

Technical Data Sheet (TDS)

Product: Copper 900 — Bright Acid Copper Plating Process

Manufacturer / Supplier

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1) Product overview

Copper 900 is an advanced acid copper sulfate process that produces very high brightness and brilliant, ductile deposits. It gives low-stress copper, high leveling with good throwing power, excellent corrosion resistance, and is suitable for functional and decorative applications on steel, zinc die-cast and plastics.

Product set

- Copper 900 MU — Make-up solution
For uniform deposits over the total current-density area.
- Copper 900 A — Brightener & Leveller (color dye additive)
Improves leveling at all current-density areas.
- Copper 900 B — Brightener
For high-current-density area.

2) Recommended equipment

- Tank material: Steel lined with rubber, PP or PVC coating.
- Anodes: Phosphorized copper (99.9%, 0.02–0.06% P).
Copper plates on titan hooks or chips in titan baskets.
Use dark anode bags to prevent roughness.
- Cooling/Heating: Required to keep the electrolyte in the specified range.
- Filtration: Continuous, 1–5 bath volumes per hour, acid-resistant filter with PP cartridge.

- Agitation: Air agitation required (oil-free, dust-free compressed air); mechanical agitation acceptable.
- Exhaust: Required.

3) Operating data

- Voltage: 1.5–6 V
- Cathodic current density:
0.5–1.0 A/dm² (barrel) · 1.0–6.0 A/dm² (rack)
- Anodic current density: 0.5–2.5 A/dm²
- Temperature: 20–30 °C
- pH: < 1.0

4) Make-up values (per liter)

Component	Typical	Allowable range
Copper sulfate · 5H ₂ O	220 g/L	190–240 g/L
Sulfuric acid (chem. pure)	70 g/L	70–90 g/L
Chloride content	100 mg/L	70–120 mg/L
Copper 900 MU	8 mL/L	6–10 mL/L
Copper 900 A	0.5 mL/L	0.6–0.8 mL/L
Copper 900 B	0.4 mL/L	0.3–0.6 mL/L

5) Analytical control (typical / control ranges)

- Copper: 55 g/L (control 50–60 g/L)
- Sulfuric acid: 70 g/L (control 70–90 g/L)
- Chloride: 100 mg/L (control 90–110 mg/L)

6) Make-up procedure

1. Fill a separate tank with 50% DI water.
2. Add activated carbon (0.2 kg per 100 L copper bath) and stir for 1 h.
3. Filter into the plating tank; add sulfuric acid and chloride to obtain a clear solution.
4. Fill to ~90% of final volume with DI water and cool to operating temperature.
5. Add Copper 900 MU, Copper 900 A, and Copper 900 B with good stirring.

6. Fill to final volume with DI water.

7. Dummy the anodes at $\sim 1 \text{ A/dm}^2$ for 2–3 hours (before adding Copper 900 additives).

If black films form on anodes, increase flow / agitation until a stable dark film evenly covers the anodes.

7) Maintenance

- Copper: Keep within the analytical range. Maintain by anode dissolution; increase anode area and/or add copper sulfate (after carbon treatment) if copper is low.
- Chloride: Keep in range for leveling and brightness. If additives give no effect, check chloride.
As a guide, $+1 \text{ mg/L Cl}^-$ in 1,000 L requires 1.65 g sodium chloride.
- Sulfuric acid: Keep in range and always below 90 g/L.
To increase by 1 g/L in 1,000 L, add 1 kg concentrated sulfuric acid (density 1.84).
- Active carbon treatment: Perform periodically to remove organic contamination (0.2–2 kg activated carbon / 100 L of bath).

8) Additive consumption (per 10,000 Ah)

- Copper 900 MU: 1.0 L (typical) — 0.5–1.5 L (mostly by drag-out)
- Copper 900 A: 1.0 L (typical) — 0.5–1.0 L
- Copper 900 B: 0.6 L (typical) — 0.3–1.0 L