



Certificate of Analysis

CERTIFIED REFERENCE MATERIAL

VeriSpec® Solution of Copper(Cu) concentration 1000 ppm Matrix: 2% HCl for AAS

Lot Number 8403023 Product Number: RV010015-100N

Manufacture Date: Mar-25-2024

Expiration Date: Apr 2027

Component	Certified Value	Uncertainty	Starting Material	Traceability
Cu	1002.6 ppm ^(y)	±2.8 ppm	CuCl ₂	NIST SRM No 3114 Lot 120618; NIST SRM No 3168a Lot 120629

Method(s) of certification used:

(y) WQP 5.15.1.24

The certified value was obtained by a weighted mean of the results of two independent testing methods among: Classical Volumetric, Primary Gravimetric, Instrumental (ICP/OES, ICP/MS or IC)

Concept of certification and traceability statement:

This certified reference material is produced using a high-purity starting material, acid from sub-boiling and 18 MOhm deionized water. The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k = 2, which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty of measurement has been determined in accordance with EA 4/02

Property of the result of a measurement whereby it can be related to stated references, usually national or international standards, through an unbroken chain of comparisons all having stated uncertainties (ISO VIM)

The metrological traceability is assured using certified reference material traceable to SI of NIST (SRM) and of accredited according to ISO/IEC 17025 and/or ISO 17034 laboratories/producers. All contributions in relation to the certification of standard solutions are considered when evaluating the uncertainty.

The measurement results are traceable to SI. All analytical balances used for the preparation of the solution are calibrated yearly under an in-house procedure with analytical weights, traceable to DKD and are daily checked.

Class A laboratory glassware is used.

The results from temperature measurement are traceable to SI. The thermometers used for solution's calibration are calibrated from an ISO 17025 accredited laboratory. The ambient conditions are controlled with a hygrometer calibrated from an ISO 17025 accredited laboratory.

Level of homogeneity:

The material was tested for homogeneity by analyzing randomly selected samples according to an in-house procedure. The level of homogeneity proved satisfactory for a sample volume of 20 ml. The uncertainty incorporates the sample standard deviation combined with the uncertainty calculated from homogeneity and stability studies.

To ensure sufficient homogeneity of the sample prior to use thoroughly mix by inversion.

Intended use:

For Laboratory Use Only

This CRM is intended for:

- Calibration of AAS
- Validation of analytical methods
- Preparation of "working reference samples"
- Detection limit and linearity studies

This statement is not intended to restrict the use for other purposes.

Instructions for the correct use of this reference material:

This certified reference material can be used directly or can be diluted in an appropriate high-purity matrix. Only a clean class A glassware should be used. Do not pipet from container. Obtained concentration (in mg/l) after dilution is a result from the multiplication of certified value of CRM concentration and the CRM's volume used for dilution and divided into the flask's volume used for dilution.

Hazardous situation:

The normal laboratory safety precautions should be observed when working with this RM. Further details for the handling of this RM are available as safety data sheet.

Stability and storage:

This CRM is with a guaranteed stability until ±0.5% of the certified concentration within its shelf-life. Stability is guaranteed provided that the solution is kept in its original packaging, tightly closed under normal laboratory conditions

Part Number	Size / Package Type	Shelf Life (Unopened Container)
RV010015-100N	100 mL natural PE	36 months

Recommended Storage: 15°C - 30°C (59°F - 86°F)

Certifying Officer:



P. Steven Donmoyer
Technical Services Manager

This Certified Reference Material was produced under a quality management system that is accredited to ISO/IEC 17025 and ISO 17034.

This Certificate of Analysis is designed to comply with ISO Guide 31 "Reference Materials -- Contents of Certificates and Labels."