

PhotonAssay™ Provisional Specifications

This specification sheet summarises performance data for the Chrysos PhotonAssay™ Max and Mine units, targeted at large-scale fire-assay replacement and rapid turn-around, on-site assay applications respectively.

Analysis method

Chrysos' PhotonAssay™ technology is based on the physics principle of gamma activation analysis. A high-energy linear accelerator X-ray source is used to activate large ore samples; the resulting activity is analysed to determine concentrations of gold and other elements. No radioactive isotope sources are used.

The analysis is independent of the physical or chemical form of the samples. A true bulk analysis is performed, with all material in the sample contributing to the reported elemental grade. The analysis is non-destructive, and samples can be retained for further testing is required.

Sample size and presentation

Samples are presented in sealed, bar-coded and tamper-proof plastic jars; they remain in these jars throughout the measurement process. Standard sample jar volumes are either 300 or 600 mL. The corresponding sample mass typically ranges from 0.3-1.0 kg depending on material density.

There are no restrictions on material particle size or the physical form of the sample: pulverised or crushed ore; feed, tailings or concentrate slurries; solutions; and other industrial materials can be measured with equal felicity. Results can be converted back to dry-basis for reporting. There are no particular sample preparation requirements beyond loading of the material to be assayed into the jars provided. If the material being assayed is drawn from a larger lot, then normal sampling considerations apply.

Sample throughput

Throughputs for the PhotonAssay™ Max and Mine systems are up to 80 and 20 samples per hour respectively. Total analysis time is less than 10 minutes for both systems. The analysis process is fully automated from the point of loading packaged sample jars through to result reporting.

Analysis range

Gold can be assayed over the concentration range 0.03 to > 10,000 ppm. Significantly elevated levels of uranium, thorium or barium increase the lower detection limit.

Accuracy

Analysis accuracy is largely independent of the sample's physical form or mineralogical matrix. For gold concentrations significantly above the detection limit, the relative standard deviation is better than 1-3%. Stability is maintained using our patented reference correction method, and by regular comparison to certified standard materials.

Secondary elements

Although developed primarily for gold analysis, Chrysos PhotonAssay™ can be used to determine a range of additional commodity and path-finder elements. Please contact us for enquiries about specific elements.

Availability

PhotonAssay™ Max demonstrations available in late 2017; PhotonAssay™ Mine units from mid-2018.

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