Semi Bright Nickel Process PC-757

Properties

- for the deposition of sulfur free semi bright nickel layers as basis for successive bright nickel plating
- high potential difference between semi bright and bright nickel deposit
- best corrosion protection in combination with bright nickel PC-767RL
- good throwing power
- high ductility

Application

make-up concentrations:

Nickel sulfate 6 aq	300 g/l
Nickel chloride 6 aq	50 g/l
Boric acid	45 g/l
Brightener 757M	15 ml/l
Brightener 757R	1.0 ml/l
Wetting Agent 787W	3 ml/l

analytical values:

nickel (Ni^{2+})	70 g/l (60-75 g/l)
chloride (Cl^-)	15 g/l (12-15 g/l)
boric acid	45 g/l (40-45 g/l)

make-up:

In a separate tank, dissolve nickel salts and boric acid in very hot (at least 60 °C) deionised water of about 1/3 of the final volume, stirring well. Add 5 g/l active carbon and stirr again for about 2 hours. Then allow to settle, filter into the active tank, and fill up to the final volume with deionised water. Dummy plate in the bath for about 4 hours at 0.4 A/dm^2, then plate a test panel at 3 A/dm^2 for 15 min. If this is ductile, the additives can be added, if not, dummy plating should be continued.

temperature:	55 °C (50-60 °C)
pH-value:	4.0 (3.8-4.0) adjust with sulfuric acid or increase by plating
cathodic current density:	3 A/dm^2 (1-5 A/dm^2)
current efficiency:	98 %
deposition rate:	0.6 µm/min at 3 A/dm^2
ratio anode/cathode:	2:1
anodes:	pure nickel anodes according DIN 1702, anode bag or diaphragm frame of precleaned PP
agitation:	mechanical: 3-6 m/min Barrel: 6-12 Rev./min or oil free air agitation
tank material:	polypropylene (PP) or steel coated with heat resistant plastic
filtration:	continuously with 2-5 x bath volume per hour
consumption:	depends on drag-out, but the following are approximate values

Brightener 757M	0.75 l per 10 kAh
Brightener 757R	1.5 l per 10 kAh
787W	1 l per 10 kAh

Analysis

Sample Preparation
Take the sample at a homogeneously mixed position and let it cool down to room temperature. If dull, allow to settle and decant or filter.

Nickel	
reagents:	0.1 N EDTA, concentrated ammonia solution,
indicator:	Murexid
process:	Pipette 1 ml bath solution into a 250 ml Erlenmeyer flask, add approx. 100 ml deionised water, 12 ml ammonia, and a spatula tip of indicator. Titrate with 0.1 N EDTA from yellow to violet.
calculation:	consumption in ml x 5.87 = g/l nickel

correction:	to increase 1 g/l = addition of: 4.5 g/l nickel sulfate·6 aq or: 4.1 g/l nickel chloride·6 aq
Chloride	
reagents:	0.1 N silver nitrate solution,
indicator:	5 % potassium chromate solution or 5 g $K_2Cr_2O_7$ + 95 g $NaHCO_3$
process:	Pipette 1 ml bath solution into a 250 ml Erlenmeyer flask, add approx. 100 ml deionised water, and some indicator. Titrate with 0.1 N silver nitrate from yellow to brown.
calculation:	consumption in ml x 3.54 = g/l chloride
corection:	to increase 1 g/l = addition of: 3.0 ml/l HCl (30%) or: 3.4 g/l nickel chloride·6 aq
Boric acid	
reagents:	0.1 N NaOH, EDTA sodium salt, mannitol, 15 % NaOH solution
process:	Pipette 10 ml bath solution into a 250 ml Erlenmeyer flask, add approx. 50 ml deionised water, and 2-4 g EDTA salt. Adjust the pH to 7.9 with 15 % NaOH solution and add 2 g mannitol to the clear solution. Titrate with 0.1 N NaOH to a pH of 7.9 again.
calculation:	consumption in ml x 0.618 = g/l boric acid

Guarantee

Our guarantee extends to the continuous quality of our products as they leave our factory and not to their usage in the field. Our technical service will be pleased to answer any question you may have concerning operation and use of our products:

Fax: +92(042)-36521213, **Tel.:** +92(042)-36521245 -46,
e-Mail: info@primechemicals.com.pk