

FISCHERSCOPE® X-RAY XAN® 150

X-ray spectrometer for non-destructive thickness measurement and material analysis



Main Features

The FISCHERSCOPE X-RAY XAN 150 instruments are compact and universally applicable energy-dispersive x-ray spectrometers. They are well suited for non-destructive thickness measurements and material analysis.

To create ideal excitation conditions for every measurement, the XAN 150 features electrically changeable apertures and primary filters. The modern silicon drift 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 has 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 150 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, starting from a few nanometers, in the electronics and semiconductor industries
- Trace analysis for consumer protection, e.g. lead content in toys
- Analysis of alloys with highest requirements of accuracy in the jewelry and watch industries and in metal refineries
- Research in universities and in the industries

Design

The FISCHERSCOPE X-RAY XAN 150 is designed as a user-friendly bench-top instrument. Sample positioning is quick and easy. The x-ray source and the detector assembly are located in the 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 measured in a range of up to 25 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 150 spectrometers are fully protected instruments 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, trace elements 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	6x changeable (Ni; free; Al 1000 µm; Al 500 µm; Al 100 µm; Mylar [®] 100 µm)
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	Setting range 0 ... 25 mm Distance compensation with patented DCM method

X-ray detection

X-ray detector	Silicon drift detector with peltier cooling
Resolution	≤ 150 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
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

FISCHERSCOPE® X-RAY XAN® 150

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 conformity	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 150	604-510 Special XAN product modification and XAN technical consultation on request
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