



## PLATING SHEEN CHEM (INDIA) PVT. LTD.

EXCELLENCE IN METAL FINISHING

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### NISTRIP

**NISTRIP** Nickel Stripper is a Two part system which rapidly strips Nickel, Nickel Iron Alloy, Nickel Cobalt alloys, Electroless Nickel and Cadmium from Steel, Copper, Brass, Lead, Tin, Silver, Aluminium, Magnesium and Zinc Die Casting Metal.

**NISTRIP** is a simple immersion process which uniformly strips Nickel without attacking the basis metal. NISTRIP does not contain Cyanides and Caustic, therefore the bath has an excellent long term stability even at elevated temperatures.

**NISTRIP** is a balanced bath, therefore all the rejected components can be stripped at the same time, Hence economy of use. NISTRIP is non-corrosive. It does not pit or corrode the basis metal – not even die castings

#### WORKING CONDITIONS OF STANDARD NISTRIP BATH (100 LTS)

NISTRIP A	:	6 – 7 KGS
NISTRIP B	:	33 LTS
D.M WATER	:	TO MAKE UP FINAL VOLUME

The standard NISTRIP bath is suitable for either continuous or intermittent operation at elevated temperatures. 1 liter will strip 1.3 sq. meters of plated nickel at a thickness of 2.54 microns. Although the standard NISTRIP bath can be used at 80°C, at room temperature it can strip electrolytic nickel at the rate of 0.00025" (6.35 microns) per hour when freshly prepared. As the bath is used, it will be necessary to raise the temperature to increase the strip rate.

A new NISTRIP bath of standard concentration will strip at the rate of 0.003" (76 microns) per hour at 80° C. As the bath is used, the stripping rate will decline.

## WORKING CONDITIONS OF ALTERNATE NISTRIP BATH(HALF STRENGTH,100 L)

NISTRIP A	:	3 – 3.5 KGS
NISTRIP B	:	15 LTS
D.M WATER	:	TO MAKE UP FINAL VOLUME

The half-strength NISTRIP solution is used when large bulky pieces or an accumulated backlog of parts requiring a large tank are to be stripped. This dilute version of the NISTRIP bath operated at higher temperatures may prove to be more satisfactory and economical. 1 liter will strip 0.66 sq. meters of plated nickel at a thickness of 2.54 micron. The stripping rate of a fresh, half-strength bath at operating temperature is from 0.006 to 0.009 inches (150-230 microns) of nickel per hour, 2-3 times faster than that of the standard bath, because of the higher operating temperatures 95-100°C).

Pieces to be stripped should be cleaned in an alkaline cleaner. Racks or baskets holding the pieces to be stripped are immersed in the NISTRIP bath and agitated periodically. For most efficient stripping, as many parts as possible should be immersed. The stripping tank should be covered at all times. Prolonged operation of tank without a cover will result in some loss of NISTRIP that must be replaced if efficiency is to be maintained. A tank cover can be made of steel, stainless steel, or aluminum.

After the nickel has been stripped, the pieces will be covered with a smut. This can be quickly removed from copper or brass with a cyanide dip. An acid dip will usually remove the smut from steel. With some types of steel, an acid dip followed by both a water rinse and a cyanide dip may be required.

## SPECIFICATIONS OF NISTRIP

	NISTRIP A	NISTRIP B
Form	Powder	Liquid
Colour	Pale Yellow	Colourless to Light Amber
PH	About Neutral	Alkaline
Odour		Slightly ammonical
Packing	25 KGS Bag	30 LTS HDPE Carbuoy



## NISTRIP

### SOLUTION PREPARATION

Determine total capacity of the tank for desired operating level. Fill the tank half full of water. Add the required volume of NISTRIP B and stir briefly. Next add NISTRIP A and stir the solution to dissolve. Add more water if necessary to bring the solution to operating level.

### CORROSION TABLE

Values in mm per hour of immersion in NISTRIP standard solution at 80°C.

Steel	No measurable corrosion
Copper	-“-
Brass	-“-
Silver	-“-
Magnesium	-“-
Aluminium	Less than 0.010 mm
Lead	0.002 mm
Zinc	0.050 mm in fresh NISTRIP bath 0.002 mm in half spent NISTRIP bath

### EQUIPMENTS REQUIRED

Tanks : Stainless Steel tanks with heating coils are required for any permanent installation. Temporary installations may be made with ordinary unlined steel drums. Glass or porcelain containers may be used as well. No rubber or other organic materials or chrome are to be used, as these materials are attacked by the stripper and could contaminate the bath. Racks and Baskets must be of the same material as specified for the tanks.

### **Determination of the Degree of Depletion of a NISTRIP Bath.**

The basic principle involved in this procedure is a comparison of a NISTRIP bath that is saturated with one where the degree of saturation is unknown. The comparison is made between the amounts of nickel sulfide formed in both bath samples when sodium sulfide is added to the samples.

Preparation of a Standard Spent NISTRIP solution

1. Place 175 ml of water in a wide-mouth jar.
2. Add 11.8 grams of NISTRIP-A and 60 ml of NISTRIP -B.
3. Add 10-15 grams of sheet nickel, nickel wire or small pieces of a nickel electrode. Expose as much surface area as possible to the NISTRIP solution.
4. Heat to approximately 80°C for 6-8 hours.

