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# Certificate of Analysis

## Sulfide in Soil

**Catalog Number:** SQCI-018

**Lot Number:** S0824

**Manufactured Date:** 08/20/24

**Certified Date:** 08/20/24

**Expiration:** 08/31/2026

**Matrix:** Dilute NaOH

**Hazards:** Irritant

<u>Analyte</u>	<u>Study Mean</u> (mg/kg)	<u>Certified Concentration</u> (mg/kg)	<u>Acceptance Limits</u> (mg/kg)
Sulfide	95.7	146 ± 1.36	47.7 - 161

This QC sample contains acid-soluble Sulfide.

This certified reference material (CRM) was manufactured and certified by NSI Lab Solutions following quality procedures meeting the requirements of ISO/IEC 17034:2016 and ISO/IEC 17025:2017. Our certificates and scopes of accreditation may be viewed at [www.anab.org](http://www.anab.org). Acceptance limits are based on three standard deviations around the biweight study mean. The certified concentration is the gravimetric true value determined during manufacture, masses traceable to NIST. The study mean is set at the mean of an interlaboratory proficiency testing study with outlier rejection. This CRM is intended to be used to validate analytical methods, for detection limit studies, and analyst proficiency testing.

### Storage & Instructions For Use

**Required storage condition is 2-8°C. Keep away from light.**

Weigh 25 g of the blank soil and place in extraction vessel.

Open ampule and add exactly 1 mL of solution directly to the blank soil.

The sample is now ready for immediate analysis.

Use an appropriate extraction and analytical method for Sulfide, assuming a 25 g sample will contain sufficient Sulfide for determination.

QC sample has been buffered to stabilize Sulfide. Some methods may require a pH adjustment to 7 prior to analysis.

Report results as mg/kg based on 25 g of soil. Do not correct for matrix spike recovery bias.

### Traceability Information

**Analyte Source Materials:** All analytes and matrix materials are obtained and verified by NSI from pre-qualified vendors as per ISO guidelines. Vendor identifications are proprietary, however sources of all materials used in the preparation and testing of NSI CRMs are tracked and documented.

**Method of Preparation:** This CRM was verified analytically. Clean laboratory procedures and techniques have been used throughout the preparation. All materials, equipment, and analytical instrumentation have been qualified prior to use as per ISO/IEC 17025 requirements.

**Balance:** All analytical balances are calibrated on a semiannual basis by an ISO/IEC 17025 accredited calibration laboratory and are traceable to NIST. Traceable Calibration Certificate available upon request.

All balances are checked daily by an in-house standard operating procedure. The weights used for this daily verification are calibrated annually by an ISO/IEC 17025 accredited calibration laboratory and are certified traceable to NIST.

Certificate of Calibration and Traceability available upon request.



ISO 9001:2015 UL Registered Firm - Certificate # 10002343 QM15

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**Thermometer:** All thermometers are NIST traceable through thermometers that are calibrated annually by an ISO/IEC 17025 accredited calibration laboratory.

**Glassware:** All glassware used in the manufacture of our CRMs is Class A. An in-house standard operating procedure is used to verify all glassware prior to it being placed into service. Volumetric pipetors are calibrated every four months by an ISO/IEC 17025 accredited calibration laboratory.

#### **Intended Uses**

- Calibration of analytical instruments
- Validation of analytical methods
- Preparation of working level reference materials, i.e. "check standards"
- Detection limit studies

#### **Homogeneity/Stability/Expiration**

This CRM was thoroughly mixed in production. Batch homogeneity was established through analyses of samples chosen at random. The stability of this quality control sample is based on short-term and long-term monitoring of the certified concentration. The expiration date is guaranteed to be valid from the manufacture date and is based on results of long-term monitoring.

#### **Uncertainty**

The  $\pm$  uncertainty associated with the certified concentration is the expanded uncertainty at 95% confidence interval (CI) with  $K=2$ . This expanded uncertainty incorporates contributions from manufacturing, homogeneity, shipping and long-term stability.

*Ewart Morris*

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Ewart Morris, Inorganics Technical Manager

*Quentisha Forrester*

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Quentisha Forrester, Quality Lead