

	Geochemistry Global	Doc Type Method Summary Method Code GO_XRF70v Service Testing Issued Date April 2022
Natural Resources	Determination of Base Metals in Sulphide Ores and Process Control Products by Potassium Pyrosulfate Fusion and Xray Fluorescence Spectrometry	Approved by K. Williams

1. Parameter(s) measured, unit(s):

Cobalt (Co), Chromium (Cr), Copper (Cu), Iron (Fe), Manganese (Mn), Molybdenum (Mo), Nickel (Ni), Lead (Pb), Tungsten (W), Zinc (Zn); in %

2. Typical sample size:

0.2g

3. Type of sample applicable (media):

Sulphide Ores/Metal containing samples and Process Control Products

4. Sample preparation technique used:

This method is used to report base metals as a percentage of total sample composition. The metals reported include Cu, Ni, Co, Fe, Pb, Zn, Cr, Mn, Mo and W. Sample preparation involves the fusion of approximately 0.2g of dry material pulp with 5 g of potassium pyrosulfate. The resulting melt is ground and pressed into a pressed pellet.

5. Method of analysis used:

The disk specimen is analyzed by WD XRF spectrometry.

6. Data reduction by:

The results are exported via computer, on line, data fed to the SGS Laboratory Information Management System (SLIM) with secure audit trail

7. Figures of Merit:

This method has been fully validated for the range of samples typically analyzed. Method validation includes the use of certified reference materials, replicates, duplicates and blanks to calculate accuracy, precision, linearity, range, limit of detection, reporting limit, specificity and measurement uncertainty.

The Reporting Limits have been determined as follows:

Element Parameter	Method Reporting Range (%)	Element Parameter	Method Reporting Range (%)
Cu	0.01-100	Zn	0.01-100
Ni	0.01-100	Mo	0.005-100
Co	0.01-100	Mn	0.01-100
Fe	0.02-100	Cr	0.01-100
Pb	0.01-100	W	0.02-100

8. Quality control:

Quality control materials include method blanks, duplicates and reference materials and are randomly inserted with the frequency set according to method protocols at ~11% for ore grade analysis. Quality control materials will also include preparations blanks and replicates if samples have been taken through the sample reduction process. Calibration materials that cover the range upon method set-up; calibration check performed daily.

9. Accreditation:

SGS Natural Resources conforms to the requirements of ISO/IEC 17025. Scopes of Accredited tests are site specific, please visit <https://www.scc.ca/en/search/laboratories>