

A large, stylized number "1" is formed by a collage of scientific images: a hexagonal metal mesh, a blue glass sphere, and a glass vial with a red cap. The background is a solid light blue.

2014

CATALOG OF ANALYTICAL STANDARDS

ORGANIC & INORGANIC

Order online at www.highpuritystandards.com
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ISO 9001:2008 REGISTERED
ISO/IEC 17025:2005 ACCREDITED
ISO GUIDE 34:2009 ACCREDITED

Welcome to the HPS 2014 Catalog

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Welcome

High-Purity Standards continues to expand capabilities. We continue to expand our stock offerings in both organic and inorganic certified reference materials. In the first quarter of 2013 we opened two new laboratory rooms to specifically enable the preparation and analysis of products with low levels of contaminants. As instrumentation capabilities increase, we will continue to expand our capabilities and product offerings to match. We look forward to the opportunity to address these new challenges and create new products in the year ahead.

This catalog should demonstrate the broad scope of our capabilities. We invite you to visit our online store at www.highpuritystandards.com to view our new product offerings. And please do not hesitate to contact us if you need other products or any assistance with reference materials.

Custom Designed Products:

Over half of our business is devoted to manufacturing custom standards. Our staff has extensive experience in standards for a wide range of industries including mining, pharmaceutical, environmental, and industrial manufacturing. This experience includes preparation of custom XRF standards, metals in basic media, and bulk custom standards. Our industrial hygiene standards include a variety of filter media, and both spike dissolved or solid inorganic components.

Packaging Options:

We stock inorganic solutions in 50mL, 100mL, 250mL, and 500mL sizes. The 50mL size is designed for those laboratories who need a smaller volume of solution, thereby limiting waste disposal costs. In addition, we offer smaller volumes that meet excepted quantity limits for hazardous shipping. Our organic standards are available in 1mL, 2mL, 5mL and 10mL ampules. Both smaller and larger volumes are also available. Please let us know if you have these requirements.



Dr. Ted Rains and Connie Hayes

Quality System:

High-Purity Standards holds certificates for ISO 9001:2008, ISO/IEC 17025:2005, and ISO Guide 34:2009. We understand quality systems are most effective when they continue to improve. This year we expanded our scope to include analysis via liquid chromatography and titration as validation methods for our reference materials. You should notice this change on lots prepared this year of our caffeine LC performance test kits and cyanide standards. We sincerely appreciate input from our customers so that our quality system can continue to grow to meet your continued improvement needs. Customer satisfaction is the keystone of our quality program, so we welcome your feedback on any aspect of our service or products. We also offer custom standards with ISO Guide 34:2009 certificates of analysis. If interested, please contact our customer service team for more information.



For information on our Quality System, use this convenient QR code.



Website:

Please visit – www.highpuritystandards.com – for a complete up-to-date listing with pricing information, or contact us to provide feedback or request new products.

Handwritten signature of Theodore C. Rains.

Theodore C. Rains, Ph.D.
President

Handwritten signature of Connie Rains Hayes.

Connie Rains Hayes
CEO

High-Purity Standards, Inc. was founded in 1990 by Dr. Theodore Rains following his retirement from the National Institute of Standards and Technology (NIST). During his time at NIST, Dr. Rains developed many procedures now used at HPS. Today, High-Purity Standards serves the scientific community with standards and reference material for both organic and inorganic analyses.

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Ordering Information

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Placing an Order

There are five methods available for ordering:

- By Internet** www.highpuritystandards.com
(secure server)
- By E-Mail** info@highpuritystandards.com
- By Telephone** (866) 767-4771 Toll Free
(8:00 A.M. – 6:00 P.M. U.S. EST)
or (843) 767-7900
- By Fax** (843) 767-7906
- By Mail** P.O. Box 41727
Charleston, SC 29423

Pricing and Terms of Sale

Prices are quoted FOB Charleston, SC, USA and are subject to change without notice. High-Purity Standards accepts payment via credit card (VISA, MASTERCARD, AND AMERICAN EXPRESS) or purchase order with approved credit. Invoices for purchase orders are marked 30 Days Net from date of invoice. If a written purchase order is to follow a telephone order, please clearly indicate on the hard copy "Confirmation only. Do not duplicate order."



