OLYMPUS®

Your Vision, Our Future

X-5000

Laboratory EDXRF with Field Portability

Benchtop Power, Performance, and Safety Combined with Portable Speed, Ease, and Cost-Effectiveness

The X-5000

Unites Laboratory EDXRF with True Field Portability

The Olympus X-5000™ is specially engineered to provide safe, and superior, in-the-field XRF analysis. Functioning as a portable laboratory, this high-powered instrument is equipped with a secure closed-beam sample chamber and flexible analytical software that features a wide-range of user-defined calibrations. The X-5000 offers you the performance and safety of traditional benchtop EDXRF, merged with the cost-effective benefits and ruggedness of proven, portable XRF technology.

- Integrated, field-hardened portable EDXRF analyzer for fast, easy-to-use performance enabling you to take immediate action anywhere you happen to be working, whether in the field, on production lines, or in inspection areas.
- Ergonomically packaged, easy to carry, and battery operated.
- Fully integrated PC and large, industrialized touch screen for user-friendly operation.
- Large, enclosed testing chamber readily handles assorted objects, including standard XRF lab cups, liquid sample bottles, and bagged samples.
- Fully interlocked and safe closed-beam X-ray system enabling users to take advantage of the ever-increasing high power of portable XRF.

Advantage X-5000

Performance and Power

The X-5000™ offers a high level of performance and power not usually found in field-portable systems.

- A full 50 kV/10 W X-ray tube delivers extraordinary in-the-field limits of detection (LOD) from Mg through to U. Multiple anode configurations are also available:
  - **Tantalum** (Ta) anode configuration is utilized for excellent sensitivity when measuring over 25 transition metals—such as, Cd, Ba, Ag, Au, Pb, Cr, in addition to many rare earth elements, including, La, Ce, Nd, Pm, and Sm.
  - **Rhodium** (Rh) anode configuration is available if the application calls for optimized analysis of light elements—such as Mg and Al, in addition to mid-range transition metals.
  - **Silver** (Ag) anode configuration is available for enhanced detection limits of light elements in applications focused on petroleum.
- An innovative large-area silicon drift detector (SDD) that allows for a wide array of elements to be measured with high precision.
- Six-position primary beam filters allowing for optimal performance across the periodic table.
- Outstanding light-element performance for elements without vacuum or helium purge.

An onboard PC offers full operation of the X-5000 in any analysis environment.

- A large display with a virtual keyboard.
- A field-hardened color touch screen.
- A user-friendly interface allowing for:
  - Spectral overlay
  - Easy peak identification
- Multiple algorithm options are available, including fundamental parameters, Compton Normalization, empirical calibration models, and spectral matching.

Portability

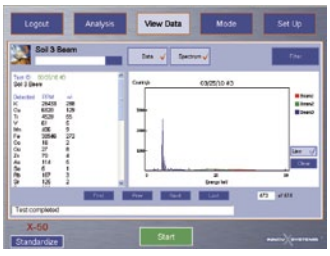
Weighing in at just 11.5 kg, the X-5000™ can be taken virtually anywhere testing is needed, from the field to the lab and beyond. This self-contained, closed-beam unit provides the ultimate in user safety.

Take it anywhere

Use it around the work site, at the inspection station, on the production line, or on the lab bench.

Start it up immediately

Open the cover and place the material on the window, and then close the cover and start testing. Features interlocked, closed-beam operation.



Get results

Results are displayed on the industrial-grade touch screen within a matter of seconds.

Document

Data is stored automatically in a tamper-proof format. Provides on-the-spot printing of material test reports (MTR), or RoHS Certification of Compliance (CoC).

Elemental Analysis in Petrochemical Fluids and Hydrocarbons

The X-5000™ analyzer provides accurate determination of trace to percent levels of elements in fuels, oils, and lubricants. This powerful, field-portable analytical instrument is used in a wide variety of industries to identify elements and determine the actual elemental concentrations present in a variety of matrices (solid, powdered, and liquid samples). Simply collect and analyze—no sample preparation is required.

