

Application Bulletin

Of interest to: General

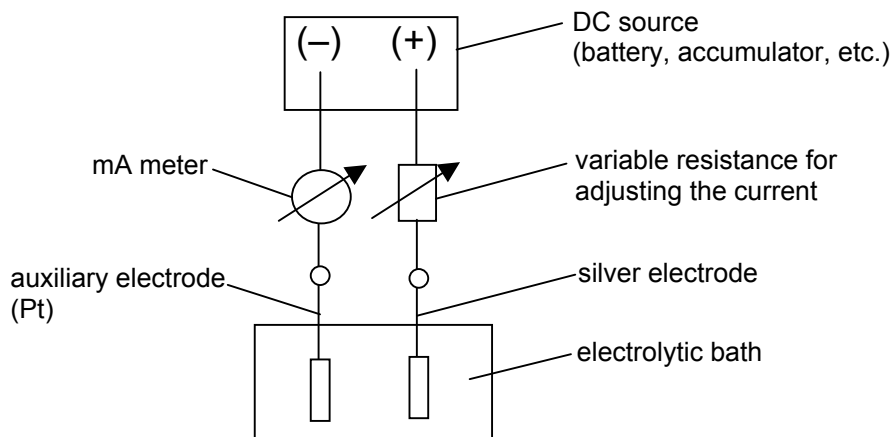
HL 1

Coatings on silver electrodes

Principle

Various coatings can be formed quite simply on silver electrodes by electrolyzing the appropriate solutions.

Circuit:



Reagents

- Chloride coating: Dilute hydrochloric acid (approx. 0.1 mol/L HCl)
- Bromide coating: Dilute hydrobromic acid (approx. 0.1 mol/L HBr)
- Iodide coating: Dilute hydriodic acid (approx. 0.1 mol/L HI)
- Sulfide coating: Sodium sulfide solution (approx. 0.2 mol/L Na₂S); slightly acidified with sulfuric acid
The solution should be clear, so filter if necessary.

Procedure

- Clean the electrode surface:
Rub the surface with a polishing cloth and then degrease (washing-up liquids or acetone are very suitable), afterwards rinse the electrode with distilled water.
- Connect the silver electrode to the positive pole as shown above.
- A plain Pt electrode connected to the negative pole serves as the auxiliary electrode.
- Electrolyze for about 1 h, using a current density of 1 ... 2 mA/cm² of electrode surface, until a complete and uniform coating is obtained.
- Rinse the electrode thoroughly with distilled water.

Remark

The coating becomes better if a low current density is used for the electrolysis and, in return, applied for a longer period of time.