Calibration Standards

A variety of inorganic standards including metals, anions, pH, and other common inorganics that can be used for primary calibration or to prepare second source calibration standards.

Contents

CRM: A reference material characterized by a metrologically valid procedure for one or more specified properties, accompanied by a reference material certificate that provides the value of the specified property, its associated uncertainty, and a statement of metrological traceability.

A complete listing of ERA's CRMs can be found on our Scope of Accreditation for general requirements for competence of reference material producers available at eraqc.com/Accreditations.

RM: A material, sufficiently homogeneous and stable with respect to one or more specified properties, which has been established to be fit for its intended use in a measurement process.

PFAS Secondary Source Standards

Standards are designed to enhance laboratory efficiency by improving the accuracy of routine quality control and streamlining processes. They are suitable for various applications, including Internal Calibration Verification (ICV), Laboratory Control Sample (LCS), Matrix Spike (MS), and Limit of Quantitation (LOQ) studies.

Wastewater/Solids

NEW!

CRM
Cat. #PFAS10001

One 2 mL flame-sealed ampule with 1.5 mL of PFAS standard containing 44 analytes at 25–625 ng/mL. The standard is suitable for matrices to include, but not limited to, wastewater and solids and compatible with methods EPA 1633 and 1633A, EPA 8327, ASTM D8421-21, ASTM D7979, and other comparable methods.

Perfluorobutanoic acid, PFBA	100 ng/mL
Perfluoropentanoic acid, PFPeA	50 ng/mL
Perfluorohexanoic acid, PFHxA	25 ng/mL
Perfluoroheptanoic acid, PFHpA	25 ng/mL
Perfluorooctanoic acid, PFOA	25 ng/mL
Perfluorononanoic acid, PFNA	25 ng/mL
Perfluorodecanoic acid, PFDA	25 ng/mL
Perfluoroundecanoic acid, PFUdA	25 ng/mL
Perfluorododecanoic acid, PFDoA	25 ng/mL
Perfluorotridecanoic acid, PFTrDA	25 ng/mL
Perfluorotetradecanoic acid, PFTeDA	25 ng/mL
Perfluorobutanesulfonic acid, PFBS	25 ng/mL
Perfluoropentanesulfonic acid, PFPeS	25 ng/mL
Perfluorohexanesulfonic acid, PFHxS	25 ng/mL
Perfluoroheptanesulfonic acid, PFHpS	25 ng/mL
Perfluorooctanesulfonic acid, PFOS	25 ng/mL
Perfluorononanesulfonic acid, PFNS	25 ng/mL
Perfluorodecanesulfonic acid, PFDS	25 ng/mL
Perfluorododecanesulfonic acid, PFDoS	25 ng/mL
4:2 fluorotelomersulfonic acid, 4:2FTS	100 ng/mL
6:2 fluorotelomersulfonic acid, 6:2FTS	100 ng/mL
8:2 fluorotelomersulfonic acid, 8:2FTS	100 ng/mL
Perfluorooctanesulfonamide, PFOSA	25 ng/mL
N-ethyl perfluorooctanesulfonamidoacetic acid, NEtFOSAA	25 ng/mL
N-methyl perfluorooctanesulfonamidoacetic acid, NMeFOSAA	25 ng/mL
N-ethyl perfluorooctanesulfonamide, NEtFOSA	25 ng/mL
N-methyl perfluorooctanesulfonamide, NMeFOSA	25 ng/mL
N-ethyl perfluorooctanesulfonamidoethanol, NEtFOSE	250 ng/mL
N-methyl perfluorooctanesulfonamidoethanol, NMeFOSE	250 ng/mL
3-Perfluoropropyl propanoic acid, 3:3FTCA	125 ng/mL
2H,2H,3H,3H-Perfluorooctanoic acid, 5:3FTCA	625 ng/mL
3-Perfluoroheptyl propanoic acid, 7:3FTCA	625 ng/mL
Hexafluoropropylene oxide dimer acid, HFPO-DA	100 ng/mL
4,8-dioxa-3H-perfluorononanoic acid, ADONA	100 ng/mL
9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid, 9Cl-PF3ONS	100 ng/mL
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid, 11Cl-PF3OUdS	100 ng/mL
Perfluoro-4-methoxybutanoic acid, PFMBA	50 ng/mL
Perfluoro-3-methoxypropanoic acid, PFMPA	50 ng/mL
Perfluoro(2-ethoxyethane) sulfonic acid, PFEESA	50 ng/mL
Nonafluoro-3,6-dioxaheptanoic acid, NFDHA	50 ng/mL
Pentafluoropropanoic acid, PFPrA	100 ng/mL
2H-perfluoro-2-octenoic acid, FHUEA	100 ng/mL
2H-perfluoro-2-decenoic acid, FOUEA	100 ng/mL
Bis(trifluoromethane)sulfonamide	100 ng/mL

