

## Nickel Remover (Nickel Stripper) – Technical Product Information & Application Guide

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### 1. Product Description

The Nickel Remover is a ready-to-use chemical solution for the selective, non-electrolytic removal of nickel coatings from metallic substrates such as steel, copper, brass, and silver.

It is widely used in electroplating, restoration, jewelry manufacturing, and precision engineering to remove defective or unwanted nickel layers in a controlled manner.

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### 2. Key Features and Benefits

- Ready-to-use – no mixing or preparation required
  - Non-electrolytic process – no rectifier or power supply needed
  - Selective action – removes nickel while preserving the base material
  - High stripping performance:
    - up to 50  $\mu\text{m/h}$  at approx. 60–65 °C (with agitation)
  - High capacity:
    - approx. 40 g of nickel per liter of solution
  - Low odor – minimal ventilation required
  - Long bath life under proper operating conditions
  - Reduced health risk compared to mechanical removal (no toxic nickel dust)
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### 3. Operating Principle

The Nickel Remover works via a chemical dissolution process (redox reaction) that converts metallic nickel into soluble nickel ions.

The formulation is designed to selectively attack nickel layers while leaving common base materials such as:

- Copper
- Steel / iron

largely unaffected.

It is effective on:

- Electroplated nickel coatings
- Electroless nickel-phosphorus coatings

Electroplated nickel generally dissolves faster than electroless deposits.

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### 4. Typical Applications

- Electroplating industry (rework and defect correction)
- Restoration of metal components
- Jewelry and watchmaking
- Surface preparation for re-plating (e.g., gold or chromium plating)

Nickel is commonly used as a barrier or intermediate layer, making its controlled removal essential in reprocessing workflows.

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### 5. Operating Conditions

Temperature

- Optimal: 50–65 °C
  - Higher temperatures increase stripping rate but reduce bath life
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Suitable Tank Materials

- Borosilicate glass
- Ceramic / enamel
- Polypropylene

Conditionally suitable:

- Stainless steel (depending on alloy)

Not suitable:

- Aluminum (risk of corrosion)
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**Agitation**

- Mild mechanical agitation recommended
  - Do not use air agitation
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**Typical Stripping Rates**

Temperature	Agitation	Removal Rate
50 °C	none	~10 µm/h
50 °C	with agitation	~17 µm/h
62 °C	with agitation	up to ~50 µm/h

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## 6. Step-by-Step Operating Instructions

### 1. Surface Preparation

- Thoroughly degrease the workpiece
- Remove:
  - oils
  - grease
  - polishing residues
  - oxides

→ Essential for uniform stripping

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### 2. Bath Preparation

- Pour solution into a suitable container
  - Heat to 50–65 °C
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### 3. Stripping Process

- Fully immerse the workpiece
  - Apply gentle agitation or movement
  - Monitor the process visually
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### 4. End of Process

- Remove the part immediately once nickel is fully stripped
  - Rinse thoroughly:
    - water
    - optionally deionized water
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### 5. Post-Cleaning

- Remove residues using:
    - ultrasonic cleaning
    - light mechanical wiping
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### 6. Post-Treatment (optional)

- Surface activation if re-plating is required
  - Dry using air or lint-free cloth
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## **7. Common Issues and Troubleshooting**

### **Uneven Stripping**

#### **Causes:**

- insufficient cleaning
- lack of agitation

#### **Solution:**

- improve degreasing
  - ensure consistent movement
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### **Slow Stripping Rate**

#### **Causes:**

- temperature too low
- bath exhausted

#### **Solution:**

- increase temperature
  - replace or refresh bath
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### **Base Material Attack**

#### **Causes:**

- excessive exposure time
- incompatible materials

#### **Solution:**

- closely monitor process
  - remove immediately after stripping
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### **Dark Residues (Smut)**

#### **Cause:**

- reaction by-products

#### **Solution:**

- ultrasonic cleaning
  - mechanical wiping
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### **Foaming or Abnormal Reaction**

#### **Cause:**

- contamination (oils, cleaning agents)

#### **Solution:**

- improve pre-cleaning
  - replace bath if necessary
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## **8. Practical Recommendations**

- Use baskets for small parts to ensure uniform exposure
  - Process thick coatings in multiple cycles
  - Monitor bath usage and capacity regularly
  - Test on sample parts when working with unknown alloys
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## **9. Health, Safety, and Environmental Information**

### **Classification (GHS)**

- Signal word: Warning
  - H317: May cause an allergic skin reaction
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### **Precautions**

- Wear protective gloves and eye protection
- Avoid skin contact

- Do not inhale vapors or aerosols
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#### **Disposal**

- Dispose of as hazardous waste in accordance with local regulations
  - Contains dissolved nickel (environmentally relevant heavy metal)
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#### **10. Storage and Shelf Life**

- Store in a cool, dry place
  - Keep container tightly closed
  - Shelf life: approx. 1–2 years
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#### **11. Technical Background**

The described process aligns with established industrial practices in electroplating:

- Chemical nickel stripping typically uses oxidizing and/or complexing systems
- Standard method for rework and coating correction

#### **References:**

- Durney – *Electroplating Engineering Handbook*
  - Schlesinger & Paunovic – *Modern Electroplating*
  - ASM Handbook, Volume 5 – *Surface Engineering*
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#### **Summary**

The Nickel Remover provides an efficient, selective, and industry-proven method for removing nickel coatings. When applied correctly, it ensures:

- reliable and reproducible results
- preservation of the base material
- safe and controlled processing conditions