

# TECHNICAL DATA SHEET

## Tri Nickel/ High Sulfur Process (EB-800-01)

Tri Nickel/ High sulfur (EB-800-01) is designed for depositing highly leveled ductile, high sulfur contain, high corrosion resistant nickel process.

### Salient Features:

- Process is suitable as an undercoat for multilayer nickel process.
- Due to high potential difference between semi bright and bright nickel processes gives excellent corrosion protection.
- Total thickness is applied in the ratio of 05-10% of semi bright and bright nickel.
- Easy to maintain and does not require frequent carbon treatments.

This process employs two addition agents EB-800 & EB-801.

Anti-pitting agent is to be added when pitting is observed.

### Solution Composition:

Chemicals	Range	Optimum
Nickel Sulfate	225-250 g/l	250 g/l
Nickel Chloride	40-45 g/l	45 g/l
Boric Acid	40-45 g/l	45 g/l
Tri Nickel Make-up EB-800	6-8 ml/l	7 ml/l
Tri Nickel Brightener EB-801	2-4 ml/l	3 ml/l
Wetting Agent	1.0-1.2 ml/l	1.0 ml/l

### Operating Conditions:

Parameters	Range	Optimum
Cathode current density	1.5-3.0 A/dm <sup>2</sup>	1.5 A/dm <sup>2</sup>
Anode current density	1.0-2.0 A/dm <sup>2</sup>	1.0 A/dm <sup>2</sup>
Temperature	40-45°C	45°C
pH	2.8-3.0	3.0
Agitation	No air required	-
Voltage	2-6	4

## Bath Make UP:

- Fill the tank with 2/3<sup>rd</sup> of warm water.(60-65°C)
- Add the required quantity of Tri Nickel Basic Salts.
- After the dissolution adjust the pH to 3.0 and dummy the bath for 2-3 hours.
- Maintain the temperature at 40-45°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 overnight.
- Filter the solution till the solution is clear.
- Adjust the pH to 2.8-3.0
- Add required quantities of additive EB-800 & EB-801.

## Process Control:

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

## Tri Nickel Make-Up EB-800:

Additive EB-800 is normally lost by drag out and its consumption is approximately. The function of additive EB-800 as increase throwing power, and provide highly ductile deposit.

## Tri Nickel Brightener EB-801:

Additive EB-801 is used as a brightening agent it provides high brightness and leveling. Its consumption is approximately.

## Wetting Agent EB-703:

Wetting Agent EB-703 reduces surface tension in nickel plating solution. Excess consumption indicates contamination in the bath.

## Equipment's:

- 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 turnover per hour is recommended. Titanium, silica cased immersion heaters are recommended.