



S1 TURBO^{SD}

- for mining applications

The Bruker S1 TURBO^{SD} Handheld Mining Analyzer is a fast and accurate tool for all aspects of mining. Compared to laboratory analysis, its ability to make on-site geochemical analysis of mine face and drill cores boosts productivity by reducing from days to seconds the turnaround times for results. The S1 TURBO's fast, real-time surveys quickly define ore boundaries and identify areas of highest potential profit. Bagged samples can be analyzed later using the bench-top stand.

The key is the Bruker X-Flash[®] Silicon Drift Detector (SDD), which offers count rates and resolution far superior to alternative SiPIN detector technology. Faster analysis is the result. It takes only few seconds to perform a typical mining analysis — that's nearly five times faster than previous generations. In addition, the improved resolution and count rates provide lower detection limits for all analyzed elements. Combine that with multiple calibrations optimized for different types of mining samples and you have one of the most powerful handheld analyzers currently available on the market.

S1 TURBO^{SD} with bench-top stand and sample cup



The S1 TURBO^{SD} SDD extends the range of elements which can be analyzed using portable XRF to include low atomic number elements, such as magnesium, aluminum, silicon, phosphorus, and sulfur. These elements help to more accurately determine mineralogy of the sample and give new valuable information to mining and exploration geologists.

S1 TURBO^{SD} LE's light element capability opens up never before possible mineral and mining applications for handheld XRF. The S1 TURBO^{SD} LE can be used for applications where light element analysis is essential, such as analysis of bauxite ore, limestone or cement.

Typical results screen, including light elements

Mining Light Elements 12:48			
Cu ore 3			
4 Time		30.3 Match	Qual 9.8
02-17-2011 10:55			
El	%	+/-	
Fe2O3	23.600	0.043	
CuO	18.600	0.047	
S	11.000	0.093	
ZnO	2.370	0.017	
SiO2	1.040	0.327	
K2O	0.082	0.031	

An essential part of a successful exploration program includes correlation of analysis data with the exact location of any ore prospecting. During drilling and excavation, combining ore and location information can be used to control the mining process. When used in conjunction with GPS pairing, the Bruker S1 TURBO^{SD} greatly simplifies these tasks by automatically combining location data with measurement results. Paired with a Bluetooth[™] GPS receiver, the S1 TURBO^{SD} can be configured to automatically store latitude, longitude, and altitude coordinates, as well as the analysis data. Coordinates and readings can then be downloaded to a PC and imported into a mine mapping program.

GPS data points downloaded to mapping program



Geological and Ore Exploration

The S1 TURBO^{SD} analyzes the geochemistry of soil, sediment, and drill core samples in the field to guide and expedite ore exploration. Compared to laboratory analysis, handheld XRF provides a huge time savings.

Mine Mapping and Grade Control

The S1 TURBO^{SD} can be used to manage drilling, excavation and transport processes by measuring samples on-site in real-time. The S1 TURBO^{SD} is powerful tool for a real time grade control. Real time grade delineation prevents effectively grade dilution or the erroneous transport of ore to waste.

S1 TURBO^{SD} analyzing drill core samples



Ore-body Assessment

Evaluate ore grade on-site without the delay and cost of laboratory analysis. With the S1 TURBO^{SD}, analysis results are available immediately without the need of expensive and time-consuming laboratory analysis, cutting costs and delays by a factor of ten.

S1 TURBO^{SD} analyzing bagged samples



Analysis of Feeds, Concentrates and Tailings

The S1 TURBO^{SD} can be used to analyze feeds, concentrates, and tailings when monitoring ore enrichment processes, or used as a backup tool for primary on-line process analyzers. The real-time data provided by a S1 TURBO^{SD} can improve quality and productivity.

Reclamation

Reclamation and clean-up of abandoned mining sites requires rapid field decisions to be able to coordinate the process effectively. The S1 TURBO^{SD} provides a fast and inexpensive approach to site characterization for identifying heavy element pollutants in soil. A large number of in situ measurements can be performed quickly, allowing fast pollutant profiling for heavy elements and their levels. By storing GPS coordinates with the data acquired it is possible to quickly map the contaminated area.

On-site soil analysis



Module	S1 TURBO ^{SD}
Weight	2 kg (4.49 lbs) with batteries, 1.77kg (3.9 lbs) base weight
Dimensions	30cm x 10cm x 28cm (11.8in x 3.9in x 11in) L x W x H
Excitation Source	X-ray tube with Ag target; max voltage 40 kV
Filters	Five (5) available automatic filter positions
Detector	10 mm ² X-Flash Silicon Drift Detector
Power	Two Li-Ion batteries; Battery Charger
Operating Range	-10°C to 50°C (+14°F to 122°F)
Calibrations	Mining Element, Soil, MiningOxide, and Mining Oxide HD. Optional: Mining Light Elements
Standard Element Set	Ca, Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Zn, As, Se, Rb, Sr, Zr, Nb, Mo, Rh, Pd, Ag, Cd, Sn, Sb, Ce, Hf, Ta, W, Pt, Au, Hg, Pb, Bi, and U
Optional Element Set	Mg, Al, Si, P, S, K
PDA Display	240 x 320; 65,536 colors; back lit; touch screen
Testing Modes	Assay and Pass/Fail
GPS Coordination	Compatible with Bluetooth GPS Receivers (NMEA protocol). Automatically stores location data, which is correlated with the measurement results
Data Storage	256 MB standard PDA memory, 512 MB Flash Card; 1 GB SD Card optional
Data Transfer	USB; Wireless Bluetooth; SD Card
Radiation Safety	Password protected, No sample (backscatter) shutoff, five minute inactive log-in
Certification	CE, cTUVus, IEC 61010-1:2002 by TÜV SÜD
Languages Supported	English, Chinese, Korean, Japanese, Russian, German, Italian, French, Dutch, Polish, Spanish, Spanish (Mexican), Portuguese
Warranty	Two years (accessories 6 months); one and three year extended warranty optional

Worldwide Service; Local Support

Bruker has been in this business for many years and we understand the critical importance of post-sales service to our clients. We are a company with global scale and presence. Our support staff is always close at hand. That's why we will provide exceptional service on your instrument from a service center close to you. When it comes to service contracts and warranties, we offer the kind of flexibility and coverage that others find hard to match. At any time during your two-year warranty period, you can decide to add extended coverage, either on an annual basis or through a discounted package of coverage for three years. Just let us know what works for you.

www.bruker.com/hhxf ●

Americas

Sales
Billerica, MA · USA
Tel. +1 (978) 663-3660 x1463
hhsales@bruker-elemental.net

Service/Manufacturing
Kennewick, WA · USA
Tel. +1 (509) 783-9850
hhinfo@bruker-elemental.net

Europe / Middle East / Africa

Sales/Service
Bruker Nano GmbH
Berlin · Germany
Tel. +49 (0)30 670 990-0
info-hh@bruker-elemental.com