0,02 l.)
0,7 l. CL Carrier K
0,2 l. CL Carrier M
0,30 l. CL Wetting Agent special A (air) or
0,30 l. CL Wetting Agent special M (mechanical)

MAKE-UP PROCEDURE

The working tank, fittings, filter device must be thoroughly cleaned, if necessary with diluted hydrochloric acid (ratio 1 : 9).

The nickel salts and boric acid are dissolved separately in suitable tanks.
Subsequently add the solved salts to the working tank which is filled up with water half of the required volume.
After this add 2 g/l active carbon and stir for 2 hours.

Leave the solution idle for 4 hours (or if possible overnight).
The active carbon and other particles will precipitate and carefully filtered out.
Top-up the electrolyte with water until the nominal volume is reached.

With the use of a modest number of anodes, work through the electrolyte at the working temperature and with 0,3 A/dm^2.
After this the CL Brightener HL Plus the carriers as well as the wetting agent may be added.

The pH value is now adjusted to 4,0 – 4,8 with the use of pure sulphuric acid or by means of filtration over a nickel carbonate filter.
After this the electrolyte is ready for use.

The density of the ready to use electrolyte is 1,20 – 1,21 g/ml (24 – 25 °Be).

WORKING CONDITIONS

Current density (cathodically)	2 – 6 A/dm^2
Current density (anodically)	1 – 4 A/dm^2
Working temperature	50 – 60 °C
pH value	4,0 – 4,8
Filtration	continuous
Movement	air agitation or mechanical movement

DEPOSITION RATE

Exposition time in min.	2 A/dm^2	4 A/dm^2	6 A/dm^2	8 A/dm^2
5	2 microns	4 microns	6 microns	8 microns
10	4 microns	8 microns	12 microns	16 microns
15	6 microns	12 microns	18 microns	24 microns
20	8 microns	16 microns	24 microns	32 microns
30	12 microns	24 microns	36 microns	48 microns

MAINTENANCE AND REPLENISHING

The following chemicals should be on stock:

CL Brightener HL Plus

and

CL Carrier M
CL Carrier K

or

CL Super 10

Wetting Agent special A (air) or M (mechanical)

Drag out reduces the total concentration of the electrolyte. It is of great importance to check the density and pH value during operation.

The following nominal values should be adhered:

Nickel:	76 g/l	(60 – 80 g/l)
Chloride:	18 g/l	(15 – 25 g/l)
Boric acid:	40 g/l	(40 – 50 g/l)

The consumption of the CL Carrier K is mainly depending on the drag-out and lies between 0,8 – 1,0 l. per 10.000 Ah or for CL Super 10 0,8 – 1,2 l. per 10.000 Ah.

CL Brightener HL Plus is only applied as a replenisher under normal working conditions.
The consumption is depending on the working conditions and the shape of the parts.
The consumption rate lies between 1,4 – 2,0 l. per 10.000 Ah.

CL Wetting Agent special A (air) is a surface active agent. It's consumption mainly depends on the drag-out. Normally are 0,1 . 0,3 l. per 10.000 Ah required.
The consumption of CL Wetting Agent M (mechanical) is around 0,4 – 0,5 l. per 10,000 Ah.

DISPOSAL INSTRUCTIONS

Only metal precipitation have to be disposed of. Existing nickel can be precipitated by the adjustment of the pH value to 9 with caustic soda.

Rinse and waste water can be treated in a waste water plant.
The remaining sludge has to be disposed of according to the local regulations.

WARRANTY

Seller makes no warranty, whether of merchantability, fitness or otherwise, expressed or implied, concerning the product other than it shall be of the specifications stated herein. Any recommendations made by Seller concerning the use of the product are believed to be reliable, but seller makes no warranty of the results obtained. Buyer agrees to inspect the product supplied hereunder immediately after delivery. Failure to give notice in writing as aforesaid within the specified time constitutes an unqualified acceptance of the product and a waiver of all claims with respect thereto.

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