

# Specialty plating

Through our surface treatment technology and results,  
Create new values.



In addition to standard gold and nickel plating, ERG also offers rhodium and palladium-nickel plating.

## Rhodium plating

Rhodium (Rh) plating is a precious-metal finish distinguished by its very high hardness, high reflectivity, and excellent corrosion resistance. Thanks to its brilliant appearance, it is widely used for decorative purposes as well as in industrial applications such as electronic components and contact materials. At the same time, it is also known as a metal that is difficult to plate.

Characteristic Item	Numerical Example
Hardness	Approx. 700–900 Hv (high hardness)
Adhesion	Good on copper or nickel substrates (pretreatment is critical)
Film Thickness	Typically 0.1–2.0 μm (thickness over 3 μm also possible)
Contact Resistance	Low and stable (similar to gold plating)
Wear Resistance	Extremely high (ideal for contact applications)
Corrosion Resistance	Extremely high (resistant to oxidation and sulfidation)
Appearance	Brilliant silver-white with strong gloss

### ■Rhodium Plating — Key Points■

- Excellent corrosion resistance and reflectivity
- High hardness (around 700–800 Hv)
- Can be brittle under stress
- Tight control needed for deposition and pH
- Adhesion depends on proper pretreatment

### ■ERG's strength■

Thick films up to 3 μm with strong adhesion and no cracking (vs. typical  $\leq 0.3 \mu\text{m}$ ).

## Palladium-Nickel plating

Palladium-nickel (Pd-Ni) plating is a high-performance finish widely adopted as an alternative to gold plating for electronic components and contact materials. With an excellent balance of corrosion resistance, conductivity, and hardness—and advantages in cost—it is being put to practical use in areas such as connector terminals, switch contacts, and IC packages.

Characteristic Item	Numerical Example
Composition Ratio	Palladium 80%, Nickel 20%
Hardness	Approx. 500–550 Hv (depends on Ni ratio)
Adhesion	Good on copper or nickel substrates (pretreatment is critical)
Film Thickness	Typically 0.1–1.0 μm
Contact Resistance	Low and stable (similar to gold plating)
Wear Resistance	High (can outperform gold)
Corrosion Resistance	Excellent (resistant to oxidation and sulfidation)

### ■Palladium-Nickel Plating — Highlights■

- Gold-level corrosion resistance
- Cost-efficient alternative to gold
- High hardness can introduce fine cracking
- Precise Ni control needed to stabilize properties

### ■ERG advantage■

Long track record with Pd-Ni and proven stability, including micro-part plating.



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