XRF Technique, Reporting, and Sample Information
Fused Bead Analysis

The submission of samples for testing constitutes acknowledgment of the information, sample requirements, and financial responsibility of the submitter which are provided in this document.

General Sample requirements

- 5g of sample is usually sufficient for analysis unless a very high Loss on ignition value is expected.
- Samples must be a relatively fine powder capable of fusion. If the sample is a coarse powder that can be easily ground, it will be ground with a mortar and pestle prior to analysis.
- Samples that consist of hard materials that cannot be easily ground using a mortar and pestle can be ground in a ball mill prior to analysis if requested or required for appropriate preparation, and a milling fee will apply. Milling has a high likelihood of introducing small amounts of Tungsten and other contaminants from the milling media into the sample.
- **Samples that contain metallic fragments, carbide material, or high organic content are NOT suitable for fused bead analysis.** Submission of samples containing any of these materials may result in the destruction of the platinum crucibles and pose a hazard to the equipment and staff.
- Submission of a sample containing any substance that leads to damage of the equipment, knowingly or unknowingly, will result in a fee to cover any damages.
- If the customer cannot ensure that a sample is safe for fusion, additional testing may be required to identify any potential hazards prior to running the sample and will be billed for in addition to the XRF testing. Please contact us before sending if you have any questions.
- The samples will be measured for a loss on ignition at 950^{o}C prior to analysis. If the samples are known to have or contain material with a melting point lower than 950C, it must be noted on the sample submission form or the sample may be destroyed during heating.

Technique Limitations:

- XRF detects the individual element concentrations within the sample between Na and U, but cannot determine the specific compound(s) that those elements may be contained within. Our results are reported based on the *assumption* that all detected elements are present in their common oxide forms since most of the elements present in other compounds will be converted to these forms during fusion.
- Light elements: Elements with an atomic number lower than Sodium (i.e. lithium, boron, carbon…etc.) are not detectable and/or accurately quantifiable with XRF. Samples that mainly consist of light elements should be identified to the best of the sender's ability. If no matrix information is provided and the results indicate there is a significant amount of undetected material, the results will be reported without normalization and may have a lower degree of accuracy without the ability to correct for matrix interference.
- We do not use dedicated platinum ware for general samples. Even with a thorough cleaning procedure in place, there is a chance of low-level carry-over from one sample to the next, especially for common elements such as Ca, Al, Si and Fe. If low-level amounts (<~0.05%) of specific elements are a concern, please let us know upon submission for evaluation of testing applicability.
- The lower detection limit, for optimal sample conditions on a 37mm sample using standard testing parameters, is generally on the order of 50ppm elements heavier than Calcium, and on the order of 500ppm for lighter elements between Na and Ca.
- Samples containing high quantities of compounds that are easily removed during the loss on ignition (i.e. phosphates, sulfates, halides…etc.) cannot always be accurately quantified since some or all of these may burn off upon heating, depending on the compound.

Please submit your samples with the required documents to the following address:

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1301 Whitehorse Mercerville Road
Suite 101
Hamilton, NJ 08619

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