

### DELTA® Handheld X-ray Fluorescence (XRF) Analyzers



Fast, Accurate, Nondestructive  
Elemental Analysis



# The DELTA® Handheld XRF for Elemental Analysis

Nondestructive DELTA handheld X-ray fluorescence analyzers provide decisive results to multiple industries with varied applications. Elements such as lead, mercury, arsenic, copper, gold, silver, platinum, and more are detectable in concentrations of parts per million (PPM) up to 100%, with little or no sample preparation requirements.

The DELTA handheld XRF analyzers are ergonomically advanced with a forward looking design, incorporating the latest in electronics, components, and software technology. The DELTA X-act Count™ technology can provide even better sensitivity and precision in faster time for more materials than before.

## Scrap Sorting and Recycling

The DELTA scrap sorting handheld XRF provides reliable identification in 1 to 2 seconds for most alloy grades and pure metals. It is designed for durability to withstand the toughest environments. It is ideal for checking a wide variety of materials, including ferrous and nonferrous metals, glass, and plastics, in seconds.



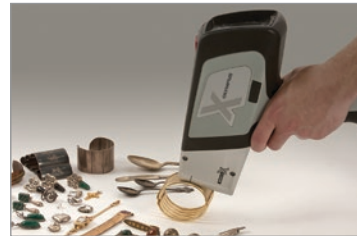
## Alloy Positive Material Identification/QA/QC

The DELTA analytical and positive material inspection (PMI) analyzer is vital for quality control and assurance in the metal manufacturing and fabrication industries. It is used for compositional analysis and alloy grade identification, from critical components to raw materials to welds.



## Jewelry/Precious Metals Identification

The DELTA analyzer provides fast, accurate alloy chemistry and karat classification with one nondestructive, nonintrusive test. Whether importing precious metals, selling or producing jewelry, or processing scrap metal, the DELTA analyzer is an ideal choice.



## Regulatory and Safety Screening

The DELTA analyzer is used to screen for pollutants and poisons such as lead, cadmium, chromium, mercury, arsenic, and other toxic elements. It is used to help ensure safety and to help comply with global regulatory programs directed by the EPA, RoHS/WEEE EU Member States' Enforcement Bodies, CPSC, FDA, Border Patrol, and more.



## Geochemistry and Mining Exploration

The DELTA analyzer provides immediate results to help determine the next course of action throughout the entire mining process — exploration, grade/process control, and environmental sustainability. On-site detection of metals, minerals, and contaminants, and GPS-GIS XRF for instant metal mapping ensures time and cost savings.



## Research and Education

The DELTA analyzer adds a new dimension to research and education in the classroom and in the field. Its versatility engages students, making the periodic table of elements and science come alive. Environmental, forensics, archaeology, and chemistry education benefit immediately.

