Product Information Sheet

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INORGANIC VENTURES is accredited to ISO 17034, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).

ACCREDITED Testing Laboratory Certificate 883.01
ACCREDITED Reference Material Producer Certificate 883.02

2.0 PRODUCT DESCRIPTION

Product Code:	Ionization Buffer
Catalog Number:	CSN-ISB
Lot Number:	U2-CS732333
Matrix:	0.1% (v/v) HNO3
Value / Analyte(s):	10 000 µg/mL ea: Cesium
Starting Material:	Cesium Nitrate
Starting Material Lot#:	S2-CS702896
Starting Material Purity:	99.9978%

3.0 PROPERTY VALUES

Nominal Value:	10 000 µg/mL
Density:	1.009 g/mL (measured at 20 ± 4 ºC)

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

CRM/RMs are tested for trace metallic impurities by Axial ICP-OES and ICP-MS. The result from the most sensitive method for each element, is reported below. Solutions tested by ICP-MS were analyzed in an ULPA-Filtered Clean Room. An ULPA-Filter is 99.9985% efficient for the removal of particles down to 0.3 µm.

M	Ag	<	0.001000	M	Eu	<	0.000500	O	Na		0.031000	M	Se	<	0.004500	O	Zn		0.015000
O	Al		0.013000	O	Fe		0.000470	M	Nb	<	0.000500	O	Si	<	0.015000	M	Zr	<	0.001000
M	As	<	0.001500	M	Ga	<	0.000500	M	Nd	<	0.000500	M	Sm	<	0.000500				
M	Au	<	0.004500	M	Gd	<	0.000500	O	Ni	<	0.001200	M	Sn	<	0.001000				
O	B	<	0.004500	M	Ge	<	0.001500	M	Os	<	0.000500	O	Sr		0.000760				
O	Ba		0.006000	M	Hf	<	0.000500	O	P	<	0.032000	M	Ta	<	0.000500				
O	Be	<	0.000110	M	Hg	<	0.003000	M	Pb	<	0.001500	M	Tb	<	0.000500				
M	Bi	<	0.002000	M	Ho	<	0.000500	M	Pd	<	0.000500	M	Te	<	0.003000				
O	Ca		0.001500	M	In	<	0.000500	M	Pr	<	0.000500	M	Th	<	0.000500				
M	Cd	<	0.000500	M	Ir	<	0.000500	M	Pt	<	0.000500	M	Ti	<	0.001500				
M	Ce	<	0.000500	O	K		0.014000	M	Rb		0.210000	M	Tl		0.047000				
M	Co	<	0.000500	M	La	<	0.000500	M	Re	<	0.000500	M	Tm	<	0.000500				
M	Cr	<	0.001500	O	Li		0.000230	M	Rh	<	0.000500	M	U	<	0.001000				
s	Cs	<		M	Lu	<	0.000500	M	Ru	<	0.000500	M	V	<	0.000500				
M	Cu	<	0.002500	O	Mg		0.000120	O	S		0.015000	M	W	<	0.001000				
M	Dy	<	0.000500	M	Mn	<	0.000500	M	Sb	<	0.001500	M	Y	<	0.000500				
M	Er	<	0.000500	M	Mo	<	0.000500	M	Sc	<	0.000500	M	Yb	<	0.000500				

M - Checked by ICP-MS O - Checked by ICP-OES i - Spectral Interference
n - Not Checked For s - Solution Standard Element

6.0 INTENDED USE

- This solution is a reagent and is not intended to be used as a certified reference material.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

Atomic Weight; Valence; Coordination Number; Chemical Form in Solution - 132.91 +1 (6) Cs+(aq)
Chemical Compatibility -Soluble in dilute HCl, HNO3, H2SO4 and HF aqueous matrices. Stable with most metals and
Stability - 2-100 ppb levels stable for months in 1% HNO3 / LDPE container. 1-10,000 ppm solutions chemically stable for years
Cs Containing Samples (Preparation and Solution) -Metal (dissolves very rapidly in water); Ores (sodium carbonate

Atomic Spectroscopic Information (ICP-OES D.L.s are given as radial/axial view):

Technique/Line	**Estimated D.L.**	**Order**	**Interferences** (underlined indicates severe)
ICP-MS 133 amu	1.7 ppt	n/a	117Sn16O
ICP-OES 455.531 nm	100/ 2 µg/mL	1	Cr, U, Ce, Ti

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.3 ISO 17034 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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11.0 ISSUE DATE, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Issue Date

May 01, 2023

- The information is valid provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This property value is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- **May 01, 2028**

- The date after which this CRM/RM should not be used.
- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

- This CRM/RM should not be used after the date given in Sec. 11.2. This is contingent upon the CRM/RM being stored and handled in accordance with the instructions given in Sec. 7.1.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Prepared By:

Uyen Truong
Product Documentation Supervisor

Certificate Approved By:

Nicholas Plymale
Lead Quality Control Technician

Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director