Wood's Ni Strike

Wood's Ni Strike Soln – High-Chloride Activation Process for High-Strength Steels, Stainless Steels, Kovar, Alloy 52, Copper Alloys, and Other Passive Substrates

Product Description Wood's Nickel Strike is an acid nickel chloride activation process formulated with a high chloride concentration to aggressively remove passive oxides and deposit a thin, adherent nickel layer. This strike layer ensures maximum adhesion for subsequent electroplated coatings on difficult-to-plate substrates. The process is widely used in aerospace, microelectronics, hermetic sealing, RF components, and high-reliability plating applications.

Applications & Compatible Substrates

High-Strength Metallurgical Steels
300M / S155
4340
HSLA steels
Maraging steels
Alloy 13-18
Alloy 17-4 (17-4PH)
Stainless Steels (≥10.5% Cr)
Austenitic, martensitic, precipitation-hardening, and high-temperature grades
Iron–Nickel & Iron–Nickel–Cobalt Alloys
Kovar (Fe-Ni-Co)
Alloy 52 (Fe-Ni)
Copper & Copper Alloys
Copper
Brass
Bronze
High-reliability copper components

Typical Bath Composition (Make-Up)

Component	Typical Range
Nickel chloride hexahydrate ($NiCl_2 \cdot 6H_2O$)	200–260 g/L
Hydrochloric acid (conc. ~ 36%	120–360 mL/L
Deionized Water	Balance

(Values may be adjusted to meet internal specifications)

Note: Higher HCl = stronger activation, slower deposition
Lower HCl = faster strike, less aggressive activation

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Operating Parameters

Parameter	Recommended Range
Temperature	20–30 °C (room temperature)
Cathode current density	1–5 A/dm²
Time in strike	20–90 seconds
Anodes	Nickel (bagged), or platinized titanium
pH	
Agitation	Mild solution or work agitation

Important: Parts should enter the bath *live* (current on) to prevent re-passivation.

Pre-Treatment Requirements

Standard Cleaning Sequence

Solvent clean / degrease
Alkaline soak clean
Cathodic electrocleaner
Rinse
Mild acid dip (**Hydrochloric Acid A Sol 5%**)
Quick rinse
Wood's Nickel Strike (live entry)
Rinse
Proceed immediately to next plating step

Recommended Process Flow for Kovar & Alloy 52 Prior to Gold Plating

Degrease
Alkaline soak clean
Electroclean (cathodic)
Rinse
Acid activation dip
Rinse
Wood's Nickel Strike (20–60 s)
Rinse
Optional: Sulfamate nickel build-up layer
Gold plating (soft or hard gold)
This sequence minimizes oxide formation and maximizes adhesion.

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Bath Maintenance

Nickel concentration: Maintain via titration and $NiCl_2 \cdot 6H_2O$ additions
Free HCl: Adjust with concentrated HCl to maintain activation strength
Filtration: Continuous or periodic
Contamination control:
Use anode bags
Avoid drag-in of alkaline cleaners
Remove metallic fines and organics
Solution life: Indefinite with proper maintenance

Quality & Performance Verification

Adhesion testing:
Tape test
Bend test
Shear test (for microelectronic applications)

Metallographic cross-sections (optional)

Visual inspection:
No burning
No pitting
Uniform nickel appearance

Storage & Handling

Store chemicals in corrosion-resistant containers
Avoid contamination with alkaline materials
Use PPE appropriate for strong acids and nickel salts
Follow local environmental and waste-handling regulations