

FISCHERSCOPE[®] X-RAY XUV[®] 773

High Performance X-Ray Fluorescence
Measuring Instrument with Vacuum
Chamber for non-destructive
Coating Thickness Measurement and
Material Analysis



Main Features

The FISCHERSCOPE X-RAY XUV 773 is an universally applicable energy dispersive X-ray measuring instrument. It is ideally suited for non-destructive analysis of thin coatings, traces and light elements. Up to 24 elements in the range of sodium (11) to uranium (92) can be determined simultaneously.

Measurements can be performed in vacuum, in ambient air or with helium purge (optional). Therefore also organic or wet samples can be analyzed.

The XUV 773 has changeable apertures and primary filters, which makes it ideal for complex tasks. With the integrated programmable X/Y/Z sample stage and a high resolution video camera the determination of the accurate measurement spot is easy and precise.

A modern Silicon Drift Detector (SDD) with an energy resolution better than 140 eV ensures outstanding analysis accuracy and detection sensitivity.

Typical fields of application:

- Analysis and coating thickness measurement on thin coatings like CIGS, CIS, CdTe
- Analysis and coating thickness measurement on functional coatings and in electronic and semiconductor industries
- Non-destructive analysis of gold, jewelry and gem stones
- Trace analysis and harmful substance analysis, RoHS, WEEE

Outstanding accuracy and long-term stability are characteristics of all FISCHERSCOPE X-RAY systems. The necessity of recalibration is dramatically reduced, saving time and effort.

Excellent ergonomics, easy operation, fast calculation and data presentation are further features of the XUV 773.

Performance

The XUV 773 is a bench top unit. The cylindrical measurement chamber opens motorized and the wide front opening simplifies sample placing. Inside of the spacious vacuum chamber voluminous or unevenly formed parts can be easily analyzed.

The XUV 773 can be equipped with a helium option. This enables for the measurement of wet samples, liquids or biological samples purged with helium.

The entire operation, the evaluation of the measurement as well as the clear presentation of the measurement data is performed on a PC using the powerful and user-friendly WinFTM[®].

The FISCHERSCOPE XUV 773 fulfills DIN ISO 3497 and ASTM B 568.

General Specification

Intended use	Energy dispersive X-ray measuring instrument (EDXRF) to analyze thin coatings, small structures, trace elements and alloys.
Element range	Sodium Na (11) to Uranium U (92) – up to 24 elements simultaneously
Design	Bench top unit with motorized opening cylindrical vacuum chamber. External vacuum pump Helium purge of measurement chamber (optional) Programmable motorized X/Y/Z sample stage High resolution color video camera with a wide magnification range
Measurement direction	Top down

X-Ray Source

X-ray tube	Micro focus X-ray tube with Rhodium target (Tungsten, Molybdenum, or other target materials as option)
High voltage	Three steps: 8 kV, 20 kV, 50 kV
Apertures (Collimators)	4x changeable: Ø 0.1 mm (3.9 mils), Ø 0.3 mm (11.8 mils), Ø 1 mm (39.4 mils), Ø 3 mm (118 mils), others on demand
Primary filters	6x changeable: Ni 10 µm (0.39 mils), free, Al 1000 µm (39.4 mils), Al 500 µm (19.7 mils), Al 100 µm (3.94 mils), Mylar® 100 µm (3.94 mils)
Measurement spot	Depends on measurement distance and used aperture. Real spot size is displayed on the video screen. Smallest measurement spot: approx. Ø 0.15 mm (5.9 mils)

X-Ray Detection

X-ray detector	SDD Silicon Drift Detector, peltier-cooled
Resolution (fwhm for Mn-K _α)	≤ 140 eV
Measuring distance e.g. for measurements in recesses	0 ... 20 mm (0 ... 0.79 in), in the calibrated range using the patented DCM method

Video Microscope

	High-resolution CCD color camera for optical monitoring of the measurement location along the primary beam axis, manual focusing and auto-focus, crosshairs with a calibrated scale (ruler) and spot-indicator, adjustable LED illumination of the measurement location, Laser pointer (class 1) to support accurate sample placement
Video magnification factor	20x ... 180x (optical: 20x ... 45x; digital: 1x, 2x, 3x, 4x)

Sample Stage

	Fast motorized and programmable X/Y/Z sample stage
Travel distance	X-/ Y-/ Z-axis [mm]: 100 x 100 x 100, [in]: 3.94 x 3.94 x 3.94
Repeatability X/Y/Z	≤ 0,01 mm (0.39 mils), uni-directional
Support area	Width x depth [mm]: 135 x 135, [in]: 5.31 x 5.31
Max. sample weight	≤ 1 kg (2.2 lb)
Max. sample height	100 mm (3.94 in)

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Electrical Data

Power supply	AC 115 V or AC 230 V 50 / 60 Hz
Power consumption	max. 120 W (without evaluation PC)
Protection class	IP40

Dimensions

External dimensions	Width x depth x height [mm]: 640 x 640 x 760 mm, [in]: 25.2 x 25.2 x 29.2
Weight	approx. 182 kg (401 lb)
Interior dimensions of chamber	Diameter x depth [mm]: 400 x 390, [in]: 15.8 x 15.3

Environmental Conditions

Operating temperature	10 °C – 40 °C (50 °F – 104 °F) around the housing
Storage temperature	0 °C – 50 °C (32 °F – 122 °F)
Admissible air humidity	≤ 95 %, non-condensing

Evaluation Unit

Computer	Windows [®] -PC with extension cards
Software	Standard: Fischer WinFTM [®] BASIC including PDM [®] Optional: Fischer WinFTM [®] SUPER

Standards

CE approval	EN 61010
X-Ray standards	DIN ISO 3497 and ASTM B 568
Approval	Individual acceptance inspection as a fully protected instrument according to the German regulations „Deutsche Röntgenverordnung-RöV“.

Order

FISCHERSCOPE X-RAY XUV 773	604-395
	Special XUV product modification and XUV technical consultation on request

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Coating Thickness



Material Analysis



Microhardness



Material Testing

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