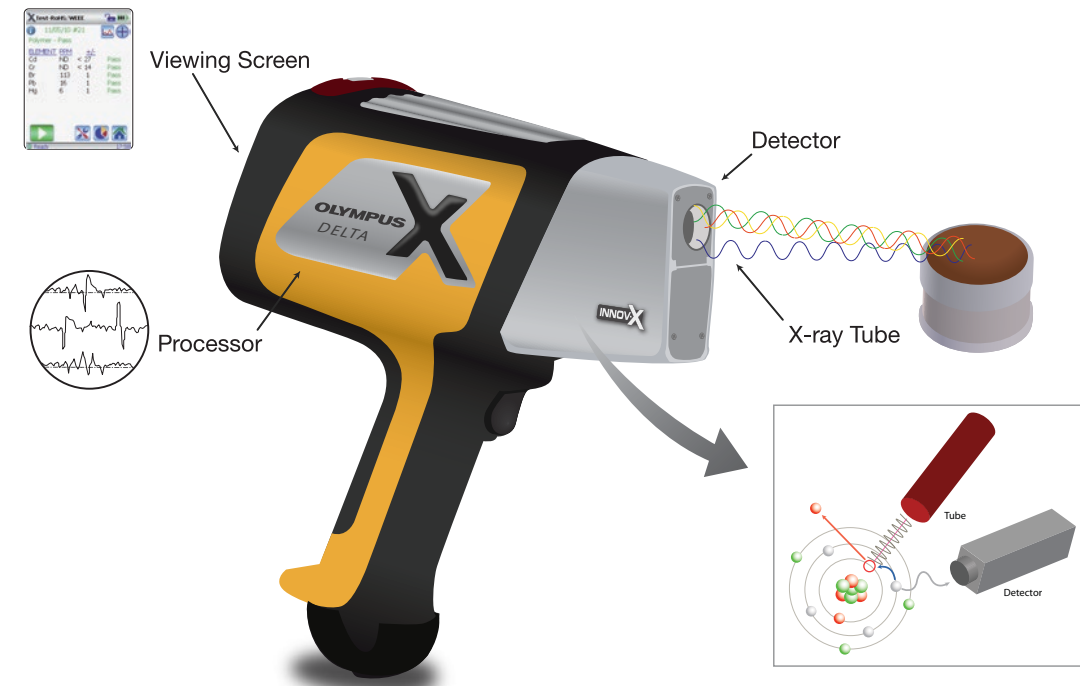


# X-ray Fluorescence Technology

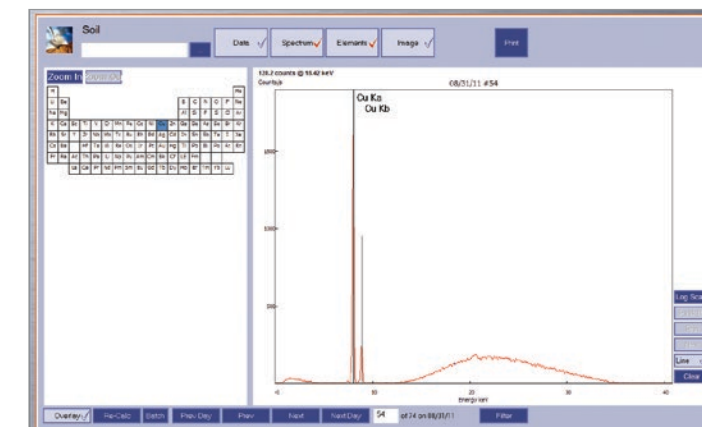
Thousands of units are in use worldwide, from show rooms and assembly lines to remote desert and arctic regions. DELTA® handheld XRF analyzers are optimized to be responsive and effective to meet the needs of both economically and regulatory-driven businesses, from recycling, mining, and fabrication to environmental assessment and consumer product safety, and to scientific research and education.

The DELTA series analyzers are configured with powerful miniature X-ray tubes, Si-PIN detectors or highly advanced silicon drift detectors (SDDs), specialized filters, and multi beam optimization for the ultimate in XRF field analysis. The analyzer's real overall value is to help make decisions in real time with minimal reliance on off-site laboratory testing.

## DELTA Handheld XRF Configuration



## XRF for Composition Analysis



The energies (keV) at which the peaks appear identify the elements present in a material. The intensities (counts per second) of peaks correlate with the concentrations of the elements present in the material.

## XRF Portable Workstation



The DELTA workstation with integrated safety-lock shielding can be controlled with a PC.



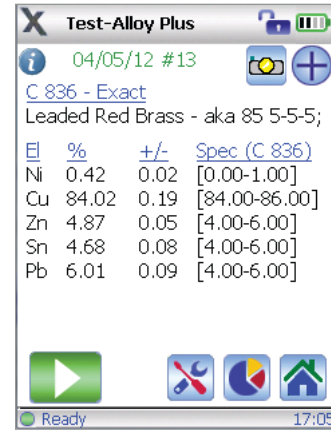
# The DELTA® Handheld XRF

Fast, Decisive Results

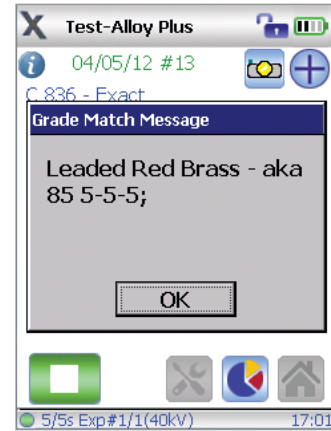
## Alloy ID and Scrap Sorting



The DELTA analyzer can take results and compare them to a library of alloy compositions to “match” an unknown material to known alloys. Pop-up messages can be preprogrammed for immediate sorting or coding instructions to increase efficiency and throughput.

