

FISCHERSCOPE® X-RAY XUL® 210
FISCHERSCOPE® X-RAY XUL® 220
FISCHERSCOPE® X-RAY XULM® 240

Robust Entry-Level X-RAY Fluorescence Measuring Instruments for Non-Destructive Material Analysis and Coating Thickness Measurement



Description

The FISCHERSCOPE X-RAY XUL/XULM are high performance, compact and universally applicable x-ray measuring instruments. They are well suited for the non-destructive coating thickness measurement and material analysis. The instruments are well suited for measurements in quality assurance, incoming inspection and process control.

Typical fields of application:

- Measurements on small parts like screws, bolts and nuts
- Measurements on contacts and electronic components
- Determining of the composition of electroplating baths

Additional fields of application of the XULM 240:

- Measurements on very small parts, plug contacts and wires
- Manual measurements on printed circuit boards
- Measurements in the jewellery and watch industries

A high count rate is achieved by using a proportional counter tube, which allows for precise measurements. Outstanding accuracy and long-term stability are characteristics of all FISCHERSCOPE X-RAY systems. The necessity of re-calibration is dramatically reduced, saving time and effort.

The fundamental parameter method by FISCHER allows for the analysis of solid and liquid specimens as well as coating systems without calibration.

The XULM 240 is equipped with a micro-focus x-ray source and electrically changeable apertures and primary filters. Thus, the instrument is also suitable for measurements on small parts.

Design

The FISCHERSCOPE X-RAY XUL/XULM instruments are designed as user-friendly bench-top instruments. According to the intended use, different versions are available with different support stages:

- XUL 210: Fixed sample support
- XUL 220 and XULM 240: Manually operable XY stage for accurate positioning of small parts

For quick and easy sample positioning, the X-ray source and detector assembly is located in the instrument's lower chamber. The measuring direction is from underneath the sample, which is supported by a transparent window.

Despite of their compact size, the instruments are equipped with a large measurement chamber. This allows for measurements on larger specimens.

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

The FISCHERSCOPE XUL 210, XUL 220 and XULM 240 instruments fulfill DIN ISO 3497 and ASTM B 568. They are fully protected instruments with type approval according to the German regulations „Deutsche Röntgenverordnung-RöV“.

General Specification

Intended use	Energy dispersive x-ray fluorescence measuring instrument (EDXRF) for material analysis and coating thickness measurement
Element range	Chlorine (17) to Uranium (92) – up to 24 elements simultaneously with option WinFTM® BASIC
Design	Bench top unit with upwards opening hood
Measuring direction	Bottom up

X-Ray Source

X-ray tube	
• XUL 210, XUL 220	Tungsten tube, thermally stabilized
• XULM 240	Micro-focus tungsten tube with beryllium window
High voltage	Three steps: 30 kV, 40 kV, 50 kV
Aperture (Collimator)	
• XUL 210, XUL 220	Ø 0.3 mm (11.8 mils), optional slot Ø 0.3 x 0.05 mm (11.8 x 2 mils)
• XULM 240	4 x changeable
Standard (523-440)	Ø 0.1 mm (3.9 mils); Ø 0.2 mm (7.9 mils); 0.05 x 0,05 mm (2 x 2 mils); 0.2 x 0.03 mm (7.9 x 1.2 mils)
Optional (523-366)	Ø 0.1 mm (3.9 mils); Ø 0.2 mm (7.9 mils); Ø 0.3 mm (11.8 mils); 0.3 x 0.05 (11.8 x 2 mils)
Optional (524-061) others on request	Ø 0.1 mm (3.9 mils); Ø 0.2 mm (7.9 mils); 0.3 x 0.05 mm (11.8 x 2 mils); 0,05 x 0,05 mm (2 x 2 mils)
Primary filter	
• XUL 210, XUL 220	fixed
• XULM 240	3 x changeable (Standard configuration: Nickel, Aluminum, no filter)
Measurement spot	Depending on the measuring distance and on the aperture, the actual measurement spot size is shown in the video image. Smallest measurement spot: <ul style="list-style-type: none">• XUL 210 and XUL 220: approx. Ø 0,51 mm (20 mils)• XULM 240: approx. Ø 0,1 mm (3.9 mils)

X-Ray Detection

X-ray detector	Proportional counter tube
Absorber	XULM 240 only: optional cobalt or nickel absorber
Measuring distance	0 ... 25 mm (0 ... 1 in), Distance compensation with patented DCM method for simplified measurements at varying distances. For particular applications or for higher demands on accuracy an additional calibration might be necessary.

Sample Alignment

Sample positioning	Manually
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
Zoom factor	Digital 1x, 2x, 3x, 4x

Evaluation unit

Computer	Windows®-PC
Software	Standard: Fischer WinFTM® LIGHT Optional: Fischer WinFTM® BASIC, PDM®. SUPER

Sample Stage

	XUL 210	XUL 220, XULM 240
Design	Fixed sample support	Manually operable XY stage
Maximum travel XY	–	30 (X) x 40 (Y) mm 1.2 (X) x 1.6 (Y) in
Usable sample placement area	310 x 320 mm (12.2 x 12.6 in)	
Max. sample weight	13 kg (29 lb)	2 kg (4.4 lb)
Max. sample height	174 mm (6.8 in)	

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	403 x 588 x 444 mm (15.9 x 23.2 x 17.5 in)
Weight	Approx. 45 kg (100 lb)

Environmental conditions

Operating temperature	10 °C – 40 °C / 50 °F – 104 °F
Storage/Transport temperature	0 °C – 50 °C / 32 °F – 122 °F
Admissible air humidity	≤ 95 %, non-condensing

Standards

CE approval	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 XUL 210	604-768
FISCHERSCOPE X-RAY XUL 220	605-151
FISCHERSCOPE X-RAY XULM 240	604-770
Special XUL product modification and technical consultation on request	

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