

PerkinElmer TruQms

Atomic Spectroscopy Standard



Certificate of Analysis

PerkinElmer Number: N8145051

Description: NexION Setup Solution

Matrix: 1% HNO₃

Lot Number: 36-47GSX1

Certification Date: MAR -- 2021

Expiration Date: SEP 30 2022

*** Instrumental Analysis using NexION 350D Mass Spectrometer:**

Analyte	Labeled	Measured	SRM	Analyte	Labeled	Measured	SRM
Be	1.00 µg/L	1.01 µg/L	3105a*	Li	1.00 µg/L	1.01 µg/L	3129a*
Ce	1.00 µg/L	1.01 µg/L	3110*	Mg	1.00 µg/L	1.01 µg/L	3131a*
Fe	1.00 µg/L	1.01 µg/L	3126a*	Pb	1.00 µg/L	1.01 µg/L	3128*
In	1.00 µg/L	1.01 µg/L	3124a*	U	1.00 µg/L	1.00 µg/L	3164*

* - indicates NIST SRM

† - indicates CRM (when NIST SRM is not available)

Reference Multi: Lot# ALL8, 36-8GS

Refer to side 2 for details of certification.

Trace Metallic Impurities in the Actual Solution via ICP/ICP-MS Analysis:

Element	µg/L	Element	µg/L	Element	µg/L	Element	µg/L	Element	µg/L
Ag	<0.01	Cu	<0.01	La	<0.01	Rb	<0.01	Tb	<0.01
Al	<0.03	Dy	<0.01	Lu	<0.01	Re	<0.01	Te	<0.01
As	<0.01	Er	<0.01	Mn	<0.01	Rh	<0.01	Th	<0.01
Au	<0.01	Eu	<0.01	Mo	<0.01	Ru	<0.01	Ti	<0.01
B	<0.01	Ga	<0.01	Na	<0.03	Sb	<0.01	Tl	<0.01
Ba	<0.05	Gd	<0.01	Nb	<0.01	Sc	<0.01	Tm	<0.01
Bi	<0.01	Ge	<0.01	Nd	<0.01	Se	<0.01	V	<0.01
Ca	<0.1	Hf	<0.01	Ni	<0.01	Si	<5	W	<0.01
Cd	<0.01	Hg	<0.01	P	<10	Sm	<0.01	Y	<0.01
Co	<0.01	Ho	<0.01	Pd	<0.01	Sn	<0.01	Yb	<0.01
Cr	<0.01	Ir	<0.01	Pr	<0.01	Sr	<0.01	Zn	<0.03
Cs	<0.01	K	<0.1	Pt	<0.01	Ta	<0.01	Zr	<0.01

Balances are calibrated with weight sets traceable to NIST.

We guarantee that our PerkinElmer TruQms Atomic Spectroscopy Standards are stable and accurate to ± 5% of certified concentration until the expiration date, provided the standards are kept tightly capped and stored under normal laboratory conditions. This value is the sum of cumulative errors associated with the analytical determinations, pipetting, and diluting to final volume. For these solutions we use high purity acids, ASTM Type I water (18 megohm double deionized), and leached, triple-rinsed bottles. All glassware used is class A.



Certifying Officer:

Y. Parikh

PerkinElmer®

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Details of Certification

This Certified Reference Material (CRM) has been prepared and certified under an ISO 9001 system consistent with the following guides:

Guide To The Expression Of Uncertainty In Measurement 2008

EURACHEM/CITAC Guide: Quantifying Uncertainty in Analytical Measurement - Third Edition

ISO 17034: General requirements for the competence of reference material providers

ISO/IEC 17025: General requirements for the competence of testing and calibration laboratories

ISO Guide 30: Reference Materials - Selected terms and definitions

ISO Guide 31: Contents of certificates of reference materials

NIST Technical Note 1297: Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results

Instructions for Use:

Primary usage of this CRM is in neat form or by serial dilution with a matrix of purity at or greater than the purity of the original matrix solution. If dilution is required the diluent must be compatible with all present certified analytes and contain stabilizers appropriate for the period of intended use. The CRM can also be used as a spike or with a spike, again with appropriate compatibility considerations. All solutions should be thoroughly mixed, by shaking, prior to use and never pipetted directly from the bottle. All surfaces that come in contact with the solution must be thoroughly cleaned and leached prior to use. Dilutions should be performed only with Class A volumetric glassware.

Method of Preparation:

Clean laboratory practices and techniques have been used throughout the preparation. All materials, equipment, analytical instrumentation and personnel have been qualified prior to use. The highest purity acids applicable, 18 megohm double deionized water, acid-leached triple-rinsed bottles, and Class A glassware have been used in all preparations.

Homogeneity:

Random, replicate samples of the final packaged material have been analyzed to prove the homogeneity in accordance with our internal procedures. This is consistent with the intended use of the Certified Reference Material.

Statistical Estimator and Confidence Limits:

The certified value 'x' listed on the reverse of this document is at the 95% level of confidence and can be expressed as:

$X = x \pm U$, where X = True value (Labeled Value), U = Expanded uncertainty

$U = k u_c$, where $k=2$ is the coverage factor at the 95% confidence level

u_c is obtained by combining the individual element standard uncertainty components u_i and $u_c = \sqrt{\sum u_i^2}$