TECHNICAL DATA SHEET

NITEK NI 612

HIGH PHOSPHOROUS ELECTROLESS NICKEL PROCESS

Nitek Ni 612 is a semi bright electroless Nickel process designed for high corrosion resistance application, having high phosphorus content in excess of 9%. The process is ideal for chemical processing, oil tool and aerospace industries. The process produces smooth, semi-bright nickel phosphorus alloy, coating by autocatalytic process.

Nitek Ni 612 can be used in both rack and barrel plating installation and it produces uniform electroless nickel coating at the rate of 7.5 – 12.5 microns for a new bath. Hardness obtained is 66-70 Rockwell C.

SALIENT FEATURES:

1. High phosphorus content in excess of 9%.
2. Requires less pH adjustments.
3. No toxic heavy metals and therefore can be considered for hygienic applications.

BATH MAKE- UP:

Nitek Ni 612 A	60 cc/l
Nitek Ni 612 B	180 cc/l
Deionised or distilled water	760 cc/l
Temperature	85 – 92°C
pH (electrometric)	4.7 – 5.2
Nickel concentration as nickel metal	5.3 – 6.0 g/l
Agitation	Work rod and/or mild air
Work load	1.25 – 2.5 sq.dm/lit.

BATH PREPARATION:

Fill the plating tank with de-ionised or distilled water. Add the calculated amount of Nitek Ni 612 A, Nitek Ni 612 B. heat the solution to the operating temperature and adjust the operating pH.

OPERATION:

Parts to be electroless nickel plated are immersed in Nitek Ni 612 bath to obtain desired thickness.

Temperature of the bath should be maintained between 85 – 90^0C.

pH of the bath should be maintained between 4.8-5.2 with pH paper. Add Ammonia Liquid for increasing pH.

Add sulphuric acid 10% for lowering pH.

Bath should be continuously filtered by 5 microns filtration medium for observing consistent results.

ANALYSIS FOR NICKEL METAL:

PROCEDURE:

Take 5ml of solution in Erlenmeyer flask.

Add 50ml DM water. Add Ammonia till color turns blue.

Add 1-2 gm of murexide indicator.

Titrate with 0.1 M EDTA till end point violet color.

CALCULATION:

$$\frac{\text{Burate Reading} \times 58.69 \times 0.1\text{ M EDTA}}{5} = \text{gms/l nickel metal}$$

REPLENISHMENT :

The nickel metal ion concentration should be maintained between 5.3 – 6.0 g/l. Nitek Ni 612 B is used only in the initial make up. In normal operation the bath is replenished with 7.84 ml of Nitek Ni 612 A and 7.84 ml of Nitek Ni 612 C per 10 microns per dm^2 in cases of rates other than this the replenishments can be done proportionately.

The required additions should be made frequently and should not be in excess of 15.5% of the original metal content.

EQUIPMENT:

316SS, Anodically polarized tanks are recommended. Polyethylene or polypropylene tanks can also be used.

Heating coils should be ceramic or stainless steel. Thermostatic control should maintain the temperature to +/-1^{0}C.

Filtration equipment with PP pump body and 5-10microns cartridge filter in PP able to withstand 95^{0}C.

An abstraction system to remove fumes / vapours is essential for good health.

Stainless steel tanks lined with polypropylene or polypropylene tanks can be used.

WASTE TREATMENT:

Nitek Ni 612 solutions are acidic in nature. Neutralize the solution before discharging into sewage system.

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