Copper plating bath CU 540

Instructions for use

Edition 01/2020

Product description

The cyanide-based alkaline *Copper plating bath CU 540* is primarily used to copper plate iron, steel, brass turned parts, zinc and tin alloys. It can also be used for pre-copper plating under, for example, a bright copper or bright nickel layer.

Layer properties

Coating:	fine copper
Colour:	dull copper-red
Hardness:	ca. 150–200 HV
Density:	8.9 g/cm³

Table of articles

Copper plating bath CU 540	**Art. No.** 86953500
Make-up salt CU 540 A	**Art. No.** 86953550

Equipment

Anode material:	electrolyte-copper in anode bag
Anode/cathode ratio:	1:1 (anode/cathode surface size)
Heating:	heating element made of quartz glass or PTFE
Tank material:	PPH
Bath filtration:	required
Movement of cathode rod:	required
Exhauster:	required

Bath make-up

Make-up chemicals

Bath chemicals for 1 l *Copper plating bath CU 540*:

- 180 g *Make-up salt CU 540 A*
- 1 l Deionised water (< 10 µS, 30-40 °C)

Procedure

Into a thoroughly cleaned tank 80 % of the quantity of deionised water which is required for the desired bath volume is filled and heated to 40 °C. While stirring constantly, *Make-up salt CU 540 A* is slowly added to the water. The solution must be stirred until the salt has been dissolved and has fully mingled with the water. Afterwards deionised water is added until the desired bath volume has been reached.

Process overview

Prerequisite for a strongly adhesive copper plating is an intensive pre-treatment of the surface. This should be carried out using an ultrasonic cleaning bath made-up with *Ultrasonic cleaning concentrate ULTRA 3000*, *Electrolytic degreasing bath Type A* and finally an acid dip treatment in *Acid dip bath S* or 10% sulphuric acid solution. After the respective process baths, the parts need to be rinsed several times in water. The last rinsing prior to copper plating should be carried out in deionised water.

The last rinsing after galvanic coating with *Copper plating bath CU 540* should be carried out in 60–80 °C hot deionised water for 10–20 s. This intensifies the colour of the deposition.

Process parameters

Bath temperature:	40–60 °C
Exposition time:	2–15 min
Voltage:	0.5– 2 V (suitable voltage for nominal current density depending on surface size to be plated, lower voltage for smaller surfaces, higher voltage for larger surfaces)
Current density:	0.5–4 A/dm²
Deposition weight:	30 mg/Amin

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Bath control and regeneration

The required salts for regeneration can be determined by analysis.

On request we conduct regular analyses in our application technology laboratory and issue individual regeneration advices. For a standard analysis we require 100 ml of the electrolyte. In case of malfunctions or problems we require 1 l as probe.

Hazard information, storage, disposal

Copper Plating Bath CU 540 is classified as highly toxic according to the German Hazardous Substances Ordinance (GefStoffV). The plating bath contains cyanides and must **not** come into contact with acids or acidic solutions.
The occupational safety measures and regulations specified in the material safety data sheet must be observed.
The bath chemicals must be stored sealed and separately from food in suitable and labelled containers.
Spent plating bath solutions and drag-out rinse waters must **not** be discharged into the waste water. They must be disposed of professionally.

The information on our product and the method are based on intensive research and technical experience of this application. We provide these results to the best of our knowledge and reserve the right to make technical changes in the course of product development.
However, this does not relieve the user of their responsibility to check our specifications for their own use before application. If you have any questions or would like a consultation, please contact our application technology service department at any time. We would also be happy to discuss our further electroplating product range.

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