QUAKELOGIC

QL-XRF C15

Bench-top Energy Dispersive X-Ray Fluorescence (ED-XRF) Spectrometer

QL-XRF C15 represents a state-of-the-art benchtop Energy Dispersive X-Ray Fluorescence (ED-XRF) spectrometer, meticulously designed and configured to meet the stringent requirements established by the IAEA CHI5056 ED-XRF Benchtop Spectrometer Specification. This advanced analytical instrument serves as a comprehensive solution for modern laboratory environments requiring precise elemental analysis capabilities.

The system delivers exceptional versatility in sample analysis, providing accurate determination of macro, micro, and trace elements across multiple sample matrices including solid materials, liquid specimens, loose powders, and pressed powder preparations. This multi-format capability ensures the QL-XRF C15 can accommodate diverse analytical workflows and research protocols demanded by contemporary laboratory operations.

Analytical Performance Specifications

The QL-XRF C15 delivers comprehensive elemental coverage spanning the periodic table from Carbon (C, atomic number 6) through Uranium (U, atomic number 92). This extensive analytical range enables laboratories to address diverse elemental analysis requirements across multiple application domains, from light element detection to heavy metal quantification.

The instrument's concentration detection capabilities extend from trace-level parts per million (ppm) concentrations to major constituent percentage (%) levels. This dynamic range accommodates both trace element investigations and bulk composition determinations within a single analytical platform, eliminating the need for multiple specialized instruments.

Full spectral acquisition methodology ensures that each measurement captures complete elemental fingerprints, enabling post-acquisition analysis optimization and retrospective data interrogation. This approach maximizes analytical flexibility and supports evolving laboratory investigation protocols without requiring sample reanalysis.

Elemental Coverage

Carbon (C) → Uranium (U)

Complete periodic table coverage for comprehensive analysis

Detection Range

ppm to % levels

From trace to major constituent quantification

1

Quantitative Analysis

Precise elemental concentration determination with calibrated standards and validated analytical methods

2

Semi-Quantitative Analysis

Rapid compositional screening without extensive calibration requirements for exploratory investigations

3

Qualitative Analysis

Elemental identification and fingerprinting for sample classification and authentication studies

Core Hardware Configuration

The QL-XRF C15 employs a sophisticated excitation and detection architecture designed to optimize analytical performance while maintaining operational reliability. The thin-window rhodium (Rh) X-ray tube with silver (Ag) anode configuration provides exceptional excitation efficiency across the instrument's entire elemental range, from light elements through actinides.

50kV	15W	3mA	≤135eV
Maximum Voltage	**Maximum Power**	**Maximum Current**	**Energy Resolution**
High-energy excitation capability	Optimized for sample protection	Controlled beam intensity	Superior spectral separation

The excitation system operates at a maximum voltage of 50 kV with power output reaching 15 W and maximum current of 3 mA. These parameters ensure sufficient excitation energy for heavy element K-lines and mid-range element L-lines while maintaining sample integrity through controlled energy deposition.

Detection System

The instrument incorporates a **high-performance Silicon Drift Detector (SDD)** with beryllium (Be) window construction. This advanced detector technology achieves energy resolution of ≤135 eV, providing exceptional peak separation for complex sample matrices and enabling accurate deconvolution of overlapping spectral features.

The SDD employs electrically-driven Peltier cooling, eliminating external cooling water requirements and simplifying installation logistics. This solid-state cooling approach ensures detector temperature stability while reducing facility infrastructure demands.

Optical Configuration

A precision six-position filter assembly provides software-controlled filter selection, enabling optimized excitation conditions for specific elemental ranges. Automated filter positioning ensures reproducible measurement geometry and eliminates manual intervention errors, supporting high-throughput analytical workflows.

Sample Handling Capabilities

The QL-XRF C15 accommodates diverse sample presentations through a comprehensive sample handling system designed for analytical versatility and operational efficiency. The instrument accepts solid materials, liquid specimens, loose powders, and pressed powder preparations, enabling laboratories to analyze samples in their optimal physical form without extensive preparation protocols.

Solid Samples

Direct analysis of solid materials with minimal preparation requirements

Liquid Samples

Specialized holders for solution and suspension analysis

Powder Samples

Both loose and pressed powder configurations supported

Automated Sample Handling

An integrated automatic sample changer provides **ten (10) or more sample positions**, facilitating unattended sequential analysis and maximizing instrument utilization during extended operational periods. The system includes comprehensive sets of standard sample holders and inserts configured for the supported sample types, ensuring consistent measurement geometry across analytical batches.

The incorporated sample spinner ensures compositional averaging for heterogeneous samples, improving analytical representativeness and reducing measurement uncertainty associated with sample inhomogeneity. This feature proves particularly valuable for pressed powder pellets and granular materials.

Measurement Atmospheres

- **Air:** Standard ambient atmosphere for routine analysis
- **Vacuum:** Enhanced light element sensitivity
- **Helium purge:** Optimized low-Z element detection

The system's flexible lid configuration accommodates larger sample dimensions up to 10 × 20 × 10 cm (H × W × D), enabling analysis of intact components, bulk materials, and irregularly shaped specimens without destructive sampling. This capability expands analytical possibilities for quality control applications and forensic investigations requiring non-destructive evaluation.

Software Platform and Compliance

The QL-XRF C15 operates through an advanced PC-based control and analysis software platform running on Microsoft Windows in Spanish language configuration. This comprehensive software environment integrates instrument control, real-time spectral display, and sophisticated data analysis algorithms within a unified user interface designed for analytical efficiency.

Real-Time Spectral Acquisition

Live spectral display with dynamic peak identification during measurement

Advanced Data Processing

Background subtraction, matrix-effect correction, and spectral deconvolution

Quantitative Analysis

Element identification and concentration calculation with uncertainty estimation

Reporting and Export

Customizable report generation and data export for laboratory information systems

The software incorporates sophisticated algorithms for background correction and matrix-effect compensation, ensuring accurate quantification across diverse sample compositions. Automated element identification reduces operator workload while maintaining analytical rigor, and comprehensive data reporting capabilities support regulatory compliance documentation requirements.

Operator Training Program

A minimum **two (2) full days of on-site operator training** delivered in Spanish ensures laboratory personnel achieve operational proficiency. The training program encompasses instrument operation, routine maintenance procedures, method development protocols, and troubleshooting strategies, providing comprehensive knowledge transfer for sustainable laboratory operation.

QuakeLogic QL-XRF C15: Advancing Analytical Precision

QuakeLogic, an industry leader in analytical instrumentation, provides laboratories with the **QuakeLogic QL-XRF C15**, designed for superior elemental analysis, robustness, and unparalleled data quality.

Connect with QuakeLogic for QL-Spectra Pro ICP-OES

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Contact us for detailed product demonstrations, purchasing information, and tailored solutions for your analytical needs.

Scan for Detailed Product Information

Explore comprehensive specifications, application notes, and resources for the **QuakeLogic QL-XRF C15** instrument, designed to elevate your laboratory's analytical capabilities.

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