Drinking Water

NEW!

CRM
Cat. #PFAS10002

One 2 mL flame-sealed ampule with 1.5 mL of PFAS standard containing 29 analytes at 50 ng/mL. The standard is suitable for matrices to include, but not limited to, drinking water and compatible with methods EPA 533, EPA 537, EPA 537.1, and other comparable methods.

Perfluorobutanoic acid, PFBA	50 ng/mL
Perfluoropentanoic acid, PFPeA	50 ng/mL
Perfluorohexanoic acid, PFHxA	50 ng/mL
Perfluoroheptanoic acid, PFHpA	50 ng/mL
Perfluorooctanoic acid, PFOA	50 ng/mL
Perfluorononanoic acid, PFNA	50 ng/mL
Perfluorodecanoic acid, PFDA	50 ng/mL
Perfluoroundecanoic acid, PFUdA	50 ng/mL
Perfluorododecanoic acid, PFDoA	50 ng/mL
Perfluorotridecanoic acid, PFTrDA	50 ng/mL
Perfluorotetradecanoic acid, PFTeDA	50 ng/mL
Perfluorobutanesulfonic acid, PFBS	50 ng/mL
Perfluoropentanesulfonic acid, PFPeS	50 ng/mL
Perfluorohexanesulfonic acid, PFHxS	50 ng/mL
Perfluoroheptanesulfonic acid, PFHpS	50 ng/mL
Perfluorooctanesulfonic acid, PFOS	50 ng/mL
4:2 fluorotelomersulfonic acid, 4:2FTS	50 ng/mL
6:2 fluorotelomersulfonic acid, 6:2FTS	50 ng/mL
8:2 fluorotelomersulfonic acid, 8:2FTS	50 ng/mL
N-ethyl perfluorooctanesulfonamidoacetic acid, NEtFOSAA	50 ng/mL
N-methyl perfluorooctanesulfonamidoacetic acid, NMeFOSAA	50 ng/mL
Hexafluoropropylene oxide dimer acid, HFPO-DA	50 ng/mL
4,8-dioxa-3H-perfluorononanoic acid, ADONA	50 ng/mL
9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid, 9Cl-PF3ONS	50 ng/mL
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid, 11Cl-PF3OUdS	50 ng/mL
Perfluoro-4-methoxybutanoic acid, PFMBA	50 ng/mL
Perfluoro-3-methoxypropanoic acid, PFMPA	50 ng/mL
Perfluoro(2-ethoxyethane) sulfonic acid, PFEESA	50 ng/mL
Nonafluoro-3,6-dioxaheptanoic acid, NFDHA	50 ng/mL

1000 mg/L Standards

Standards can be used for primary calibration or to prepare second source calibration check standards. They are analytically traceable to NIST SRM's where available, and are guaranteed stable for one year. The certification documentation includes manufacturing uncertainties, traceability summaries and densities to aid in performing gravimetric dilutions. The documentation for metal standards includes impurities.

Inorganics – 1000 mg/L

Chemical Oxygen Demand (COD)

500 mL Bottle	125 mL Bottle
Cat. #974	Cat. #042

One 1000 mg/L standard preserved with H2SO4 in an amber glass bottle.

Total Kjeldahl Nitrogen (TKN)

500 mL Bottle	125 mL Bottle
Cat. #996	Cat. #043

One 1000 mg/L standard preserved with HCl in a poly bottle.

