

Inorganic Standards

- Assurance[®] and Claritas PPT[®] grade inorganic standards
- Manufactured by experienced chemists to ensure the highest quality standards



Inorganic Standards

Spex CertiPrep was founded in 1954 to provide superior Certified Reference Materials (CRMs) for spectroscopy and chromatography. Since that time, we have made it our business to supply CRMs for many different types of instrumentation. We offer a full range of inorganic standards, both Assurance and Claritas PPT®, for your ICP and ICP-MS analysis. Custom inorganic standards are also available. We have built our reputation by providing chemists and environmental scientists products that exhibit quality, reliability and convenience. Your science is our passion®.

DQS and A2LA Stamp of Approval

- Certified to DQS to ISO 9001:2015
- Accredited by A2LA to ISO/IEC 17025:2017 and ISO 17034:2016

Features of Spex CertiPrep Inorganic Standards

- 99% of stock orders ship within 24 to 48 hours
- Single-element standards available in 1 µg/mL, 10 µg/mL, 1,000 µg/mL, 30 mL, 125 mL for Claritas PPT® grade standards as well as 1,000 µg/mL, 10,000 µg/mL, 30 mL, 125 mL, 250 mL, and 500 mL for Assurance® grade standards
- Inorganic multi-element standards for the latest EPA methods
- Custom standards manufactured and shipped within 5 to 7 business days
- Traceable to NIST SRM
- High purity acid grade for Assurance® grade standards and ultra high purity grade acid for Claritas PPT® grade standards
- Analytical range for use at ppb for Assurance® grade standards and at ppt for Claritas PPT® grade standards
- 68 trace metal impurities measured on Certificate of Analysis measured to µg/mL
- Dedicated technical support to answer your CRM and lab questions



Inorganic Certified Reference Materials



Designed for use with ICP and ICP-MS



Supplied with a Certificate of Analysis



ISO Accredited Standards

Inorganic Standards

Inorganic standards can be used for:

- AA Atomic Absorption
- ICP Inductively Coupled Plasma
- ICP-MS Inductively Coupled Plasma-Mass Spectrometry

Value of Spex CertiPrep

- Provide the highest quality standards available
- Uncertainty of standards is reported on the Certificate of Analysis
- Weights used are traceable to NIST
- Manufactured by experienced chemists to ensure highest quality standards

Inorganic Standards

IC Standards

Ion Chromatography is an analytical process for the separation of ions based on charge affinity. Ion Chromatography can be used for a variety of different kinds of charged molecules from large proteins to amino acids. In order to ensure accurate analysis, quality standards, which are traceable and stable, are necessary. We offer the highest quality IC standards available for the analytical laboratory.

ICP Standards

Assurance® grade standards are designed for ICP analysis. They are available in single and multi-element formulations. Over 70 single-element standards are available at 1,000 µg/mL or 10,000 µg/mL. Multi-element standards include calibration test solutions, instrument performance standards, drinking water metals, and interference check standards.

Inorganic Standards

Inorganic Standards (continued)

ICP-MS Standards

Claritas PPT® grade standards are designed for ICP-MS analysis, and can also be used for ICP-OES analysis. They are available in single and multi-element formulations. The standards are available at 1 µg/mL or 1,000 µg/mL and are packaged in 30 mL or 125 mL bottles to minimize contamination. They are made using high purity acids, the highest grade starting materials, and high purity water to minimize potential contaminants. A one-step dilution to ppb levels reduces dilution errors.

USP <232> and USP <233> Elemental Impurity Standards

The USP Metal Impurities Expert Panel has proposed new limits on the elemental impurities in pharmaceutical products based on concerns surrounding potential health toxicity. Spex CertiPrep USP <232> (limits) and USP <233> (procedures) parts can be used “as is” as a calibration or check standard to verify Oral Daily Dose PDE or diluted as needed for Parenteral Component Limit or Parenteral Daily Dose.

Organometallic Oil Standards

Spex CertiPrep offers a wide range of organometallic oil standards in both single and multi-element blends. They come in convenient 50 g or 100 g sizes in a transparent matrix. Guaranteed to be stable and accurate.