5. Cool, remove the pieces of nickel and keep the solution for future analyses. The amount of solution produced will be enough for analyses.

### Test Procedure

Adjust the volume of the working bath with water to its original level. Stir thoroughly and take a sample for analysis. Cool the sample to room temperature.

1. Pipette a 10 ml sample of the NISTRIP bath to a 50 ml graduated centrifuge tube.
2. Add 30 ml of DM water and 10 ml of 10% sodium sulfide solution. Mark the tube "A".
3. Next, add 10 ml of the standard saturated NISTRIP solution to a 50 ml graduated centrifuge tube and add 30 ml of deionized water and 10 ml of 10% sodium sulfide solution. Mark this tube "B".
4. Place both tubes in a centrifuge and spin together until a distinct separation occurs between the murky solution and the solid precipitate. Note the volume of the precipitate in each tube. The volume of precipitate is proportional to the amount present. The longer they are spun, the smaller the volume of precipitate because of packing, but the ratio of volumes will be constant. Turbidity in the centrifuged samples may be disregarded as long as a distinct surface can be detected. If the precipitate in the tube of the NISTRIP being tested ("A") is one-half the volume of the precipitate in the tube of saturated NISTRIP solution ("B"), then the working NISTRIP bath is one-half saturated or is half used up.

If the NISTRIP solution being tested is relatively new and contains little nickel, the precipitate formed will be pink or violet. As the amount of nickel increases, the colour will become brown to black. A whitish precipitate indicates zinc contamination in the bath. Be sure to spin both tubes together.

### ANALYTIC PROCEDURE FOR NISTRIP B CONTENT

Continuous heating of a NISTRIP stripping bath without a cover or with a poorly fitting cover will result in some evaporation loss of the NISTRIP B. If this loss is not made up by additions of more NISTRIP B, a loss of bath efficiency with premature exhaustion will occur.

The maintenance of the proper concentration of NISTRIP B is simple, when using the acid titration method described below. Neither the presence or absence of nickel, nor the precipitate, which if formed when acid is added, will harm or obscure the end-point of the titration.

### PROCEDURE

Use water to adjust the volume of the NISTRIP stripping solution to its original volume. Take a 100 ml sample and filter to remove sludge.

Pipette 5 ml of the NISTRIP solution into the flask and add 30 ml of water and 2 drops of methyl orange indicator. Titrate to the endpoint with 0.5 N HCl.

## CALCULATIONS

A freshly prepared bath will consume  $z$  ml 0.5 N HCl when titrated as described above. A used bath will consume less, say  $x$  ml.

The expression  $(z \text{ ml} - x \text{ ml}) \times 100$  shows the percentage  $z$  of the original bath consumed, as well as the amount of NISTRIP B (in percentage of original quantity charged), needed to make up for lost NISTRIP B.

## TREATMENT OF SPENT NISTRIP BATHS.

The most frequently used method to reduce the Ni-content in the used NISTRIP-bath is as follows:

1. During agitation the discarded NISTRIP-bath should be acidified with concentrated Hydrochloride Acid down to about pH 0.5.
2. During vigorous agitation, add slowly a 10% Sodium Sulphide solution. In view of the evolution of hydrogen sulphide good ventilation must be provided at this stage.
3. Add Sodium Sulphide solution until the pH value of the bath is about 6. Generally one needs about 2 litres of 10% Sodium Sulphide solution per 1 litre spent NISTRIP bath.
4. If an odour problem occurs, it can be reduced by adding about 0.5 gram of Na-Borhydride per litre of Sodium Sulphide solution.
5. During continued agitation, add a flocking agent suitable for pH 6.
6. Agitate until the precipitation is completed.
7. Filter the solution.

The solid material from the filtration contains the Nickel and has to be disposed in accordance with local regulations. After filtration, the bath/solution will contain max. 0.5 ppm Ni.

## **RECOVERY OF NICKEL**

The nickel can also be recovered from the bath by electrolysis.

Adjust the bath solution to pH 3.5. Use a graphite anode in conjunction with a nickel cathode



# NISTRIP

## NOTES AND PRECAUTIONS

A freshly prepared bath must not be heated for long periods of time without immersing nickel-plated pieces into the NISTRIP solution.

NISTRIP baths should also be kept covered at room temperature in order to prevent contamination by dust and dirt. Contamination by metallic salts, especially by copper and chromium or by other chemicals, should be avoided to prevent loss of efficiency.

Equipment should be clean and the articles to be stripped should be free of dust, dirt, grease and oil.

NISTRIP contains no cyanides, but Avoid breathing fumes of NISTRIP solutions. Control that the Threshold Limit Value is not exceeded. Keep the containers tightly closed in a cool and well - ventilated place. In case of NISTRIP solutions coming in contact with the eyes, wash immediately with water for at least 15 minutes and consult a physician. Remove soaked clothing immediately and wash affected skin with plenty of water.

Use only in well ventilated areas. INSTALL EYE WASHER AND SAFETY SHOWER IN HANDLING PLACE.

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Further Technical Assistance & MSDS can be sought from our office, any time.

DISCLAIMER : The data in this leaflet corresponds to our latest knowledge. However, it is not possible to derive any liability there from. Each processor will be himself liable for observation of all regulations, for suitability in a particular application or in matters of legislation or patent law.

*Manufactured By :*

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