

# Certificate of Analysis

MEG, LLC

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## Cu.18.01

Certified Reference Material

MEAN = 0.249 % Cu  
95% Confidence = 0.237 to 0.260

MEAN = 0.009 % Mo  
95% Confidence = 0.008 to 0.010

MEAN = 0.044 % AS Cu  
95% Confidence = 0.035 to 0.052

MEAN = 0.046 % QLT Cu  
95% Confidence = 0.038 to 0.055

**Prepared By:** Shea Clark Smith

**Certified By:** Shea Clark Smith, MSc, PG

**Manufactured for:** MEG LABS

**Date of Certification:** Tuesday, February 5, 2019

### Origin of Reference Material:

Certified Reference Material : Cu.18.01

Prepared from assayed drill cuttings from a porphyry copper deposit at Ruth, Nevada

### Method of Preparation:

100 Kg of ore was dried at 100°C for 24 hours, jaw crushed and roll crushed.

The batch was comminuted to powder in a ceramic ball mill for 240 hours

Sizing tests of the final product show greater than 95% pass -177um (-80 mesh).

The standard was packaged in 50 g envelopes, each envelope with a removable sticker-label.

### Method of Analysis:

Sizing tests of the final product show >95% pass -270 um (-55 mesh). Ten samples of the final product were submitted to 10 laboratories for round robin analyses. Total molybdenum and copper concentrations were analyzed by 4-acid digestion / ICP/OES or AAS. Copper solubility was analyzed by sulfuric acid and sodium sulfite digestion followed by AAS. Data reported in percent.

### Summarized Assay Results:

**PROJECT:** Cu.18.01

TOTAL COPPER	Reported in percent	%
DATA POINTS (LAB DATA)		7
MEAN (LAB DATA)		0.25
STANDARD DEVIATION (LAB DATA)		0.01
% RSD		2.3
RANGE OF VALUES - HIGH		0.26
RANGE OF VALUES - LOW		0.24
95% CONFIDENCE LIMITS	0.24 to	0.26

**TOTAL MOLYBDENUM** Reported in percent

<b>DATA POINTS (LAB DATA)</b>	<b>7</b>
<b>MEAN (LAB DATA)</b>	<b>0.009</b>
<b>STANDARD DEVIATION (LAB DATA)</b>	<b>0.000</b>
<b>% RSD</b>	<b>3.2</b>
<b>RANGE OF VALUES - HIGH</b>	<b>0.010</b>
<b>RANGE OF VALUES - LOW</b>	<b>0.009</b>
<b>95% CONFIDENCE LIMITS</b>	<b>0.008 to 0.010</b>

**ACID SOLUBLE COPPER** Reported in percent

<b>DATA POINTS (LAB DATA)</b>	<b>7</b>
<b>MEAN (LAB DATA)</b>	<b>0.044</b>
<b>STANDARD DEVIATION (LAB DATA)</b>	<b>0.004</b>
<b>% RSD</b>	<b>9.5</b>
<b>RANGE OF VALUES - HIGH</b>	<b>0.050</b>
<b>RANGE OF VALUES - LOW</b>	<b>0.037</b>
<b>95% CONFIDENCE LIMITS</b>	<b>0.035 to 0.052</b>

**QUICK LEACH COPPER (QLT)** Reported in percent

<b>DATA POINTS (LAB DATA)</b>	<b>7</b>
<b>MEAN (LAB DATA)</b>	<b>0.046</b>
<b>STANDARD DEVIATION (LAB DATA)</b>	<b>0.004</b>
<b>% RSD</b>	<b>8.8</b>
<b>RANGE OF VALUES - HIGH</b>	<b>0.054</b>
<b>RANGE OF VALUES - LOW</b>	<b>0.041</b>
<b>95% CONFIDENCE LIMITS</b>	<b>0.038 to 0.055</b>

**Statistical Procedures:**

Acceptable assay limits are based on the results of 10 samples shipped to each of 10 laboratories.

Some labs assayed submitted samples twice, in different months, or different years.