CLP Standards

Our CLP standards are used in conjunction with the Statement of Work for Inorganic Analysis; Multi-Media/Multi-Concentration Document Number ILM05.3/ISM01.2.

Carbon Black

Standardized iodine solution and standardized sodium thiosulfate solution are the required reagents for Carbon Black Testing - Iodine Adsorption Number (ASTM Method D1510). Carbon black is an almost pure form of elemental carbon used in a wide variety of applications.

Inorganic Standards

Inorganic Standards (continued)

pH Buffers

Accurate and certified to ISO/IEC 17015:2017 and ISO 17034:2016 requirements. Buffers pH 2 through pH 12 are conveniently packaged in 500 mL bottles. We manufacture our buffers using high quality starting materials and ASTM Type I Water, and are thoroughly analyzed for certified values and homogeneity. Buffers are accurate, premium grade for calibration and quality control checks.


Custom Standards




At Spex CertiPrep, we stock thousands of high purity components for use in inorganic and organic certified reference materials. These are available as single-component standards or blends. If you do not see a stock product that suits your needs, our chemists can prepare any multi-component standard for you. Send us your list of components, concentrations and matrices and our laboratory will confirm compatibility and stability.

Inorganic Certificate of Analysis

Every manufacturer of Certified Reference Materials supplies a Certificate of Analysis with their product. However, not all certificates are alike. We know because Spex CertiPrep has been supplying the most comprehensive certificate in the industry for years. Many other companies have followed, but no one gives you the information you get from us. We have highlighted why our certificate is the best and what you should look for in a Certificate of Analysis (see example on the following page).

Inorganic Standards



Catalog Number: CLMS-2N
Description: Multi-element Solution 2
Matrix: 5% HNO3

Lot No. CL5-199MKBY

The **CLARITAS PPT®** Certified Reference Material, CRM, is intended primarily for use as a calibration standard or quality control standard for inorganic spectroscopic instrumentation such as ICP-OES, DCP, AA, ICP-MS, and XRF. It can be employed in US EPA, ASTM and other methods relevant to the certified properties listed below.

The CRM is prepared from high purity single-element concentrates of individual elements using Class A laboratory ware to give precise concentrations. See side 2 for details of certification.

Instrumental Analysis by ICP Spectrometer:

| Analyte | Labeled | Certified | Uncertainty | SRM | Analyte | Labeled | Certified | Uncertainty | SRM |
|---------|----------|------------|--------------|--------|---------|----------|------------|--------------|--------|
| Ag | 10 µg/mL | 9.89 µg/mL | ± 0.05 µg/mL | 3151* | K | 10 µg/mL | 9.89 µg/mL | ± 0.05 µg/mL | 3141a* |
| Al | 10 µg/mL | 9.89 µg/mL | ± 0.05 µg/mL | 3101a* | Li | 10 µg/mL | 9.99 µg/mL | ± 0.05 µg/mL | 3129a* |
| As | 10 µg/mL | 9.92 µg/mL | ± 0.05 µg/mL | 3103a* | Mg | 10 µg/mL | 9.98 µg/mL | ± 0.05 µg/mL | 3131a* |
| Ba | 10 µg/mL | 9.98 µg/mL | ± 0.05 µg/mL | 3104a* | Mn | 10 µg/mL | 9.99 µg/mL | ± 0.05 µg/mL | 3132* |
| Be | 10 µg/mL | 10.0 µg/mL | ± 0.05 µg/mL | 3105a* | Na | 10 µg/mL | 9.91 µg/mL | ± 0.05 µg/mL | 3152a* |
| Bi | 10 µg/mL | 9.97 µg/mL | ± 0.05 µg/mL | 3106* | Ni | 10 µg/mL | 9.95 µg/mL | ± 0.05 µg/mL | 3136* |
| Ca | 10 µg/mL | 9.94 µg/mL | ± 0.05 µg/mL | 3109a* | Pb | 10 µg/mL | 9.91 µg/mL | ± 0.05 µg/mL | 3128* |
| Cd | 10 µg/mL | 9.95 µg/mL | ± 0.05 µg/mL | 3108* | Rb | 10 µg/mL | 9.93 µg/mL | ± 0.05 µg/mL | 3145a* |
| Co | 10 µg/mL | 9.95 µg/mL | ± 0.05 µg/mL | 3113* | Se | 10 µg/mL | 9.98 µg/mL | ± 0.05 µg/mL | 3149* |
| Cr | 10 µg/mL | 9.93 µg/mL | ± 0.05 µg/mL | 3112a* | Sr | 10 µg/mL | 9.97 µg/mL | ± 0.05 µg/mL | 3153a* |
| Cs | 10 µg/mL | 10.0 µg/mL | ± 0.05 µg/mL | 3111a* | Tl | 10 µg/mL | 9.88 µg/mL | ± 0.05 µg/mL | 3158* |
| Cu | 10 µg/mL | 10.0 µg/mL | ± 0.05 µg/mL | 3114* | U | 10 µg/mL | 10.0 µg/mL | ± 0.05 µg/mL | 3164* |
| Fe | 10 µg/mL | 10.3 µg/mL | ± 0.05 µg/mL | 3126a* | V | 10 µg/mL | 9.99 µg/mL | ± 0.05 µg/mL | 3165* |
| Ga | 10 µg/mL | 10.0 µg/mL | ± 0.05 µg/mL | 3119a* | Zn | 10 µg/mL | 10.0 µg/mL | ± 0.05 µg/mL | 3168a* |
| In | 10 µg/mL | 9.87 µg/mL | ± 0.05 µg/mL | 3124a* | | | | | |

