

FISCHERSCOPE[®] X-RAY XAN[®] FD

X-ray spectrometer for fast, accurate, reliable & non-destructive method of alloy composition & coating thickness measurement for gold, silver & precious metals



Main Features

The FISCHERSCOPE X-RAY XAN-FD instrument is compact and universally applicable energy-dispersive x-ray spectrometer. It is well suited for non-destructive thickness measurements and material analysis.

To create ideal excitation conditions for every measurement, the instrument feature electrically changeable apertures and primary filters. The modern silicon PIN detector achieves high accuracy and good detection sensitivity.

Using the fundamental parameter method, coating systems as well as solid and liquid samples can be analyzed standard-free. It is possible to detect up to 24 elements in a range from aluminum (13) to uranium (92) simultaneously.

The instrument have an excellent accuracy and long-term stability, which among other things is reflected in a significantly reduced calibration effort. For high accuracy tasks calibrations can be performed at any time.

Excellent ergonomics, easy operation, fast calculation and data presentation are all features of the instrument.

The XAN-FD instrument is especially well suited for measuring and analyzing thin coatings, even with very complex compositions or small concentrations.

Typical areas of application are:

- Measurement of functional coatings in the electronics and semiconductor industries
- Analysis of alloys in the jewelry and watch industries
- Research in universities and in the industries

Design

The XAN-FD spectrometer is designed as user-friendly bench-top instrument. Sample positioning is quick and easy. The X-ray source and semiconductor detector assembly is located in the XAN-FD lower chamber, so that the measuring direction is from underneath the sample, which is supported by a transparent window.

With the patented DCM method uneven parts or parts with set back surfaces will also be reliably measured in a range of up to 22 mm.

The integrated video-microscope with crosshairs and up to 184x zoom factor simplifies sample placement.

The entire operation, the analysis of the gauging and the display of all information is carried out by an evaluation PC with the easy to use WinFTM® software.

XAN-FD spectrometer is fully protected instrument with type approval according to the German regulations „Deutsche Röntgenverordnung-RöV“.

General Specifications

Intended use	Energy dispersive x-ray fluorescence spectrometer (EDXRF) to determine thin coatings and alloys
Element range	Aluminum (13) to Uranium (92), up to 24 elements simultaneously
Design	Bench-top unit with hood opening upwards
Measuring direction	Bottom-up method

X-ray source

X-Ray tube	Micro focus tungsten tube with beryllium window
High voltage	Three steps 10 kV, 30 kV, 50 kV
Aperture (collimator)	4x changeable: Ø 0.2 mm, Ø 0.6 mm, Ø 1 mm, Ø 2 mm, others on request
Primary filter	3x changeable: Nickel, Aluminum, free, others on request
Measurement spot	Depending on the measuring distance and on the aperture in use; the actual measurement spot size is shown in the video image. Smallest measurement spot: approx. Ø 0.3 mm
Measuring distance, e.g., for measurements in recesses	0 ... 22 mm, in the calibrated range using the patented DCM method 22 ... 25 mm, in the non-calibrated range using the patented DCM method

X-ray detection

X-ray detector	Silicon PIN detector with peltier cooling
Resolution	≤ 180 eV (fwhm at Mn-K α)

Sample orientation

Video microscope	High-resolution CCD color camera for optical monitoring of the measurement location along the primary beam axis Crosshairs with a calibrated scale (ruler) and spot-indicator Adjustable LED illumination of the measurement location
Zoom factor	34x ... 184x (optical: 34x ... 46x; digital: 1x, 2x, 3x, 4x)

Sample support stage

Design	Fixed sample support
Maximum travel X/Y	
Usable sample placement area	318 x 327 mm
Max. sample mass	2 kg
Max. sample height	86 mm

Electrical data

Line voltage, line frequency	AC 115 V or AC 230 V 50 / 60 Hz
Power consumption	Max. 120 W (measuring head without PC)
Protection class	IP 40

Dimensions

Exterior dimensions	
Width x depth x height [mm]	380 x 576 x 340
Interior dimensions measurement chamber	
Width x depth x height [mm]	Total: 318 x 307 x 29 – 86 Without slant area: 318 x 203 x 86
Weight	approx. 42 kg

Environmental Conditions

Temperature: Operation	10 °C – 40 °C / 50 °F – 104 °F
Temperature: Storage/Transport	0 °C – 50 °C / 32 °F – 122 °F
Humidity of ambient air	≤ 95 %, non-condensing

Evaluation unit

Computer	Windows® PC with extension cards
Software	Standard: Fischer WinFTM® BASIC + PDM® Optional: Fischer WinFTM® SUPER

Standards

CE-Konformität	EN 61010
X-ray standards	DIN ISO 3497 and ASTM B 568
Approval	Fully protected instrument with type approval according to the German regulations „Deutsche Röntgenverordnung-RöV“

Order

FISCHERSCOPE X-RAY XAN-FD	603-153
MEASURING HEAD X-RAY XAN-FD	603-154
	Special XAN-FD product modification and XAN-FD technical consultation on request

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