



PT. SINAR CEMARAMAS ABADI

- VERCOPPER (ACID / CYANIDECOPPER)
- VERNICKEL
- VERCHROME
- VERZINC ACID / CYANIDE ZINC
- CLEANER (ELEKTRO / SOAK)
- PHOSPHATING
- CHROMATING
- ELECTROLESS NICKEL

FOR HIGHTECT ELECTROPLATING :

- ELECTROLESS NICKEL PLATING FOR ALUMINIUM AND ZINC DIE CAST, MAGNESIUM
- GOLD PLATING
- PTFE FORELECTROLESS NICKEL
- HARDCHROM
- SAND CAST ALUMINIUM ALLOYS PLATING
- MAGOXID – COAT FOR PROTECTING MAGNESIUM SUBSTRATES

- KEPLA – COATING FOR ALUMINIUM AND TITANIUM ALLOYS
- ELECTROLESS NICKEL PLATING WITH INTEGRATED SILICON CARBIDE PARTICLES (SIC)

- GLISS – COAT
A CLEAN SOLID FILM LUBRICATION FOR A MAINTENANCE FREE PERMANENT LUBRICATION OF ALL KIND OF FRICTION PAIRINGS
- SEPA – COAT
(ANTI ADHESIVE COATING AND ACTIVATOR) FOR THE REMOVAL OF PART FROM MOULDS

NICAL

ALUMINIUM ADHESION PICKLE ZINCATE PROCESS

1. DESCRIPTION

NICAL is a highly concentrated liquid product for the make up of an alkaline, cyanide free aluminium adhesion pickle. By a simple electroless immersion process, a metal layer is deposited on aluminium and its alloys, which is an excellent base surface for the subsequent electroless finishing or electroplating.

The characteristics become significantly more important in memory disc applications, since they permit maximum adhesion of a thin, pore-free Nickless electroless nickel coating to a highly finished aluminium surface, with the least amount of etching, thus minimizing the thickness of the post-plate finish.

2. Advantages :

- Liquid concentrate for easy make up and replenishment.
- Can be used on a wide variety of aluminium alloys.
- Long bath life reduces operating costs.

3. EQUIPMENT

Tanks made of stainless steel (Mat.No.; 14401 or 14571) or plastic can be used. If Stainless steel tanks are applied take care, that the aluminium part do not get contact with the interior surface of the tank. Parts which dropped into the tank have to be removed immediately, because it can come to deposition of Copper on the wall of the tank.

4. OPERATING DATA

NICAL is highly alkaline and contains Sodium Hydroxide. Before making up or replenishing the working solution, refer to the safety and handling section on page 3 to be certain you are aware of the protective gear you must wear, the correct method of adding **NICAL** to the bath, and the first-aid procedures to follow in the event of accidental exposures to **NICAL** liquid concentrates or solutions.

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5. PRETREATMENT

The aluminium surface must be cleaned thoroughly before the NICAL treatment can take place.

In this way, an uniform attack on the parts can be guaranteed.

6. MAKE UP QUANTITY FOR 100 LITERS:

50 l NICAL

Operating temperature:

20 - 30° C

Immersion time:

15 - 60 second

The optimal immersion time is dependent upon the alloy and has to be determined by test prior to operation.

MAKE UP

- 1) Fill tank 2/3 full with cool water
- 2) Add the required quantity of NICAL slowly while stirring (avoid splashing)
- 3) Fill tank to operating level with water and mix
- 4) Adjust temperature if required, to operating range of 20 – 30° C

MAINTENANCE

Determine NICAL concentration by titration analysis as described in the Analytical Control Section.

Maintain working solution at proper concentration with the required additions of NICAL concentrate.

While NICAL operates over a wide concentration range, the best practice is to maintain its concentration in the bath to within 20% of initial make up.

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7. Analytical Control

Reagents: EDTA (disodium dihydrate salt) 0.0575 M, 21.4101 g/l
Triethanolamine, 50% by vol.
Eriochrome Black T indicator mix (1 gr of Eriochrome Black T indicator mixed with 100 gr C.P, sodium chloride).
Buffer solution (Dissolve 55 g/l ammonium chloride and 350 ml/l Ammonium hydroxide and dilute to one litre with deionized water)

Procedure:

1. Pipette 5 ml sample of NICAL working solution into 250 ml Erlenmeyer flask
2. Add 40 ml of 50% triethanolamine
3. Add 25 ml of buffer solution
4. Dilute to 100 ml with distilled or deionized water
5. Add small quantity of Eriochrome Black T indicator mix
6. Immediately titrate with standart EDTA until colour changes from red purple to blue

Calculation : used ml EDTA X 1.34 = % by Vol Nical

8. SAFETY AND HANDLING

NICAL is highly alkaline and contains Sodium hydroxide. Store in a tightly closed container.

Add NICAL liquid concentrate to working solution carefully to avoid splashing.

NICAL concentrate and solutions can cause severe damage on contact with eyes and skin, and they may be fatal if swallowed. Wear rubber gloves, chemical safety goggles or face shield and protective clothing while handling NICAL concentrate or solutions. Wash thoroughly after handling. In case of contact, immediately flush skin or eyes with large amounts of water for at least fifteen minutes.

For eye contact, call a physician immediately.

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9. Typical Sequence of Operations for Aluminium and Alu-Alloys

- | | | | | |
|-----|---|-------------|------------------------|----------------|
| 1) | Soak Cleaner | 40 – 60 ° C | | 1 – 10 min. |
| 2) | Double rinse | | | |
| 3) | Alkaline etch | room temp. | | 5 min |
| 4) | Double rinse | | | |
| 5) | Etching | room temp. | HNO ₃ conc. | 1 min |
| 6) | Double rinse | | | |
| 7) | Activate in NICAL | 20 – 30 ° C | | 30 sec – 1 min |
| 8) | Double rinse | | | |
| 9) | Etching | room temp. | HNO ₃ | 1 min |
| 10) | Double rinse | | | |
| 11) | Activate in NICAL | 20 – 30 ° C | | 1 min |
| 12) | double rinse | | | |
| 13) | Electroless nickel-plating or copper-plating, nickel-plating etc. | | | |

Depending on kind of aluminium and quality of material surface other pretreatment steps or times may be necessary.

We shall elaborate the suitable sequence of operation for your application.

These working instruction are based on laboratory value and practical experiences.

We have however no influence on the precise and conscientious use of our products.

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