

NUSTRIP 93

NICKEL STRIPPER

INTRODUCTION

NuStrip 93 is a fast, cyanide-free, alkaline immersion process for stripping electrolytic nickel. It will strip 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 93 Part 1	11.0 – 15.0% v/v
NuStrip 93 Part 2	13.5 – 20.0% v/v
NuStrip Copper Inhibitor	Used per Notes below

OPERATING DATA

Temperature	Ambient – 185°F (Optimum 160°F)
pH	>10
Agitation	Mechanical agitation of parts or good solution movement is necessary for uniform stripping

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EQUIPMENT

Tanks	Stainless Steel, mild steel, polypropylene
Heaters	PTFE, stainless steel or mild steel immersion heaters or steam coils
Pumps	Any material compatible with the solution temperature and pH
Racks	Stainless steel or mild steel uncoated racks are recommended; stainless steel is recommended for baskets.
Ventilation	Essential

INSTALLATION

Make sure the tank is thoroughly clean.

1. Fill tank ½ full with water.
2. Add the NuStrip 93 Part 1 and mix thoroughly.
3. Add the NSstrip 93 Part 2 and mix thoroughly.
4. Make up to final volume with water and mix thoroughly.
5. Heat to required temperature.

MAINTENANCE AND CONTROL

The most economical use of NuStrip 93 is achieved when the solution is used rapidly to exhaustion (up to 25 g/L nickel). One liter of NuStrip 93 used to exhaustion is capable of stripping 1 mil of plated nickel per 1.25 sq ft.

Intermittent use over a period of weeks will result in unacceptably slow stripping rates at low nickel concentrations. For intermittent use, it is recommended that evaporation losses are made up with Part 1, Part 2 and water in the ratio of the original make-up.

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, jigs, 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. For wired or jugged parts a recirculating pump will provide adequate solution movement.

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NOTES (cont'd)

Where passive surfaces are present as in the case of chrome-stripped nickel, it may be necessary to carry out an activation procedure before stripping the nickel. This is most conveniently done by cathodic treatment in a suitable alkaline cleaner followed by immersion in a 20-50% hydrochloric acid solution. A suitable active surface will have a uniform dark brown color after a short immersion in the NuStrip 93 solution.

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 large articles are immersed in NuStrip 93 substantial areas of the substrate will be exposed to the stripping solution for quite long periods of time, due to varying thickness of the nickel over their surfaces. If the substrate is copper or copper alloy, the copper inhibitor will be used up and additions of NuStrip 93 Copper Inhibitor of 10 ml/L should be made in the course of each working day.

Where articles are frequently inspected for stripping progress by removing them from the solution, de-smutting and replacing in the solution, copper inhibitor is used up at a much faster rate than usual and it is necessary to replenish the level by additions of NuStrip 93 Copper Inhibitor.

If a NuStrip 93 working solution is held at operating temperature for long periods even without work being stripped, the stripping rate will fall due to volatilization, and NuStrip 93 Copper Inhibitor should be added at a rate of 1 - 2 ml/L before recommencing nickel stripping.

STRIPPING RATE

The stripping rates to be expected from a fresh solution at various temperatures with moderate agitation are shown below:

Temperature	Stripping rate (1 micron=0.0393 mils)	
	microns/minute	microns/hour
60°F	0.10	6
68 °F	0.15	9
86 °F	0.25	15
104 °F	0.55	33
122 °F	0.85	51
140 °F	1.25	75
158 °F	1.6	96
176 °F	2.5	150
185 °F	3.0	180

Operation above 176°F continually is not advised due to increased evaporation loss.

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STRIPPING RATE (cont'd)

As nickel dissolves in the solution the stripping rate gradually falls. The rates which can be achieved at various nickel concentrations are shown below. (This assumes a standard operating temperature of 176°F with moderate agitation):

Nickel concentration (g/L)	Stripping rate (1 micron=0.0393 mils)	
	microns/minute	microns/hour
2.5	2.5	150
5.0	2.0	120
7.5	1.7	102
10.0	1.3	78
15.0	0.8	48
20.0	0.6	36
25.0	0.4	24

Faster stripping rates are possible with more vigorous agitation.

STORAGE

Store in original containers above 40°F

SAFETY

CAUTION! NuStrip 93 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 GROUPS

The following products are referred to in this data sheet.

PRODUCT NAME	PRODUCT NUMBER
Nustrip 93 Part 1	405005
Nustrip 93 Part 2	405006
Nustrip 93 Copper Inhibitor	401001

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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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