



## **Zinc Plating Guide for Beginners**

### **Brush / Tampon and Bath Plating**

This guide is **beginner-friendly, practical**, and aligned with **commonly accepted international sources**. It applies **equally to brush/tampon plating and bath plating** using a **zinc electrolyte** (e.g. BMG-098.1).

Zinc provides **excellent corrosion protection for iron and steel** and is widely used for **new plating, repairs, and re-plating**.

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### **1. What Is Zinc Plating?**

Zinc plating is an electrochemical process that deposits a **bright zinc layer** onto metal surfaces. Zinc acts as a **sacrificial coating**, protecting steel and iron from rust even if the coating is damaged.

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### **2. Suitable and Unsuitable Materials**

#### **Suitable:**

- Iron
- Steel
- Copper
- Brass

#### **Not suitable:**

- Chrome
  - Aluminum
  - Titanium
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### **3. Safety**

- not classified as hazardous, but **irritating**
  - Wear protective gloves
  - Wear safety goggles
  - Avoid skin and eye contact
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### **4. Surface Preparation (Critical for Corrosion Protection)**

#### **Rust Removal (Iron / Steel)**

- Remove rust completely (mechanical and chemical)
- Grind and sand thoroughly
- Remove scale and dark oxidation layers

#### **Cleaning & Degreasing**

- Degrease thoroughly (electro cleaner, acetone, etc.)
  - Clean clamps and contact points
  - Handle only with gloves afterward
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### **5. Electrical Connections**

- **Positive (+):** handpiece with electrode and pad



- **Negative (-):** workpiece with crocodile clip

Electrodes:

- **Zinc anodes recommended**
- Stainless steel anodes only conditionally suitable

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## 6. Technical Parameters (Beginner Guidelines)

- **Voltage:** start at **4 V**
- **Temperature:** minimum room temperature
- **Electrolyte:** liquid or thickened (gel former optional)

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## 7. Brush / Tampon Zinc Plating

- Best for **small to medium areas**
- Recommended max. **2 dm<sup>2</sup>** surface area

**Procedure:**

1. Soak pad with zinc electrolyte
2. Connect polarity correctly
3. Plate using light, circular movements
4. Build a uniform zinc layer

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## 8. Zinc Bath Plating

**General Notes**

- Orange flocculation in the electrolyte is normal
- Fresh zinc deposits appear **matte gray**
- Shine is achieved by polishing after plating

**Current & Voltage**

- Key parameter: **current density**
- Guideline: approx. **2.5 A / dm<sup>2</sup>**

Adjust current slowly until a uniform gray deposit forms without excessive gas evolution.

**Anodes & Arrangement**

- Use **zinc anodes only**
- Clean and sand anodes before use
- Ensure even anode distribution around the workpiece

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## 9. Post-Treatment & Protection

- Rinse with water
- Dry and polish

To prevent white rust:

- blue chromate / passivation (note material removal)
- sealing or corrosion protection coatings

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## 10. Common Beginner Issues

**Dark deposits:** current too high

**Layer dissolves:** surface too large (brush plating), wrong anodes



**White rust:** missing post-treatment

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**Key takeaway:**

Zinc protects steel by sacrificing itself – proper preparation and post-treatment determine durability.