MBAS/LAS Surfactants

Cat. #975

One 15 mL screw-cap vial with LAS at 1000 mg/L preserved with H2SO4.

Total Organic Carbon (TOC)

Cat. #978

One 500 mL amber glass bottles with TOC at 1000 mg/L preserved with H2SO4.

Total Organic Halides (TOX)

Cat. #976

One 2 mL flame-sealed ampule with TOX at 1000 mg/L in methanol.

Phenol

Cat. #982

One 500 mL amber glass bottle with phenol at 1000 mg/L preserved with H2SO4.

Sulfide

Cat. #999

One 10 mL flame-sealed ampule containing 1000 mg/L sulfide preserved with NaOH and zinc acetate.

Ions – 1000 mg/L

Parameter	Matrix	500 mL Bottle	125 mL Bottle
Acetate	H_2O	–	Cat. #78202
Ammonia as NH3	H_2O	Cat. #986	Cat. #044
Ammonia as N	H_2O	Cat. #985	Cat. #045
Bromate	H_2O	–	Cat. #065
Bromide	H_2O	Cat. #987	Cat. #046
Chlorate	H_2O	–	Cat. #066
Chloride	H_2O	Cat. #988	Cat. #047
Chlorite	H_2O	–	Cat. #067
Complex cyanide*	NaOH	Cat. #998	Cat. #049
Cyanide (free)*	NaOH	Cat. #997	Cat. #048
Fluoride	H_2O	Cat. #989	Cat. #050
Iodide	H_2O	–	Cat. #78212
Nitrate as NO3	H_2O	Cat. #992	Cat. #051
Nitrate as N	H_2O	Cat. #991	Cat. #052
Nitrite as N	H_2O	Cat. #990	Cat. #053
Perchlorate	H_2O	–	Cat. #068
Phosphate as PO4	H_2O	Cat. #994	Cat. #060
Phosphate as P	H_2O	Cat. #993	Cat. #061
Sulfate	H_2O	Cat. #995	Cat. #062

*Dangerous good. Requires special shipping.

Cations by Ion Chromatography – 100 mg/L

Parameter	Matrix	125 mL Bottle
Ammonium as NH_4	H_2O	Cat. #78102
Ammonium as N	H_2O	Cat. #78104

Cations by Ion Chromatography – 1000 mg/L

Parameter	Matrix	125 mL Bottle
Calcium	H_2O	Cat. #K10
Magnesium	H_2O	Cat. #K11

Metals – 1000 mg/L

Parameter	Matrix		125 mL Bottle
Aluminum	HNO_3	DG	Cat. #011
Arsenic	HNO_3	DG	Cat. #013
Beryllium	HNO_3	DG	Cat. #015
Bismuth	HNO_3	DG	Cat. #K01
Calcium	HNO_3	DG	Cat. #018
Chromium	HNO_3	DG	Cat. #020
Chromium VI	H_2O	—	Cat. #019
Cobalt	HNO_3	DG	Cat. #021
Copper	HNO_3	DG	Cat. #022
Iron	HNO_3	DG	Cat. #023
Lead	HNO_3	DG	Cat. #024
Lithium	HNO_3	DG	Cat. #K04
Magnesium	HNO_3	DG	Cat. #025
Manganese	HNO_3	DG	Cat. #026
Mercury	HNO_3	DG	Cat. #027
Molybdenum	HNO_3	DG	Cat. #028
Nickel	HNO_3	DG	Cat. #029
Phosphorus	HNO_3	DG	Cat. #063
Potassium	HNO_3	DG	Cat. #030
Selenium	HNO_3	DG	Cat. #031
Silica	H_2O	—	Cat. #064
Silicon	HNO_3	DG	Cat. #032
Silver	HNO_3	DG	Cat. #033
Sodium	HNO_3	DG	Cat. #034
Strontium	HNO_3	DG	Cat. #035
Thallium	HNO_3	DG	Cat. #036
Tin	HCl	DG	Cat. #037
Titanium	HCl	DG	Cat. #038
Vanadium	HNO_3	DG	Cat. #039
Yttrium	HNO_3	DG	Cat. #K08
Zinc	HNO_3	DG	Cat. #040

DG – Dangerous good. Requires special shipping.

