

NUSTRIP EN

ELECTROLESS NICKEL STRIPPER

INTRODUCTION

NuStrip EN is a fast, cyanide-free alkaline immersion stripping process for electroless nickel. It will strip electroless nickel from steel, copper and copper alloys, including leaded brass with minimal substrate attack.

BENEFITS

- Fast stripping speed
- High nickel capacity
- Minimal substrate attack

SOLUTION MAKE-UP

NuStrip EN Part 1	40% v/v
NuStrip EN Part 2	60 g/L
Sodium Hydroxide	15 g/L
NuStrip EN Accelerator	See Maintenance & Control

OPERATING DATA

Temperature	185 – 195°F
Agitation	Work or solution movement is recommended

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EQUIPMENT

Tanks	Stainless steel, mild steel or polypropylene
Heaters	PTFE, stainless steel, mild steel immersion heaters or steam coils
Racks	Stainless steel or mild steel uncoated racks are recommended. Stainless steel is recommended for baskets.
Ventilation	Essential

INSTALLATION

1. Make sure the tank is thoroughly clean.
2. Fill tank ½ full with water and heat to 104 – 122°F.
3. Add NuStrip EN Part 2 and stir until dissolved.
4. Carefully add the NuStrip EN Part 1.
5. Add sodium hydroxide with stirring. Continue stirring until fully dissolved.
6. Make up to final volume with water.
7. Heat to operating temperature.

MAINTENANCE AND CONTROL

The solution should be regularly analyzed and replenished as necessary. (See Analysis Methods)

Analyze and make additions as follows:

Analyze for NuStrip EN Part 1 and replenish accordingly.

Analyze for NuStrip EN accelerator *after* thoroughly mixing in NuStrip EN Part 1 additions.

For intermittent use it is recommended that evaporation losses are made up with Part 1, Part 2, sodium hydroxide and water in the ratio of the original make-up. This will extend bath life.

NOTES

Stripping Practices:

Articles to be stripped should be wired or racked, or small parts can be treated in baskets. The use of copper or brass wire, racks or baskets is **NOT** recommended as the solution contains inhibitors to prevent attack on copper or brass substrates, and these constituents will be depleted if such materials are used to suspend articles to be stripped.

Mechanical agitation of the parts is strongly recommended, particularly where basket stripping is employed.

If necessary to strip wired or racked parts, a recirculating pump will provide adequate solution movement.

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Page 2 of 5
NUSEN-08/23
NA-ISSUE 04

NOTES (cont.)

The progress of stripping can be monitored by removing the work from the solution, de-smutting and visual inspection. After stripping is complete the articles should be de-smudded by immersion in a solution of 50 g/L sodium cyanide OR 20 g/L chromic acid and rinsed very thoroughly before re-plating.

Copper Substrates

Where articles are frequently inspected for stripping progress by removing them from the solution, de-smutting and replacing in the solution, NuStrip EN Accelerator is used up at a much faster rate than usual and it is necessary to replenish the level by additions of NuStrip EN Accelerator.

If a NuStrip EN working solution is held at operating temperature for long periods even without work being stripped, the stripping rate will fall due to volatilization. The solution should be analyzed before use.

STRIPPING RATE

The stripping rate of a new solution is approximately **1.2 mils/hr** for 8 – 10% phosphorus deposits.

The stripping speed is affected by the phosphorus content, deposit age and heat treatment. The stripping rate is also affected by the degree of saturation (density) of the NuStrip EN solution.

ANALYSIS METHODS

NuStrip EN Part 1

Reagents

1. 1.0N Sulfuric Acid
2. Methyl Orange Indicator

Method

1. Pipette 2 ml of working solution into a 250 ml Erlenmeyer flask.
2. Add approximately 100 mls of DI water and mix.
3. Add 3-4 drops methyl orange indicator.
4. Titrate with 1.0N sulfuric acid to pink end point.

Calculation

NuStrip EN Part 1 (%) = mls of 1.0N sulfuric acid X 2.33

Replenishment

For every 1% drop in concentration add:

10 ml/L of NuStrip EN Part 1
3.75 g/L of NuStrip EN Part 2
1.9 g/L Sodium Hydroxide

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Page 3 of 5
NUSEN-08/23
NA-ISSUE 04

ANALYSIS METHODS (cont.)

NuStrip EN Accelerator (Color Match Test)

Reagents

1. Copper sulfate solution: (Add 5 ml of ammonia solution to 75 ml of DI water, then dissolve 1.5 g of hydrated copper sulfate in this and make up to 100 ml in a volumetric flask)
2. 1, 1, 2, - Trichloroethylene
3. Standard Accelerator Solution (SAS): (Add 0.7 ml NuStrip EN Accelerator to a 1000 ml volumetric flask and make to mark with DI water)

Method

1. Add 10 ml of trichloroethylene and 2 ml of prepared copper sulfate solution to 7 test tubes and place stopper on each
2. No further additions are made to test tube 1.
3. To test tube #2 add 1.0 ml of Standard Accelerator Solution (SAS). Increase addition to test tubes #3 through #6 in 0.5 ml increments (see table):

<u>TEST TUBE</u>	<u>MLS SAS</u>
1	0
2	1.0
3	1.5
4	2.0
5	2.5
6	3.0
7	for bath sample:

4. Stopper each test tube and shake well.
5. Get a 150 ml sample of the working solution and let cool to room temperature (after additions from NuStrip EN Part 1 analysis have been made).
6. Filter sample.
7. Pipette a 10 ml sample of the filtered sample into a 100 ml volumetric flask and dilute to volume with DI water.
8. Pipette a 1 ml sample of this dilution into test tube #7. Stopper and shake well.
9. *Compare the color of the bottom layers using a white background.*

Replenishment

<u>Color Comparison Match</u>	<u>ml/L NuStrip EN Accelerator Required</u>
1	23
2	19
3	15
4	10
5	6
6	3

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Page 4 of 5
NUSEN-08/23
NA-ISSUE 04

STORAGE

Store in original containers above 40°F

SAFETY

CAUTION! NuStrip EN concentrates and working solutions contain strong alkaline ingredients. Avoid contact with eyes, skin and clothing. Wear chemical handler's gloves, goggles and protective clothing when handling. Read and understand Material Safety Data Sheet before using this product.

PRODUCT GROUP

The following products are referred to in this data sheet.

PRODUCT NAME	PRODUCT NUMBER
Nustrip EN Part 1	405007
Nustrip EN Part 2	402001
Nustrip EN Accelerator	401002

NOTICE

The information and recommendations of PMD (UK), Ltd. and Automated Chemical Solutions, Inc., and its representatives, regarding this product are, to the best of our knowledge, true and accurate. We make no guarantee of results because the conditions of actual use are beyond our control. We assume no liability for damages or penalties resulting from the use of this product or following our recommendations. Our recommendations and suggestions for use of this product are not intended to grant license to operate under or infringe any patent.

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Page 5 of 5
NUSEN-08/23
NA-ISSUE 04