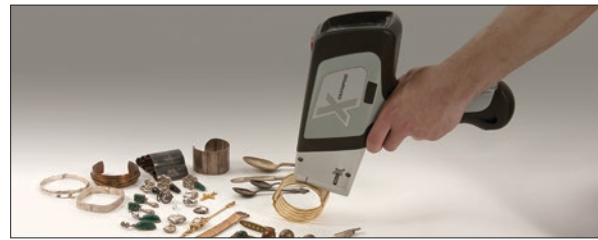


Grade Match Messaging in real time



Pop-up Grade Match Messaging at the end of a test

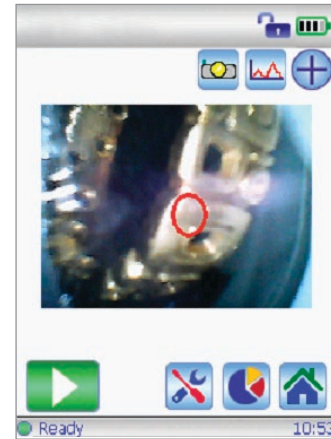
## Jewelry/Precious Metals ID



The DELTA analyzer can automatically identify and characterize a wide range of alloys, including precious metals such as Au, Ag, Pt, and Pd. It can be preprogrammed to provide on-the-spot gold karat classification, 0–24 kt.



Automatic karat determination

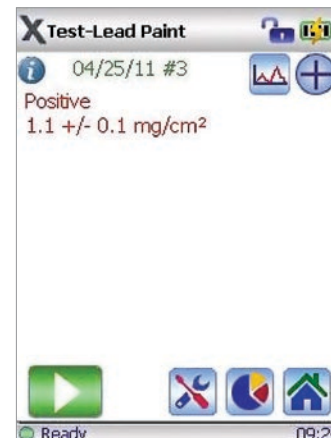


Camera and collimator view of sample

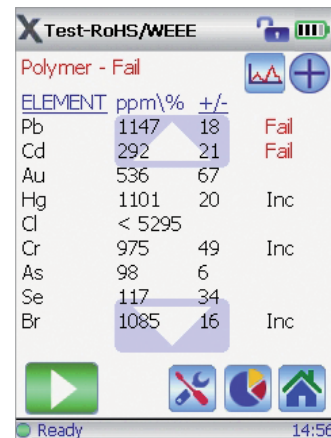
## Regulatory and Safety Screening



The DELTA analyzer can provide positive/negative or pass/fail results for rapid regulatory and safety screening of Pb, Cd, As, Hg, Cr, and other toxic metals in consumer products. Archived DELTA images and results make it the ideal tool for a reasonable testing program.



