

PMD NUSTRIP 93

NICKEL STRIPPER

INTRODUCTION

PMD Nustrip 93 is a fast, cyanide-free, alkaline immersion stripping process for 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

PMD Nustrip 93 is supplied in two parts and is made up as follows:-

PMD Nustrip 93 Part 1	110 - 150 ml)	
PMD Nustrip 93 Part 2	135 - 200 ml)	See notes
Water	755 - 650 ml)	

OPERATING DATA

	Range	Optimum
Solution Temperature	Ambient - 85 degC	70 degC
Extraction	Full extraction is required to remove harmful fumes.	
Agitation	Mechanical agitation of parts is necessary for uniform stripping but where this is not possible, solution movement may be used.	

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EQUIPMENT

Tanks	Stainless Steel, mild steel or suitable plastics.
Heaters	PTFE, stainless steel or mild steel immersion heaters or steam coils.
Pumps	Any material compatible with the solution temperature and pH.
Jigs	Stainless steel or mild steel uncoated jigs are recommended; stainless steel is recommended for baskets.

INSTALLATION

Make sure the tank is thoroughly clean then approximately half fill with water. Add the Nustrip 93 Part 1 and mix thoroughly, Add the Nustrip 93 Part 2, mix thoroughly then make up to final volume with water. Finally, mix thoroughly and heat to required temperature.

MAINTENANCE AND CONTROL

The most economical use of Nustrip 93 is achieved when the solution is used rapidly to exhaustion (approximately 25 g/l nickel). Intermittent use over a period of weeks will result in unacceptably slow stripping rates at low nickel concentrations. For intermittent use, therefore, it is recommended that evaporation losses are made up with Part 1, Part 2 and water in the ratio of the original make-up.

CAPACITY

When used rapidly to exhaustion, one litre of Nustrip 93 is capable of stripping 1.25 sq.ft. (12 sq.dm.) plated to 0.001" (25 micron).

NOTES ON THE USE OF PMD NUSTRIP 93

Stripping practice:-

Articles to be stripped should be wired or jigged, or small parts can be treated in baskets. The use of copper or brass wire, jigs 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.

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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.

NOTES ON THE USE OF PMD NUSTRIP 93 CONTINUED

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 such as PMD Cleaner 606 or Econoclense SEF, followed by immersion in a 20-50% hydrochloric acid solution. A suitable active surface will have a uniform dark brown colour after a short immersion in the PMD 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-smutted 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 PMD 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 PMD 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 PMD Nustrip 93 Copper Inhibitor.

If a PMD Nustrip 93 working solution is held at operating temperature for long periods even without work being stripped, the stripping rate will fall due to volatilisation, and PMD 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:-

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Temperature	Stripping rate microns/minute	Stripping rate microns/hour
15 deg C	0.10	6.0
20 deg C	0.15	9.0
30 deg C	0.25	15.0
40 deg C	0.55	33.0
50 deg C	0.85	51.0
60 deg C	1.25	75.0
70 deg C	1.60	96.0
80 deg C	2.50	150.0
85 deg C	3.00	180.0

Operation above 80 degC continually is not advised due to increased evaporation loss.

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 80 deg C with moderate agitation).

Nickel concentration (g/l)	Stripping rate microns/minute	Stripping rate 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.

Electroless nickel stripping:-

Electroless nickel deposits will strip more slowly than electrolytic nickel, especially as the phosphorus content of the deposit increases. The more concentrated make-up is prepared for electroless nickel i.e. 150 ml Part 1, 200 ml Part 2 and 650 ml water.

For high phosphorus electroless nickel the use of PMD Nustrip EN is recommended.

DISPOSAL

Dispose of in accordance with local authority requirements.

PRODUCT FAMILIES

The following products or families of products are referred to in this data sheet.

<u>Product Name</u>	<u>Product Number</u>
PMD Nustrip 93 Part 1	405005
PMD Nustrip 93 Part 2	405006
PMD Nustrip 93 Copper Inhibitor	401001
PMD Nustrip EN Part 1	405007
PMD Nustrip EN Part 2	402001
PMD Cleaner 606	206003
Econclense SEF	206008

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