Return Policy

We will accept any unopened catalog item returned for any reason within 30 days of purchase, and you will receive full credit. A restocking fee of 20% per item will be assessed for any item returned after 30 days. Any catalog item or custom mix can be returned for replacement if the item is found to be erroneous. ALL returns must be authorized. Please call (866) 767-4771 to receive a return authorization number (RA#).

Certificate of Analysis and Material Safety Data Sheets

Each product will include a Certificate of Analysis and a Material Safety Data Sheet. MSDS information for catalog items can also be located at www.highpuritystandards.com. NIST traceability documentation, if available, is included in the Certificate of Analysis.

Shipping

Orders for catalog items are generally shipped the same day if the order is received before 2pm (U.S. EST). Shipment dates for custom blends are confirmed with the receipt of an order. Our standard method of shipment is ground service. Expedited delivery services are available. Shipping charges are prepaid and added to the invoice. Any additional charges incurred by hazardous shipping regulations and COD requests will be paid by the customer.

Laboratory Use

HPS products are intended for laboratory use only. They are not intended for medical, food, drug, or household use. All products should be handled and used by trained professional personnel only. The responsibility for the safe handling and use of these products rests solely with the buyer and/or user.



Organic Multicomponent Standards

Find this online at highpuritystandards.com

- Standards for a variety of EPA, ASTM methods
- Manufactured under ISO/IEC 17025:2005 and ISO Guide 34:2009 accredited program
- Each product comes with a comprehensive Certificate of Analysis
 - Concentration values verified against second source
 - Chromatogram
 - Weight report traceable to NIST

For information on Organic Multicomponent Standards use this convenient QR code.



Semivolatiles

Base Neutral and Acid Surrogate Standard Mixture

Part # **CSS-ME8250-M6C**

6 certified components in Methylene Chloride for use in EPA Method 8250A, 8270B, CLP, 625 available in 1mL ampules

Stated concentration of each component (µg/mL):

2-Fluorobiphenyl	1000	2-Fluorophenol	2000
Nitrobenzene-d6	1000	Phenol-d6	2000
p-Terphenyl-d14	1000	2,4,6-Tribromophenol	2000

Semivolatile Internal Standard Mixture

Part # **SV-IS-M6C**

6 certified components at 2000 µg/mL in Methylene Chloride, available in 1mL and 5 x 1mL ampules

Acenaphthene-d10	Chrysene-d12	1,4-Dichlorobenzene-d4
Naphthalene-d8	Perylene-d12	Phenanthrene-d10

Polycyclic Aromatic Hydrocarbons (PAHs) Standard Mixture

Part # **PAH-HM16C**

16 certified components at 2000 µg/mL in Methylene Chloride, available in 1mL and 5 x 1mL ampules

Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene
Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene
Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene
Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene

Base Neutral Extractable Mixture

Part # **BNEM-M44C**

44 certified components of Base and Neutral Organic mixture at 1000 µg/mL in Benzene:Methylene Chloride:Acetonitrile (4:4:2) for use in EPA Method 625/1625, 8270, CLP, available in 1mL ampules

Acenaphthene	Acenaphthylene	Anthracene	Azobenzene	Ben(a)anthracene
Benzo(a) pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo(g,h,i)perylene	Bis(2-chloroisopropyl)ether
2-Chloronaphthalene	Chrysene	Dibenz(a,h)anthracene	2,4-Dinitrotoluene	Fluoranthene
Fluorene	Hexachlorobenzene	Indeno(1,2,3-c,d)pyrene	Naphthalene	n-Nitrosodiphenylamine
Phenanthrene	Pyrene	Benzyl butyl phthalate	Bis(2-chloroethoxy)methane	4-Bromodiphenyl ether
Bis(2-ethylhexyl)phthalate	4-Chlorodiphenyl ether	2-Chloroethyl ether	1,2-Dichlorobenzene	1,3-Dichlorobenzene
1,4-Dichlorobenzene	2,6-Dinitrotoluene	Dibutyl phthalate	Diethyl phthalate	Dimethyl phthalate
Di-n-octyl phthalate	Hexachlorobutadiene	Hexachlorocyclopentadiene	Hexachloroethane	Isophorone
Nitrobenzene	n-Nitrosodimethylamine	n-Nitrosodi-n-propylamine	1,2,4-Trichlorobenzene	

