

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	2-4 ml/l	3 ml/l
Tri Nickel Brightener EB-801	6-8 ml/l	7 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 ²	1.5 A/dm ²
Anode current density	1.0-2.0 A/dm ²	1.0 A/dm ²
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 2/3rd 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 300 ml/1,000 A.H.
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 1000 ml/1,000 A.H.

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