Positive/negative results screen



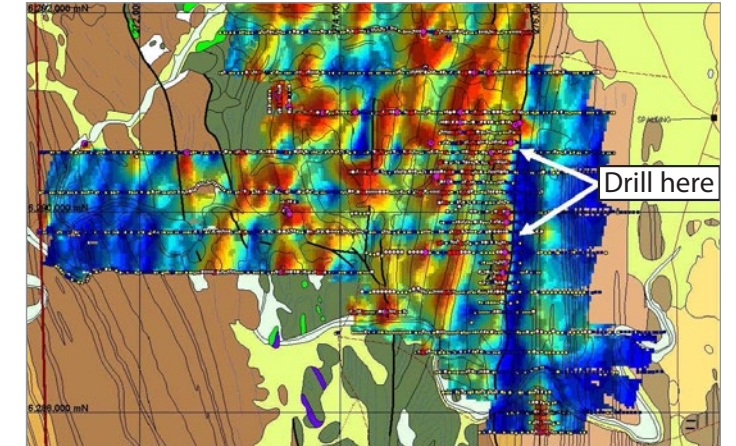
Pass/fail and composition screen

# DELTA® Handheld XRF for Overall Value

## Geochemistry and Mining Exploration



The DELTA analyzer’s metal and light element compositional results can be easily transferred for XRF-GPS-GIS “instant geochemistry.” It provides the ability to map, visualize, assess, and follow-up on targets immediately for better mining exploration decision making.

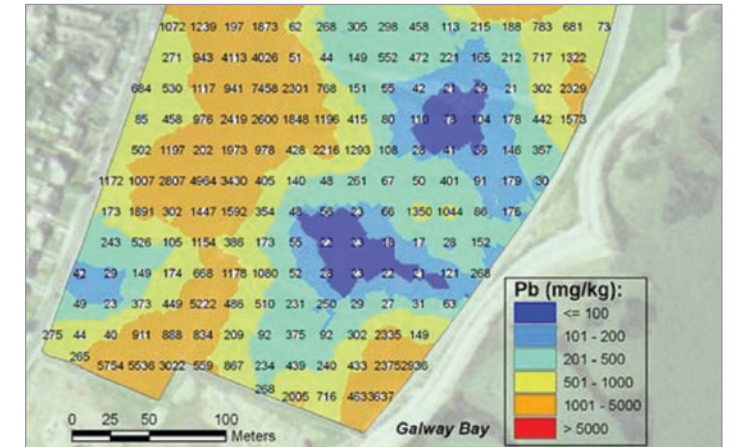


Instant geochemistry for exploration drilling

## Environmental Assessments



Assessments, property evaluations, and contamination tracking.

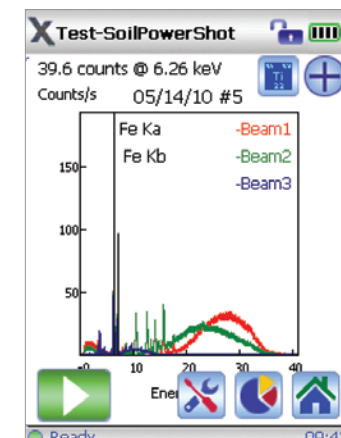


Instant metal mapping for site characterizations

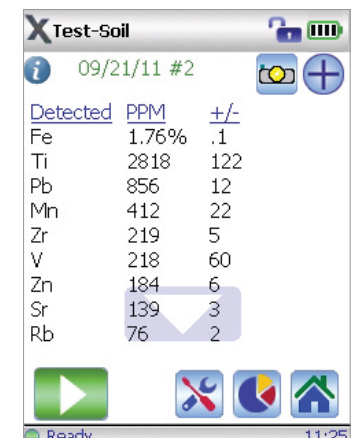
## Research and Education



The DELTA analyzer can provide qualitative and semi quantitative elemental information to guide research and identification of unknown or complex materials. It can provide results fast enough to keep students engaged in applicable science-based projects.



Qualitative analysis for elemental ID



Semi-quantitative analysis of composition



# The DELTA® Series

## Everything You Need in Handheld XRF

DELTA handheld XRF analyzers are ergonomically advanced with a forward looking design incorporating the latest in electronics, components, and software technology.

### Features and Benefits

- Powerful 4 W X-ray tube for optimum element excitation
- Tight geometry for exceptional LODs and fast analysis
- Fast data acquisition for faster testing time
- Floating point processor: provides more calculations in less time and leverages more advanced calibration algorithms
- Analysis indicator lights visible from 360° to help ensure safe use
- Advanced colortouch LCD screen for clarity, brightness, responsiveness, and energy efficiency for indoor/outdoor use
- DELTA PC software for enhanced data analysis, calibration modeling, and optional closed beam workstation operation
- USB interface port for high-speed downloads and seamless PC control
- Ergonomic rubberized handle for enhanced grip
- Hot swap batteries to maximize uptime and productivity

The DELTA X-act Count™ technology can provide even better sensitivity and precision in faster time for more materials than before. Throughput is increased with the same or better precision in half the time for most elements.



