TECHNICAL DATA SHEET

SPECTEK SEMI-BRIGHT NICKEL PROCESS

Spectek Semi Bright Nickel Process is designed for depositing highly levelled ductile, sulphur free high corrosion resistant semi bright nickel process.

SALIENT FEATURES :

- Process is suitable as an undercoat for multilayer nickel process.
- Suitable for plating on brass, zinc diecasting, steel as an undercoat plating.
- Due to high potential difference between semi bright and bright nickel processes gives excellent corrosion protection.
- Gives highly leveled sulphur free ductile deposits.
- Total thickness is applied in the ratio of 65-75% of semi bright and 25-35% of bright nickel.
- Easy to maintain and does not require frequent carbon treatments.

This process employs two addition agents Carrier Brightener and Brightener & Leveling agents

Antipitting agent is to be added when pitting is observed.

SOLUTION COMPOSITOIN :

	RANGE	OPTIMUM
Spectek Semi Bright Nickel Salt	300-400 g/l	350 g/l
Carrier Brightener	5-10 cc/l	7 cc/l
Brightener & Leveling agents	0.6-1.0 cc/l	0.8 cc/l
Antipitting agent	0.2-0.4 cc/l	0.3 cc/l

OPERATING CONDITIONS :

	OPTIMUM	RANGE
Cathode current density	4.0 A/dm^2	2.0-5.0 A/dm^2
Anode current density	2.0 A/dm^2	1.0-2.5 A/dm^2
Temperature	55^{o}C	50-60^{o}C

pH	4.4	3.5-4.5
Agitation	--	low pressure air
Voltage	6	4-8

BATH MAKE UP :

- Fill the tank with 2/3rd of warm water.(60-65°C)
- Add the required quantity of Spectek Semi Bright Nickel Salt.
- After the dissolution adjust the pH to 3.8 and dummy the bath for 2-3 hours.
- Maintain the temperature at 60-65°C.
- Raise the pH to 5-5.4 by nickel carbonate.
- Add 2-3 ml /l hydrogen peroxide and start agitation for 1 hour.
- Add 2 gm/l activated carbon and agitate for 2 hours and leave for settling over night.
- Filter the solution till the solution is clear.
- Adjust the pH to 4.5-4.6
- Add required quantities of brighteners and additives.

PROCESS CONTROL :

The constituents of nickel solution namely nickel sulphate, nickel chloride and boric acid contents should be analyzed at least once per week and adjusted within the specified ranges.

CARRIER BRIGHTENER :

Carrier Brightener is normally lost by dragout and its consumption is approximately 10-15% of Brightener & Leveling agents.

BRIGHTENING AND LEVELLING AGENT :

The function of Brightening And Levelling Agent is to work in conjunction with the carrier Carrier Brightener to produce the desired brightness and levelling.

Recommended addition is approximately 150-250ml/1000Amp. Hour

ANTIPITING AGENT :

Antipiting Agent reduces surface tension in nickel plating solution. Excess consumption indicates contamination in the bath.

pH:

The pH of Spectek Semi Bright Nickel is generally should be maintained between 3.8-4.3. Higher pH results in increased roughness. Dilute sulphuric acid is used to lowering the pH and nickel carbonate is used to raise the pH.

EQUPMENTS :

- A mild steel tank lined with PVC, PP or similar materials is suitable to contain the Semi- Bright Nickel solution.
- PP, PVC lined filters having capacity of 2-3 turn over per hour is recommended.
- Titanium, silica cased immersion heaters are recommended

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