* - Indicates NIST SRM † - Indicates Spex CertiPrep CRM (when NIST SRM is not available)
 Spex CertiPrep Reference Multi-Lot # CL3-151MKKB, CL4-108MKKB

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

| Element | µg/mL | Element | µg/mL | Element | µg/mL | Element | µg/mL | Element | µg/mL | Element | µg/mL |
|---------|--------|---------|--------|---------|--------|---------|--------|---------|-------|---------|--------|
| Au | < 0.04 | Ge | < 0.7 | Mo | 0.2 | Re | < 0.01 | Sm | 0.9 | Ti | < 6 |
| B | < 2 | Hf | < 0.08 | Nb | < 0.06 | Rh | 0.7 | Sn | < 0.9 | Tm | 0.05 |
| Ce | 0.1 | Hg | < 0.2 | Nd | < 0.01 | Ru | < 1 | Ta | < 0.1 | W | < 0.3 |
| Dy | < 0.01 | Ho | < 0.01 | P | < 200 | Sb | < 0.04 | Tb | < 2 | Y | 6 |
| Er | < 0.01 | Ir | 0.08 | Pd | < 5 | Sc | < 0.4 | Te | < 1 | Yb | < 0.01 |
| Eu | < 0.01 | La | 0.07 | Pr | < 0.01 | Si | < 200 | Th | 0.01 | Zr | < 0.1 |
| Gd | < 0.02 | Lu | < 0.02 | Pt | < 0.01 | | | | | | |

Balances are calibrated regularly with weight sets traceable to NIST #s 32856, 32867 and others. This CRM is guaranteed stable and accurate to ± 0.5% of the certified value. This includes uncertainty components due to preparation, measurement, homogeneity, short-term, and long-term stability. No measured concentration of any individual component exceeds ± 2% of the labeled value. This guarantee is valid for a period of one year from the date of certification only when the material is unopened and stored under ambient laboratory conditions.

Date of Certification: _____
 Certifying Office: Katherine Cullinan
 Katherine Cullinan, QC Manager

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Spex Certificate is accredited by A2LA for Inorganic and Organic Certified Reference Materials as complying with the requirements of ISO/IEC 17025 and ISO 17034 with the most comprehensive scope in the industry.

68 elements are scanned with found values for Claritas PPT® and Assurance® standards.

Each elemental impurity listed with actual value – not limited to elements above detection limits.

Trace impurities of the final solution – not of the starting material.

Stability and accuracy of the final solution – not the starting materials.

Traceable to NIST.

Signed by Spex CertiPrep's Inorganic QC Manager.

Stamped with month and year of certification.