PerkinElmer Pure

PerkinElmer Number: N9300173
Lot No: 25-42CRY1
Element and Matrix: 1000 µg/mL Chromium in 2% HNO3
Certification Date:
Starting Material: Chromium(III) Nitrate Nonahydrate
Expiration Date:
Starting Material Lot No: 03161L
Density: 1.012 g/mL @ 20°C

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

Element	µg/mL	Element	µg/mL	Element	µg/mL	Element	µg/mL	Element	µg/mL
Ag	0.02	Dy	<0.001	Li	<0.001	Pt	<0.001	Tb	<0.001
Al	0.004	Er	<0.001	Lu	<0.001	Rb	0.02	Te	<0.001
As	0.008	Eu	<0.001	Mg	0.002	Re	<0.001	Th	<0.001
Au	<0.001	Fe	0.03	Mn	<0.001	Rh	0.002	Ti	<0.001
B	<0.001	Ga	0.003	Mo	<0.001	Ru	0.01	Tl	0.008
Ba	<0.001	Gd	<0.001	Na	0.3	Sb	<0.001	Tm	<0.001
Be	<0.001	Ge	<0.002	Nb	0.002	Sc	<0.001	U	<0.001
Bi	<0.001	Hf	<0.001	Nd	<0.001	Se	<0.06	V	0.003
Ca	0.02	Hg	<0.001	Ni	<0.001	Si	<0.1	W	<0.001
Cd	<0.001	Ho	<0.001	P	<0.2	Sm	<0.001	Y	<0.001
Ce	<0.001	In	<0.001	Pb	<0.001	Sn	<0.001	Yb	<0.001
Co	<0.001	Ir	<0.001	Pd	<0.001	Sr	<0.001	Zn	0.02
Cs	<0.001	K	0.01	Pr	<0.001	Ta	<0.001	Zr	<0.001
Cu	0.004	La	<0.001						

Traceability Documentation for Solution Standard:

Certified Value: 1001 µg/mL ±5 µg/mL (refer to side 2)

Certified Value is Traceable to: NIST SRM #3112a

*** Classical Wet Assay:** 1001 µg/mL

Method: Precipitation using Ammonium Hydroxide. Filter, ignite, and weigh as Cr2O3.

***Instrument Analysis using ICP Spectrometer:** 1000 µg/mL
via NIST SRM #3112a

We guarantee that our PerkinElmer Pure Atomic Spectroscopy Standards are stable and accurate to ±0.5% 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 1 water (18 megohm double deionized), and leached, triple-rinsed bottles. All glassware used is class A.

Certifying Officer: Y. Parikh
Yogesh Parikh, Senior Spectroscopist

This Certified Reference Material (CRM) has been prepared and certified under an ISO 9001:2015 (Certificate No. 10002793 QM15), ISO/IEC 17025:2017 (Certificate No. 2495.02) and ISO 17034:2016 (Certificate No. 2495.01) quality system consistent with the following guides. This CRM was produced by an A2LA accredited reference material producer.

- ISO 9001: Quality management systems – Requirements certified by DQS
- ISO/IEC 17025: General requirements for the competence of testing and calibration laboratories – accredited by A2LA
- ISO 17034: General requirements for the competence of reference material producers – accredited by A2LA
- ISO Guide 31: Reference Materials: Contents of certificates and labels
- ISO Guide 35: Reference Materials: General & Statistical Principles for Certification
- Guide to the Expression of Uncertainty in Measurement 2008
- EURACHEM/CITAC: Quantifying Uncertainty in Analytical Measurement-Third Edition
- NIST Technical Note 1297

Instructions for Use:

Primary usage of this CRM is in neat form or diluted serially with matrix of a purity at or greater than the purity of the original matrix solution. If dilution is required the diluent must be compatible with all certified analytes and contain stabilizers appropriate for the period of intended use. Dilutions should be performed only with Class A volumetric flasks. The CRM can also be used as a spike, or with a spike, again with the 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.

Method of Preparation:

Clean laboratory procedures 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 (where appropriate), and Class A/calibrated volumetrics have been used in all preparations.

Material Source:

All analytes and matrix materials are obtained and verified from pre-qualified vendors as per ISO 9001, ISO/IEC 17025, and ISO 17034 guidelines. Vendor identifications are proprietary; however sources of all materials used in the preparation and testing of CRMs are tracked and documented.

Homogeneity:

The homogeneity of the CRM has been confirmed by procedures consistent with ISO/IEC 17025, and ISO 17034. Random, replicate samples of the final, packaged material have been analyzed to prove homogeneity in accordance with internal procedures. Since the product is highly homogeneous, any sample size taken for analysis would be within the uncertainty budget. This is consistent with the intended use of the CRM.

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 = certified value, U = expanded uncertainty, x = property value
- $U = ku$ 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 $u_c = \sqrt{\sum u_i^2}$

During the stated period of validity, the purchaser will be notified if this product is recalled due to any significant changes in the stability of the solution.

Legal Notice:

Product intended for laboratory use only. PerkinElmer warrants that its products conform to the information contained in this publication. Purchaser must determine the suitability of the product for its particular use. Please see the latest catalog or order invoice and packing slip for additional terms and conditions of sale.