Acids Extractable Mixture

Part # **ACID-M16C**

16 certified components of Acid Organic mixture at 2000 µg/mL in Methylene Chloride for use in EPA Method 625/1625, 8270, CLP available in 1mL ampules

Benzoic	2-Chlorophenol	4-Chloro-3-methylphenol	4,6-Dinitro-2-methylphenol	2,4-Dichlorophenol
2,4-Dimethylphenol	2,4-Dinitrophenol	2-Methylphenol	4-Methylphenol	2-Nitrophenol
4-Nitrophenol	Pentachlorophenol	Phenol	2,3,4,6-Tetrachlorophenol	2,4,5-Trichlorophenol
2,4,6-Trichlorophenol				

Dutch 7 PCB Congeners Mixture

Part # **PCB-MDC7**

7 certified component PCB Congener mixture at 100 µg/mL in Isooctane, available in 1mL and 5 x 1mL ampules

2,4,4'-Trichlorobiphenyl (BZ-28)	2,2',3,4,4',5' - Hexachlorobiphenyl (BZ-138)
2,2',5,5' - Tetrachlorobiphenyl (BZ-52)	2,2',4,4',5,5' - Hexachlorobiphenyl (BZ-153)
2,2',4,5,5' - Pentachlorobiphenyl (BZ-101)	2,2',3,4,4',5,5' - Heptachlorobiphenyl (BZ-180)
2,3',4,4',5 - Pentachlorobiphenyl (BZ-118)	

Organic Multicomponent Standards

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Petroleum and Underground Storage Tank (UST) Standards

Retention Time Standards

Florida Total Petroleum Hydrocarbon Standard Mixture

Part # **FTPH-M17C**

17 certified component n-alkane standards mixture for TPHs analysis; C8 – C40 all components at 500 µg/mL in Hexane, available in 1mL, 5mL and 5 x 1mL ampules

n-Octane (C8)	n-Decane (C10)	n-Dodecane (C12)	n-Tetradecane (C14)	n-Hexadecane (C16)
n-Octadecane (C18)	n-Eicosane (C20)	n-Docosane (C22)	n-Tetracosane (C24)	n-Hexacosane (C26)
n-Octacosane (C28)	n-Triacontane (C30)	n-Dotriacontane (C32)	n-Tetracontane (C34)	n-Hexatriacontane (C36)
n-Octatriacontane (C38)	n-Tetracontane (C40)			

Diesel Range Organic Mixture

Part # **DRO-M10C**

10 certified component n-alkane standards mixture for TPHs analysis; C10 – C28 all components at 2000 µg/mL in methylene chloride, available in 1mL and 5 x 1mL ampules

n-Decane (C10)	n-Dodecane (C12)	n-Tetradecane (C14)	n-Hexadecane (C16)	n-Octadecane (C18)
n-Eicosane (C20)	n-Docosane (C22)	n-Tetracosane (C24)	n-Hexacosane (C26)	n-Octacosane (C28)

Gasoline Characterization Standards

BTEX and MTBE Mixture

Part # **MBTEX-HM7C**

7 certified component BTEX and MTBE mixture at 2000 µg/mL in Purge and trap Methanol. Available in 1mL and 5 x 1mL ampules

BTEX and MTBE Mixture

Part # **MBTEX-LM7C**

7 certified component BTEX and MTBE mixture at 200 µg/mL in Purge and trap Methanol. Available in 1mL and 5 x 1mL ampules

BTEX Mixture

Part # **BTEX-LM6C**

6 certified component BTEX mixture at 200 µg/mL in Purge and Trap Methanol. Available in 1mL and 5 x 1mL ampules

BTEX Mixture

Part # **BTEX-HM6C**

6 certified component BTEX mixture at 2000 µg/mL in Purge and Trap Methanol. Available in 1mL and 5 x 1mL ampules

Benzene	Toluene	p-Xylene
Ethyl benzene	m-Xylene	o-Xylene



To view our Organic Standards poster,
use this convenient QR code.

