

APPLICATION NOTE

Application of FISCHER products

AN042en

Analysis of the metallic content of plating solutions

In order to apply coatings at a well-defined plating rate and with a well-defined composition, electroplating companies must monitor and control the formulation of their plating baths very closely. For example, the metallic coatings (like AuCuCd, AuCuIn, RhRu or others) especially beloved in the jewellery industry must be applied absolutely homogeneously over the entire surface to ensure an even colour finish.

The quality of metallic coatings depends heavily on the formulation of the plating bath, which consequently needs to be monitored. Compared with other methods, XRF (x-ray fluorescence) analysis of such solutions is straightforward: sample preparation is quick, and the only consumables required are small pieces of plastic foil, as opposed to other analytical methods where gases (Ar) or purified water are used.



Fig.1: Analysis of a typical electroplating bath is especially important to guarantee a homogeneous coating process

All the FISCHER XRF instruments can be easily outfitted for analysing plating solutions by mounting the optional solution analysis cell (see Figure 2). First, the specialised cell is filled with the solution to be analysed,

then it is covered with a thin but robust Mylar foil and sealed with a plastic ring – all part of the solution analysis kit. Different cells are available which vary only in the material of the cell's base from which they are made. Choosing the correct material can considerably improve the measurement performance. Matrix effects (Cl, SO₄, CN,...) in the solution can be corrected via the absorption of fluorescence radiation of the cell's base material (e.g. Mo or Ni).

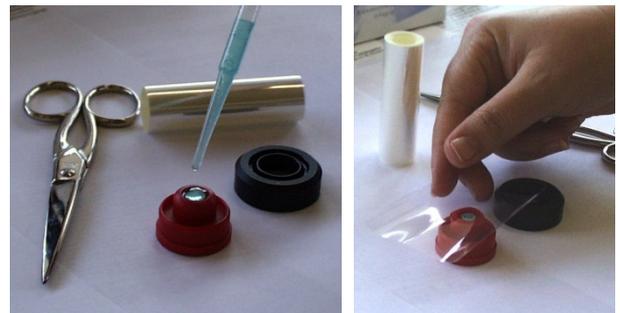


Fig.2: Setup of the solution analysis cell. First it is filled with the solution, then covered by a Mylar foil and sealed with a plastic ring.

Due to the easy handling bath analysis can be carried out directly in the production without specially qualified personnel being required. Measurement results are available within minutes which provides short reaction times regarding changing the bath. In addition the cells are resistant against chemicals and can be re-used. There are no further operational costs involved.

FISCHER's high-precision, fast and user-friendly XRF measurement systems are perfect for analysing the metallic content of plating solutions. Equipped with the solution analysis cell they provide great time savings compared to other analytical methods. Please contact your local FISCHER representative for further information.

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