Alkaline Copper Plating Guide for Beginners
Brush / Tampon and Bath Plating
This guide is easy to understand, practical, and suitable for beginners. It applies equally to brush/tampon plating and bath plating using an alkaline copper electrolyte (e.g. BMG-093M).

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1. What is Alkaline Copper Plating?

Alkaline copper plating is an electrochemical process where a thick, easily polishable copper layer is deposited onto a conductive surface using direct current.
Alkaline copper is used for:

- **corrosion and rust protection (especially on steel)**
- **filling small scratches and surface defects**
- **building a strong base layer**
- **preparation for nickel, silver, gold, or chrome plating**

➡️ **Alkaline copper offers excellent adhesion and is ideal for beginners.**

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2. Alkaline vs. Acid Copper (brief)

Alkaline copper:

- **for steel, iron, nickel, brass**
- **very good adhesion**
- **fast build-up, thick layers possible**

Acid copper:

- **for aluminum (depending on alloy)**
- **decorative purposes**

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3. Suitable Materials

Directly suitable:

- **Steel, iron**
- **Nickel**
- **Brass**
- **Copper**
- **Stainless steel (after activation)**

Not directly suitable:

- **Aluminum (acid copper required)**
- **Non-conductive materials**

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4. Safety

Alkaline copper electrolytes may cause irritation:

- **Wear protective gloves**
- **Wear safety goggles**
- **Avoid skin and eye contact**
- **Work in a well-ventilated area**

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5. Surface Preparation

5.1 Polishing / Light Abrasion

- **Prepare the surface matte or high-gloss, as desired**
- **Copper reproduces the surface structure exactly**

5.2 Cleaning & Degreasing

- **Remove oil, grease, and oxides completely**

- **Degrease thoroughly with an electro cleaner**
- **Handle only with gloves afterward**

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6. Electrical Connections

- **Negative (–): workpiece (cathode)**
- **Positive (+): electrode or anode pad**

Electrodes:

- **Copper or graphite electrode (bath)**
- **Fabric/cotton pad (brush plating)**

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7. Technical Parameters (Beginner Guidelines)

- **Voltage: approx. 3 V and above**
- **Temperature: room temperature up to ~40 °C**
- **Deposition rate: very fast (several µm per minute possible)**

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8. Alkaline Copper Bath Plating

Additional notes:

- **Place workpiece centrally in the bath**
- **Distribute anodes evenly**
- **Never use steel anodes**
- **Gentle agitation improves uniformity**

Procedure:

1. **Slightly warm the electrolyte if needed**
2. **Connect workpiece (negative)**
3. **Connect anode (positive)**
4. **Slowly increase voltage**
5. **Build up copper layer**
6. **Remove and rinse**

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9. Brush / Tampon Copper Plating

Typical uses: repairs, edges, local build-up

Additional notes:

- **Keep pad well soaked and clean**
- **Use smooth, even movement**
- **Do not stay in one spot too long**

Procedure:

1. **Soak pad with copper electrolyte**
2. **Workpiece to negative, electrode to positive**
3. **Plate evenly**
4. **Build thickness as required**

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10. Polishing & Further Plating

- **Copper can be polished very well after plating**
- **Polishing closes micropores → improved corrosion resistance**
- **Ideal base for:**
  - **Nickel**
  - **Silver**
  - **Gold**
  - **Chrome**

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11. Common Beginner Issues

No deposit: interrupted circuit, wrong polarity, poor conductivity

Black deposits (edges): voltage too high, movement too slow

Peeling: wrong copper type or unsuitable substrate
Stains: surface touched with bare fingers