XRF Technique and Sample Submission Information
Pressed Pellets and Bulk Samples

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.

Bulk Samples:

- Samples must be a solid material with a flat surface in order to analyze as bulk material.
- Sample must fit within the sample cups (45mm diameter 50mm tall cylinder) and have a large enough flat surface to cover one of the three opening sizes: 37mm, 27mm and 6mm.

Pressed Pellets:

- A minimum of 5g of dry material is preferred; less than 5g may produce sub-optimal results.
- Samples must be a fine powder. 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 will be ground in a ball mill prior to analysis 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 received with insufficient volume to fill a standard 37mm pellet cup will be treated based upon the total volume sent which may involve forming a smaller pellet, and/or backing the pellet with additional binder, both of which potentially reduce the accuracy/sensitivity of the test.
- Samples that are received wet/damp must be dried prior to analysis. If air drying is insufficient, the sample(s) must be oven dried at a suitable temperature and an oven drying fee will be applied. Drying will increase the standard turnaround time.
- Samples with a high plasticity such as polymers that cannot be ground to a fine powder are not suitable unless they are cryoground prior to sending, or consist of bulk pieces with a flat surface (please inquire about bulk piece analysis as size restrictions apply).
- Samples that cannot be easily ground to a fine powder will produce significantly lower accuracy results in a pressed pellet; fused bead analysis may be preferable if the sample is suitable.
- Samples with a very low density may require additional binding agent to form a pellet which may decrease the sensitivity of the test.

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, unless known compound information is provided/determined with other testing, or different reporting parameters are requested upon sample submission.
- 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.
- 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. Fluoride and oxygen cannot be accurately quantified, but are detectable by XRF in large quantities and estimates of the quantifications can be provided if requested.

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

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Suite 101
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