Key Applications

- ASTM D4294 (sulfur analysis).
- ASTM D6481 (unused lubricating oils):
  - Ca, P, Zn, S;
  - Monitoring of Mo, Ba, Mn.
- Monitoring of wear metals:
  - Fe, V, Pb, Cr, Cu, Sb, Sn, Mo, Ti, Ni, Cd.
- Heavy fuel oil analysis aboard vessels:
  - Sulfur content in SOx Emission Control Areas (SECAs).
- Diagnosis of abnormal wear through analysis of wear debris and particulates.
- Mercury and arsenic contamination in tank-bottom sludge.

Environmental

The X-5000™ is ideal for field-portable X-ray fluorescence analysis of analytes for soil and sediment, in bagged or fully prepared samples, to help comply with EPA Method 6200. In addition to common regulated analytes, some desired light elements such as Mg, S, and P can also be detected. The X-5000 delivers superior LOD, rapid analysis time, and analytical confidence during screening or qualitative, semi-quantitative, or quantitative analysis, enabling you to simultaneously analyze up to 25 elements within seconds. The eight RCRA and priority pollutant metals are easily and quickly measured on-site in soil, solids, wet sediment, sludge, and liquids using the X-5000. Its compact design and battery-power operation make the X-5000 the analytical choice for field use.

For compliance with global environmental methods:

- US EPA 6200 and ISO/DIS 13196
- US EPA TCLP HAZMAT classification
- US EPA, HUD, NIOSH and OSHA
- Priority pollutant metals and eight RCRA metals

Consumer Products

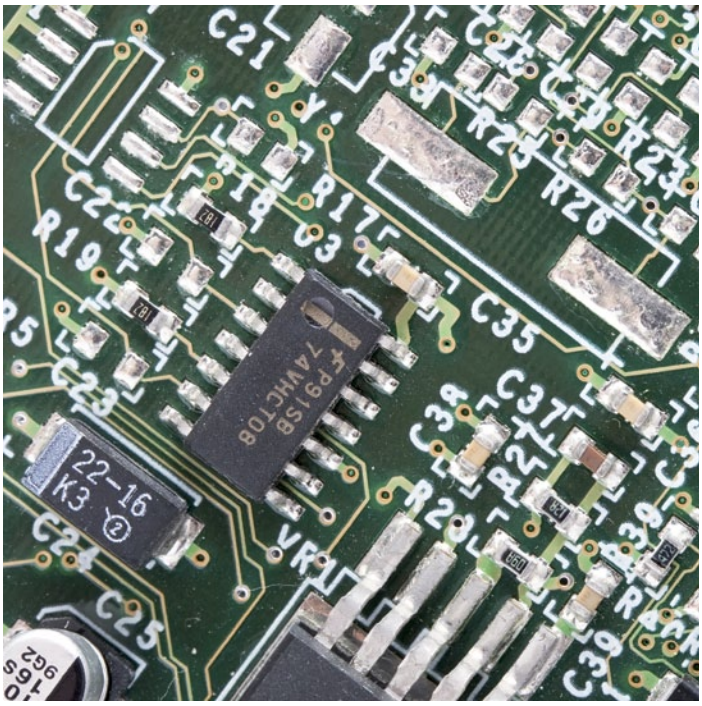
The X-5000™ is used to quickly, easily, and nondestructively screen for Pb, Hg, Cd, Br, and other toxic metals used as additives in consumer products. This is particularly important for products that are intended for children under the age of 12. This type of analysis is also performed at border crossing points to ensure the compliance of imported products. Applicable consumer products include:

- Toys/sporting goods
- Furniture/fabric
- Costume jewelry/apparel
- Foods/beverages
- Vitamins/supplements
- Cosmetics/personal care products