Other metals, concentrations, and volumes are also available.

Call Waters ERA Customer Service for more information.

ICP-MS Metals

These standards come with a Certificate of Traceability and Uncertainty. Use for initial as well as continuing calibration and tuning verification. Provided as convenient concentrates with densities allowing you to easily perform gravimetric dilutions.

ICP-MS Trace Metals

CRM
Cat. #TMS001*

One 125 mL screw-cap poly bottle preserved with HNO_3 and tartaric acid*.

Aluminum	10.0 mg/L	Manganese	10.0 mg/L
Antimony	10.0 mg/L	Molybdenum	10.0 mg/L
Arsenic	10.0 mg/L	Nickel	10.0 mg/L
Barium	10.0 mg/L	Selenium	10.0 mg/L
Beryllium	10.0 mg/L	Silver	10.0 mg/L
Cadmium	10.0 mg/L	Thallium	10.0 mg/L
Chromium	10.0 mg/L	Thorium	10.0 mg/L
Cobalt	10.0 mg/L	Uranium	10.0 mg/L
Copper	10.0 mg/L	Vanadium	10.0 mg/L
Iron	10.0 mg/L	Zinc	10.0 mg/L
Lead	10.0 mg/L		

*Dangerous good. Requires special shipping.

ICP-MS Major Cations

CRM
Cat. #TMS002*

One 125 mL screw-cap poly bottle preserved with HNO_3*.

Calcium	50.0 mg/L	Potassium	50.0 mg/L
Magnesium	50.0 mg/L	Sodium	50.0 mg/L

*Dangerous good. Requires special shipping.

Anions

Ion Chromatography

CRM
Cat. #981

One 15 mL screw-cap vial yields up to 200 mL after dilution. Designed to calibrate or verify IC calibrations.

Call for anion standards at lower levels.

Bromide	0.2–20 mg/L	Nitrate as N	0.2–20 mg/L
Chloride	0.2–20 mg/L	Phosphate as P	0.5–30 mg/L
Fluoride	0.1–10 mg/L	Sulfate	0.5–30 mg/L

Learn more about Calibration products

AA/ICP Metals

All metals standards come with a Certificate of Traceability. The ICP Trace Metals standard also includes uncertainties. Use as initial as well as continuing calibration verification.

Flame AA Trace Metals

CRM
Cat. #508

One 24 mL screw-cap vial, preserved with HNO_3, yields up to 500 mL after dilution. Designed for flame AA. Includes aluminum, antimony, arsenic, barium, beryllium, boron, cadmium, chromium, cobalt, copper, iron, lead, manganese, molybdenum, nickel, selenium, silver, strontium, thallium, vanadium, and zinc.

Flame AA Cations

CRM
Cat. #530

One 15 mL screw-cap vial, preserved with HNO_3, yields up to 250 mL after dilution.

Use with ICP, IC, and AA methods.

Calcium	10–200 mg/L
Magnesium	10–200 mg/L
Potassium	5–100 mg/L
Sodium	10–250 mg/L

ICP Trace Metals

CRM
Cat. #524*

One 500 mL whole-volume standard, preserved with HNO_3 and HCl, is ready-to-use.*

Aluminum	10.0 mg/L
Antimony	1.0 mg/L
Arsenic	1.0 mg/L
Barium	1.0 mg/L
Beryllium	1.0 mg/L
Bismuth	1.0 mg/L
Boron	1.0 mg/L
Cadmium	1.0 mg/L
Calcium	10.0 mg/L
Chromium	1.0 mg/L
Cobalt	1.0 mg/L
Copper	1.0 mg/L
Iron	10.0 mg/L
Lanthanum	10.0 mg/L
Lead	10.0 mg/L
Magnesium	10.0 mg/L
Manganese	1.0 mg/L
Molybdenum	1.0 mg/L
Nickel	1.0 mg/L
Phosphorus	1.0 mg/L
Potassium	10.0 mg/L
Selenium	10.0 mg/L
Sodium	10.0 mg/L
Strontium	1.0 mg/L
Tin	1.0 mg/L
Titanium	1.0 mg/L
Vanadium	1.0 mg/L
Zinc	1.0 mg/L

*Dangerous good. Requires special shipping.

pH Buffers

Our pH Buffers are analytically traceable to NIST SRMs, mercury free, guaranteed stable for at least one year after your receipt, and are supplied with a full certificate of analysis. Choose single bottles or convenient six-bottle cases.

