

## Non-destructive analysis of hazardous substances in electrical and electronic equipment



Testing and verifying conformity to RoHS, WEEE and ELV



Verifying the reliability of electronics through materials analysis and coating thickness measurements



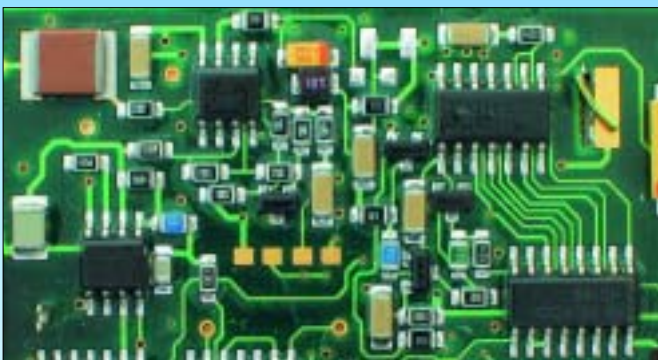
Analysis of multi-layer electronic components



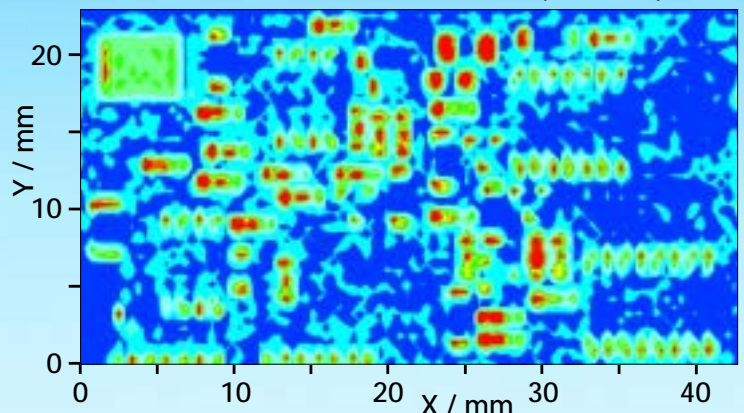
General materials testing  
Analysis of Plating Bath Solutions



A printed circuit board scanned with a FISCHERSCOPE® X-RAY XDAL®



The lead content of solder pads and components can be accurately quantified. It is easy to distinguish an elevated lead content at critical locations (red areas).



## Legal Regulations

The EU Directives WEEE\*, RoHS\* and ELV\*, which affect broad industrial sectors, are generally known. The use of certain materials in electrical and electronic equipment is banned or restricted below specified limits.

The limit for lead (Pb), mercury (Hg), hexavalent chromium (Cr VI), polybrominated biphenyls (PBB) and polybrominated diphenyl ethers (PBE) is 1000 ppm, for Cadmium (Cd) it is 100 ppm.

\*Effective beginning July 1, 2006: WEEE: Waste of Electrical and Electronic Equipment; RoHS: Restriction of Hazardous Substances; ELV (since July 1, 2003): End of Life Vehicles Directive

## The Measuring Instrument Manufacturer

HELMUT FISCHER with nearly 25 years of experience develops, manufactures and



Quick screening using the XAN®

distributes X-ray fluorescence instruments for coating thickness measurement and materials analysis. Thousands of these instruments are used at customer's sites worldwide. They are capable of meeting even the most difficult measurement challenges.

## Advantages of Measurements Using X-ray fluorescence

### No elaborate sample preparation

Specimens are simply placed in the measuring chamber.

### Operation without particular previous knowledge

Prepared measurement applications start at the push of a button.

### Short Measuring Times

Depending on the respective samples, the measuring times for the specified detection limits are 50 – 200 sec.

### Screening

The frequent question "Has the limit value been exceeded?" can be answered very quickly and reliably. A measurement provides direct results of the concentrations for Pb, Hg and Cd. If the total content of Cr or Br is measured and the respective limit value is not violated, it is safe to say that Cr VI or PBB and PBE are under the permitted limit value as well. Additional analysis methods to determine the Cr VI, PBB or PBE

content are required only if the limit value is violated.

## Video Microscope for the Measurement of Very Fine Surface Structures

An integrated video camera with a very high-resolution optics offers a perfect overview of the measurement location. Thus, it is possible to position and analyze the measurement spot even on very finely structured specimen surfaces with targeted accuracy. The size of the measurement spot can be adapted using the software.

## Calibrated Measurements

Very reliable quantitative analyses are also possible. This requires a calibration with suitable reference materials. By calibrating the instrument with suitable reference materials, it is possible to make reliable quantitative and traceable analyses.

## Detection Limits

### FISCHERSCOPE® X-RAY:

Pb, Hg, Br < 10 ppm  
Cd, Cr < 20 ppm



Br and Cd determination in synthetic components

FISCHERSCOPE® X-RAY Model	XAN®	XDAL®
The detector type of both models is a PIN semiconductor diode with high energy resolution		
Main applications	General Analytics Analysis of any alloys Coating analysis & Thickness measurement	Same as XAN® plus: Automated measurements using an XY(Z) measuring stage. Lateral distribution analysis
Collimators (The purpose of the collimator is to define the measurement spot)	4 Round collimators 0.2 / 0.6 / 1.0 / 2.0 mm	4 Collimators 0.1 / 0.3 / 0.6 / 0.5 x 0.15 mm

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Subject to changes

952-081

Printed in Germany

11/05

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ISO 9001  
SQS Registration  
No 11899

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