The samples were submitted with other MEG standards in randomized order, so that as much as possible, real operating conditions were obtained from the participating laboratories. All of the data were used to determine an acceptable range, based on the mean and standard deviation of the "Lab Average Data". The acceptable reporting range is the "95% Confidence Limit", which is the mean +/- 2 standard deviations. Other statistics are provided to help the user assign viable acceptance

boundaries

Standards with an RSD (Relative Standard Deviation) of near or less than 5% are termed "Certified", while RSD's 5% to 15% are designated "Provisional". RSD's over 15% are "Informational".

**Instructions and Recommendations for Use:**

Submit the entire contents of one 50 g envelope in random locations in the submittal, approximately every 10-20 samples. Use of blanks (samples with "below detection" concentration of analyte) are also recommended, randomly placed every 30-40 samples.

The analytical request should be the same as that used for the round robin assays that generated this certificate.

**Intended Use:**

The standard material can be used to validate the analysis of samples from gold ores with a similar The recommended concentrations and limits for this material are based on multiple assays from several laboratories and reflect a consensus of the inherent chemical concentration. These values are a first attempt at a chemical characterization to which to which later data may be added as experience with the material increases. later data may be added as experience with the material increases.

Slight variations in analytical procedures between laboratories will result in slight biases to the recommended statistical limits.

This standard material is not recommended for method development, nor instrumental calibration.

**Handling Instructions:**

The material is packaged in manila tin-top envelopes for easy open and close use. **The material should be reblended just prior to use in the assay laboratory.** This can be done with a micro-riffle splitter or rubber sheeting. Simple agitation and shaking is not sufficient to rehomogenize prior to

Normal safety precautions for handling powders are recommended. The use of safety glasses, dust inhalation protection, gloves, and a laboratory coat are suggested.

**Safety Notice:**

A Material Safety Data Sheet (MSDS) is not required for this material. This material will not release or otherwise result in exposure to a hazardous chemical, under normal conditions of use. Use regular precautions as for any work with fine powder material.

**Legal Notice:**

This certificate and the referenced material have been prepared with due care and attention. However, MEG, LLC and Ajeet Milliard, PhD, P.G., accept no liability for any decisions or actions taken following the use of this geochemical reference material.

**Assay Data Used to Calculate "True" Copper and Molybdenum Value:**

	Cu (%)	Mo (%)	ASCu (%)	Cu QLT (%)
LAB 1	0.241	0.010	0.037	0.048
LAB 2	0.251	0.009	0.044	0.046
LAB 3	0.248	0.009	0.047	0.043
LAB 4	0.025	0.009	0.043	0.041
LAB 5	0.242	0.008	0.041	0.047
LAB 6	0.252	0.009	0.044	0.047
LAB 7	0.258	0.009	0.050	0.053

**Major Constituents as Oxides**

Average of 10 samples: 4-acid, ICPMS (Total Digestion)

Raw Data:	Al%	Ca%	Fe%	K%	Mg%	Na%	S%	Ti%	Si%
ICP/MS Data (n=10)	5.76	1.36	4.25	4.31	0.67	0.65	2.05	0.17	
Conversion Factor	1.8899	1.3992	1.4297	1.2046	1.6579	1.348	2.4953	1.6681	2.1392
<b>% Oxide:</b>	<b>Al<sub>2</sub>O<sub>3</sub></b>	<b>CaO</b>	<b>Fe<sub>2</sub>O<sub>3</sub></b>	<b>K<sub>2</sub>O</b>	<b>MgO</b>	<b>Na<sub>2</sub>O</b>	<b>SO<sub>3</sub></b>	<b>TiO<sub>2</sub></b>	<b>SiO<sub>2</sub></b> estimated
	<b>10.89</b>	<b>1.90</b>	<b>6.08</b>	<b>5.19</b>	<b>1.11</b>	<b>0.88</b>	<b>5.12</b>	<b>0.28</b>	<b>68.56</b>

**Participating Laboratories:**

- |                             |                         |
|-----------------------------|-------------------------|
| American Assay Labs, Sparks | BV-Inspectorate, Sparks |
| Activation Labs, Ancaster   | MS Analytical           |
| Activation Labs, Kamloops   | McClelland, Reno        |
| ALS, Loughrea               | Skyline, Tucson         |
| ALS, Vancouver              | SGS, Burnaby            |

Certified By:   
Ajeet Milliard, PhD, P.G.