PATEL CHEMICALS **TECHNICAL DATA SHEET**

UNISTAR BRIGHT NICKEL SALT

UNISTAR BRIGHT NICKEL SALT is a highly balanced bright nickel system which produces brilliant, haze free nickel deposits with high degree of leveling and ductility. The process produces brilliant bright deposits over a wide range of operating conditions. The system has good tolerance to metallic impurities such as copper and zinc. The deposits produced are highly ductile and have good gold and chrome receptivity and hence highly recommended for use in plating of jewelry and novelty parts.

UNISTAR BRIGHT NICKAL SALT process employs two addition agents namely UNISTAR NICKEL ADDITIVE 202 and UNISTAR NICKEL BRIGHTENER 203

BATH COMPOSITION

UNISTAR BRIGHT NICKEL SALT :	300 - 400g/ltr.
UNISTAR NICKEL ADDITIVE 202 :	8 - 10 ml/ltr.
UNISTAR NICKEL BRIGHTNER 203 :	0.4 - 0.6 ml/ltr.

OPERATING CONDITIONS

Temperature :	50° - 60°C
pH :	4.2 - 4.8
Density :	20 – 26°Be
Agitation :	Air or Mechanical
Filtration :	Continuous
Cathode Current Density :	2 - 8 A/dm2
Anode Current Density :	1 - 3 A/dm2

BATH PREPARATION

A fresh Nickel plating bath is prepared as follows:
A fresh lined tank requires leaching. For leaching fill the tank with 5% Sulphuric acid at 50° - 70°C. Agitate the solution for 2-3 hours maintaining the temperature at 70°C. The dilute acid is allowed to stand overnight and then cleaned with water. Fill the tank with 2/3rd of warm DM water and add required quantity of UNISTAR BRIGHT NICKEL SALT and stir to dissolve. Make the level and adjust the pH to 3.5 with dilute sulphuric acid (25% by volume.) Dummy the bath at 3 A/sq.ft. for minimum 6 - 8 hours by suspending a few nickel anode bar and as many dummy cathodes as possible on the Cathode bar. Pump the hot solution to the storage tank and raise the pH to 5 - 5.4 by Nickel carbonate and add 2 ml/l. (100 volume) hydrogen peroxide and stir vigorously maintaining the temperature at 50° - 65°C for 2 hours. Add 2 gms/l. activated carbon and air agitate for about an hour and leave it over night to settle. Filter the solution back in to a clean plating tank and adjust the pH to 4.6. Now the bath is ready for plating after the addition of required amount of brightner and additive.

BATH CONTROL AND REPLENISHMENT

Addition of Nickel sulphate, Nickel Chloride and Boric acid should be done after periodic analytical check up, and the bath is to be maintained as:

Nickel metal :	60 - 70 g/ltr.
Nickel sulphate :	225 - 300 g/ltr.
Chloride as Nickel chloride :	40 - 70 g/ltr.
Boric acid :	35 - 45 g/ltr.

The brightner additions are normally based on ampere hours of plating done. The required amount of addition depends upon the degree of leveling and brightners required, drag out losses, base metal finish, and operating temperature etc.

The recommended additions are:

UNISTAR NICKEL BRIGHTNER 203 :	150 - 200 ml/1000 Amp.hr.
UNISTAR NICKEL ADDITIVE 202 :	200 - 250 ml/1000 Amp.hr.

EQUIPMENT

A steel tank, lined with PVC or rubber can be used. For heating Titanium or Silica case immersion heaters are recommended. The filter should be lined with a material suitable for use with nickel plating solution. It should have a capacity of 2 -3 turn over per hour.

NOTE

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