The unique DELTA Docking Station frees you from having to power down the analyzer. The station charges the analyzer battery and a spare and performs periodic calibration checks. DELTA analyzers can be operated 24/7 in the field with hot swap battery replacement\*.

\*Available for the DELTA Professional



## Optional DELTA® Accessories

A variety of accessories and options are available to take full advantage of the DELTA handheld XRF in the field. From portable bench-top setups for prepped samples to XRF-GPS-GIS setups for full-scale, large area, in-situ instant metal mapping, these accessories help maximize the efficiency of field XRF testing.



DELTA accessories and options on this page are optional and can be coupled with an initial purchase or at any time after.

### 1. DELTA Portable Workstation

The portable workstation with integrated safety-lock and shielding is convenient for analyzing bagged, prepped, and liquid samples, multiple small objects, and filters or dust wipes. A PC is connected for remote control of this closed-beam DELTA analyzer setup.

### 2. DELTA Holster

The holster keeps the analyzer by your side and within easy reach.

### 3. DELTA Soil Foot

The soil foot provides hands-free analysis with the DELTA analyzer for long testing times.

### 4. DELTA FlexStand

Lightweight, mobile test stand with shielded sample chamber for testing small samples, sample cups, and bagged samples.

### 5. DELTA 50 kV Probe Shield

The safety shield provides additional shielding from open beam radiation for field use of the full 50 kV power.

### 6. DELTA Soil Stick

The soil stick minimizes wear and tear on your back and knees and provides push button operation of the DELTA analyzer from an adjustable height. It's most applicable for in-situ testing on large scale soil geochemistry and environmental programs.

### 7. DELTA Xplorer

The Delta XRF-GPS-GIS Xplorer configuration provides seamless connectivity between XRF and GIS for rapid targeting and real-time decision making.

# DELTA<sup>®</sup> Series



## DELTA Professional

The DELTA Professional provides the best value solution with superior performance in speed, LODs, and elemental range.



## DELTA Element

The entry-level DELTA Element analyzer is built for economy and fast ROI for basic alloy identification and metals analysis.

## DELTA Comparison\*

DELTA Professional	DELTA Element
4 W Ag, Rh, Au, or Ta anode (per application) X-ray tube	4 W Au anode X-ray tube
Silicon Drift Detector	Si-PIN Diode Detector
Alloy and Mining: Mg and up for Rh/Ag and Al and up for Ta/Au; Soil: P and higher	Alloy: Ti and higher
Weight: 1.5 kg (3.25 lbs) without battery	
Dimensions: 260 × 240 × 90 mm (10.25 × 9.5 × 3.5 in.)	
Environmental Temperature Range: -10 °C to 50 °C (14 °F to 122 °F)	
Processing Electronics: 530 MHz CPU with integrated FPU with 128 MB RAM; Proprietary Olympus digital pulse processor (DPP)	
Power: Rechargeable Li-ion battery; Hot-swap maintains analyzer power during battery charge	
Data Display: 32 bit Color QVGA resolution, Blanview transmissive backlit touch screen; 57 × 73 mm (2.25 × 2.9 in.)	
Data Storage: 1 GB microSD™ (stores ~75,000 readings)	
Data Transfer: USB	

## Standard Accessories\*

- Carrying Case
- Li-ion Battery
- Electronic User Manual and User Interface Guide and Printed Quick Start Guide
- Battery Charger
- Mini USB Cable
- 316 Stainless Steel Calibration Check Reference Coin
- Ten (10) Spare Windows
- Integrated Wrist Strap
- DELTA PC Software
- Factory Authorized Training & Support

[www.olympus-ims.com](http://www.olympus-ims.com)

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