RoHS Directives

The X-5000™ delivers fast and simple RoHS compliance results for Cd, Pb, Hg, total Cr, and Br. The patent-pending RoHS Engine method automatically optimizes the X-ray source and filtering for optimal detection limits without any operator intervention required. The smart system performs automatic optimization of alloy and polymer samples. Production-friendly, on-the-spot, nondestructive analysis is used to detect PPM levels of restricted substances, and is also ideal for meeting requirements such as the RoHS Packaging Directive, ELV Requirements, in addition to various customer specifications, which are often more exigent than RoHS limits. The analyzer's large sample chamber is also ideal for a variety of sample types, including:

- Cables
- Connectors
- PCBs
- Metal components
- Solders



Mining/Geochemistry

The X-5000™ is ideal for exploration and mining samples ranging from soils and sediments to rock chips, bagged drill cuttings, cut core, and liquid analysis including highly acidic samples. The X-5000 delivers excellent precision and accuracy for critical measurements, and the low LODs required for specialized applications such as:

- Precious metals
- Rare earths
- Au and Au pathfinders
- Cassiterite, cadmium, and antimony

Superior field analysis of light elements—such as, Mg, Al, Si, P, S and Cl—is achieved without vacuum or helium purge. With its rugged design and minimal requirements for sample prep, the X-5000 meets the standards of the mining and geochemical industries.

Alloy Analysis

The X-5000™ captures the power, speed, and precision of a dedicated industrial alloy analyzer in a rugged and totally portable unit. Its sealed, robust housing is ideal for at-line operation in incoming inspection, scrap processing, foundries, or on the production line.

Specific applications include:

- Analysis of small samples and turnings.
- Analysis of ID alloys from ultrasmall shavings and particles down to 50 µm or less. Ideal for tracing metal particles for failure analysis.
- Detection of residual, tramp, or poison metals such as, Cd, Sn, Ag, Cu, and other elements <0.01%.
- Screening of alloys to measure for low concentrations of P and S in carbon steels, stainless steels, and other allows for quality control purposes.

General Materials Analysis

For the advanced user, the power of the X-5000™ resides in its sophisticated electronics. The six-position filter wheel, a wide range of voltage and current settings, the SDD, and a fully integrated industrial PC allow for multiple calibrations, dozens of turnkey settings, ease in adding new elements for analysis, spectral viewing, and more. Many applications require analysis for which few, if any, known standards exist for instrument calibration. In other cases, calibration standards are proprietary to the customer. To overcome these issues, users can set factors and offsets (slope and y-intercept) to optimize for specific samples.

Specifications

Excitation source	10 W X-ray tube. 50 kV, 200 µA X-ray tube
Application-optimized X-ray tube anode	Rhodium anode for light-element-focused applications. Tantalum anode for heavy-transition metal-focused applications. Silver anode for petroleum- and oil-focused applications.
High-resolution Silicon Drift Detector	
Resolution	<165 eV (FWHM Mn K-alpha line)
Powerful Pentium processor, embedded XP	
Sealed, field-hardened color touch screen	20.9 cm × 15.9 cm (8.25 in. × 6.13 in.)
Safety interlocks that create a closed-beam system	
Multiple analysis modes including	Fundamental parameters Compton Normalization Empirical calibration models Spectral matching
Six-position primary beam filters for optimal performance across the periodic table	
A rugged, injection-molded, sealed carrying case and sealed test platform	
Large sample platform with an interlocked testing cover	
Heavy-duty carry case with wheels and a telescoping handle	
AC power adaptor	110–220 VAC, 50–60 Hz, 70 W max
Optional 3-hour Li-ion battery pack available	
Operating environment temperature	10 °C to 50 °C
Humidity	10% to 90% relative humidity, noncondensing
Total weight	11.5 kg (25 lb)
Instrument dimensions	38 cm × 33 cm × 28 cm (15 in. × 13 in. × 11 in.)
Sample-chamber dimensions	29 cm × 15 cm × 11 cm (11 in. × 6 in. × 5 in.)

OLYMPUS NDT INC. is ISO 9001 and 14001 certified

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