

ColdBlock in the Mining Sector



ColdBlock sample digestion technology is being used in the mining industry around the world – Canada, US, Europe, S. Africa, Australia, Mexico, Chile, Peru, Bolivia, and Vietnam – in a wide range of mining applications:

- Base metal and complex poly-metallic operations,
- Precious metal operations where it can replace fire assay,
- Lithium mining and processing
- Rare Earth mining and processing
- Uranium mining operations
- Metal Concentrate analysis – grade and penalty elements

Sample digestion is the most time consuming, hazardous, and most labour-intensive step in the assaying process. All ColdBlock methods – base metal, gold, silver, lithium, and other sample types – significantly shorten this process, from hours to minutes, with a simpler, more cost-effective process, that also results in improved workplace safety.

Used by mining labs around the world – faster, simpler, safer, lower-cost

ColdBlock sample digestion methods are developed through an extensive testing and verification process, completed in our in-house lab, often in partnership with leading commercial and industrial laboratories.

ColdBlock Strong Acid Digestion Replaces 4-Acid Methods

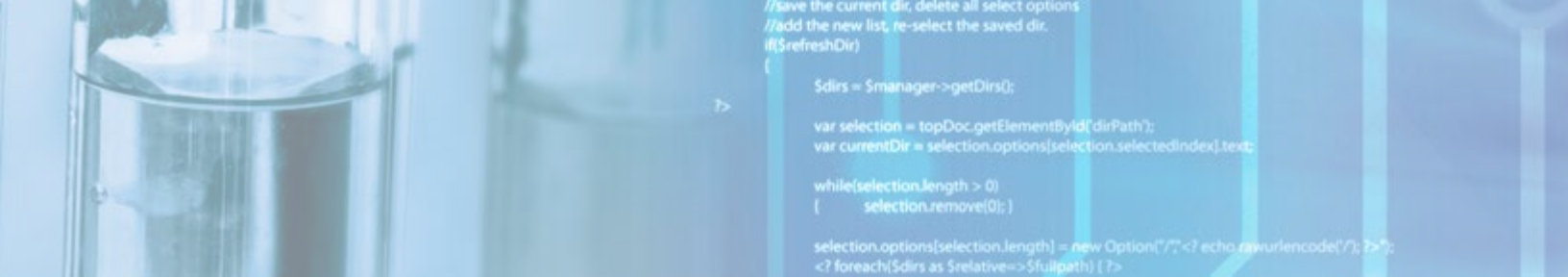
Preparation of many mining sample types (base metal, lithium, uranium, rare earths, among others) is done using a method called 4-Acid Digestion. This industry-standard sample preparation method is used for multi-element analysis of mining samples, from exploration to ores & concentrates. These near-total digestions require the use of 4 acids including hydrochloric, nitric, hydrofluoric, and perchloric acids. 4-Acid Digestion is a lengthy, labor-intensive, expensive method that takes hours to complete.

How much do you pay for 4-acid digestions? How long do you wait for results?

ColdBlock's Strong Acid Digestion method replaces traditional 4-Acid Digestions with a significantly faster process that eliminates the need for hazardous perchloric acid, while maintaining precision and accuracy required across all mining sample types. It is a simple, straight-forward process that:

- Results in a digestion that is equivalent to 4-Acid methods,
- Requires just 30-40 minutes (vs 2-4 hours for traditional four-acid),
- Reduces labour requirements & training, while improving workplace safety.

The ColdBlock Strong Acid Digestion method eliminates the need for perchloric acid, and also neutralizes the small amount of hydrofluoric acid used in the procedure with boric acid – it is simply a safer process. The method still achieves 'near total' sample digestion, with metal analyte recoveries, precision and accuracy across typical exploration and mining sample types, equivalent to traditional 4-acid methods. The method can also reduce the need to



take the sample to 'incipient dryness' eliminating this source of operator error and further reducing digestion time to just 30 minutes.

ColdBlock's Strong Acid Digestion method has been tested against a range of certified reference materials (CRMs) from African Mineral Standards, CDN labs, Geostats, & OREAS. This work, completed and verified by several leading commercial mining labs, shows excellent comparison to certified 4-Acid Digestion results for all CRMs, across all elements of interest including base metals, rare earth elements, battery metal elements like lithium, as well as radioactive elements like uranium & thorium.

Simple Aqua Regia Digestions in a Fraction of the Time

Many mining samples do not require the near-full digestion that 4-Acid and Strong-Acid Digestion methods provide. Sometimes, simple 2- or 3-acid digestions are all that is required for an accurate reading of key elements of interest, such as gold, copper, silver, and many other elements.

The ColdBlock Lab Services team have developed methods using ColdBlock that replace a wide range of simple digestion methods used in Mining. With ColdBlock you get speed and safety, without sacrificing precision, accuracy, or repeatability.



ColdBlock's aqua regia digestion methods for Gold analysis take less than 20 minutes, and ColdBlock digesters can accommodate samples sizes up to

Gold and Silver analysis on sample sizes up to 30g, with results in <20 minutes

30 grams. These methods have been confirmed with testing on over a dozen different certified reference materials (CRMs) and are being used around the world – including leading global commercial laboratories.

Some of our customers have reported that digestion using ColdBlock, followed by analysis using an ICP-MS, results in fast, accurate, repeatable results and has allowed them to reduce or eliminate their dependence on fire assay. They report significantly shorter turn-around times, reduction in lead waste and employee lead-exposure-testing, and a ~50% reduction in cost per sample.

For more information, reach out to us by e-mail at info@coldblock.ca or visit us at www.coldblock.ca.