Value	Volume	Single Bottle Six-Bottle Case	Cat. #
pH 4.00	1 pint	Cat. #127	Cat. #128
pH 7.00	1 pint	Cat. #131	Cat. #132
pH 10.00	1 pint	Cat. #135	Cat. #136
Case of 2 ea.	Pints	—	Cat. #141

Chromatographic and sample cleanup products from Waters

Sample Preparation

Oasis Sample Extraction Products.

Sep-Pak SPE Cartridges.

Sample concentration and cleanup

Oasis Sample Extraction Products

Analysis of water samples often requires concentration and cleanup of "dirty" or complex matrices. Oasis™ Solid-Phase Extraction (SPE) Products allow for simple and rapid method development. With the Oasis product line, you can expect robust SPE methods that provide reproducible results and high recoveries, without having to be concerned with sorbent drying or pH limitations.

Key features/benefits

- Greater capacity.
- Excellent stability over entire pH range.
- Cleanest extracts.
- Elimination of matrix effects.
- Reduction of ion suppression.
- Superior recovery, reproducibility, retention, and selectivity for a wide variety of compounds.
- Available in cartridges or high throughput, 96-well plates.

Reduce interference and increase sensitivity for better quality results

Certified Sep-Pak SPE Cartridges

Sep-Pak™ SPE Cartridges are widely used by scientists for trace-level analysis in water samples. Manufactured using strict performance and cleanliness specifications and QC-tested for extractables and leachables, Certified Sep-Pak Sample Preparation Products reduce interference and increase sensitivity by eliminating contaminants introduced by the cartridge hardware and sorbents.

Key features/benefits

- Superior extracts for water sample residue analysis.
- Cleanliness and reproducibly needed for demanding sample preparation methods.
- Allows for accurate, high-quality water testing results.

Certified cleanliness for ultra-trace level analysis

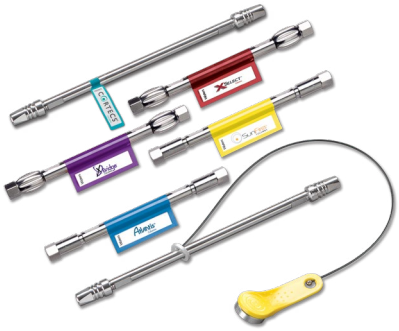
Vials

Waters Certified Vials are manufactured to exacting standards, tested and certified to give you confidence that the peaks you observe are representative of your sample, not your vials.

Key features/benefits

- Prevent ghost peaks stemming from contaminants.
- Eliminate unexplained masses in MS.
- Eliminate potential of needle damage due to tight dimensional specifications.

Waters Certified Vials.



UPLC, UHPLC, and HPLC Columns.

Waters Analytical Standards and Reagents.

Maximize efficiency, ruggedness, and throughput

LC Columns

Featured in methods to meet regulatory requirements throughout the world, Waters columns provide cutting-edge performance. In addition to our complete selection of UHPLC, UPLC,™ and HPLC column chemistries, Waters also provides application-specific columns for optimal specificity.

Key features/benefits

- Industry leading reliability and reproducibility.
- Wide range of general purpose and application specific columns.
- Uncompromised analytical performance.

Standardize and simplify workflows

Analytical Standards and Reagents

Waters understands that the quality of the standards and reagents you use directly correlates to the quality of your results. Our standards are precisely formulated to ensure data comparability and defensibility over time, and provide absolute traceability to meet your quality assurance requirements.

Key features/benefits

- Saves costly validation time of standards and reagents.
- Easy and convenient formulations and packaging ensure accuracy of LC and LC-MS results over time.
- Optimized kits to keep your system operating at peak performance.

Waters™

These and many more products are available for purchase directly from

waters.com, or call 800.252.HPLC (4752)