Organic Multicomponent Standards

Find this online at highpuritystandards.com

Volatile

Volatile Organic Compounds

Part # VOC-M60C

60 certified components of Volatile Organic mixture at 200 µg/mL in Purge and Trap Methanol for use in EPA Method 524 and 8260B available in 1mL ampules

Benzene	Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform
Bromomethane	n-Butylbenzene	sec-Butylbenzene	tert-Butylbenzene	Carbon tetrachloride
Chlorobenzene	Chloroethane	Chloroform	2-Chlorotoluene	Chloromethane
4-Chlorotoluene	Dibromochloromethane	1,2-Dibromo-3-chloropropane	1,2-Dibromoethane	Dibromomethane
1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	Dichlorodifluoromethane	1,1-Dichloroethane
1,2-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	1,2-Dichloropropane
1,3-Dichloropropane	2,2-Dichloropropane	1,1-Dichloropropene	cis-1,3-Dichloropropene	trans-1,3-Dichloropropene
Ethylbenzene	Hexachlorobutadiene	Isopropylbenzene (Cumene)	p-Isopropyltoluene (p-Cymene)	Methylene chloride
Naphthalene	n-Propylbenzene	Styrene	1,1,1,2-Tetrachloroethane	1,1,2,2-Tetrachloroethane
Tetrachloroethene	Toluene	1,2,3-Trichlorobenzene	1,2,4-Trichlorobenzene	1,1,1-Trichloroethane
1,1,1-Trichloroethane	Trichloroethene	Trichlorofluoromethane	1,2,3-Trichloropropane	1,2,4-Trimethylbenzene
1,3,5-Trimethylbenzene	Vinyl chloride	m-Xylene	o-Xylene	p-Xylene

Liquid Volatile Organic Compounds

Part # VOC-M54C

54 certified components of Liquid Volatile Organic mixture at 2000 µg/mL in Purge and Trap Methanol for use in EPA Method 8021 available in 1mL ampules

Benzene	Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform
n-Butylbenzene	sec-Butylbenzene	tert-Butylbenzene	Carbon tetrachloride	Chlorobenzene
Chloroform	2-Chlorotoluene	4-Chlorotoluene	Dibromochloromethane	1,2-Dibromo-3-chloropropane
1,2-Dibromoethane	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	Dibromomethane
1,1-Dichloroethane	1,2-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene
1,2-Dichloropropane	1,3-Dichloropropane	2,2-Dichloropropane	1,1-Dichloropropene	cis-1,3-Dichloropropene
trans-1,3-Dichloropropene	Ethylbenzene	Hexachlorobutadiene	Isopropylbenzene (Cumene)	p-Isopropyltoluene (p-Cymene)
Methylene chloride	Naphthalene	n-Propylbenzene	Styrene	1,1,1,2-Tetrachloroethane
1,1,2,2-Tetrachloroethane	Tetrachloroethene	Toluene	1,2,3-Trichlorobenzene	1,2,4-Trichlorobenzene
1,1,1-Trichloroethane	1,1,2-Trichloroethane	Trichloroethene	1,2,3-Trichloropropane	1,2,4-Trimethylbenzene
1,3,5-Trimethylbenzene	m-Xylene	o-Xylene	p-Xylene	

Purgeable Aromatic BTEX Mixture

Part # BTEX-LM6C

6 certified component BTEX mixture at 200 µg/mL in Purge and Trap Methanol for use in EPA Method 602 and 8021. Available in 1mL and 5 x 1mL ampules

Purgeable Aromatic BTEX Mixture

Part # BTEX-HM6C

6 certified component BTEX mixture at 2000 µg/mL in Purge and Trap Methanol for use in EPA Method 602 and 8021. Available in 1mL and 5 x 1mL ampules

Benzene	Toluene	p-Xylene
Ethyl benzene	m-Xylene	o-Xylene

EDB/DBCP Mixture

Part # 8011-M2C

2 certified component 1,2-Dibromoethane (EDB) and 1,2-Dibromo-3-chloropropane (DBCP) mixture at 2000 µg/mL in Purge and Trap Methanol for use in EPA Method 504 and 8011. Available in 1mL and 5 x 1mL ampules

8260 Surrogate Mix

Part # VOC-SURR-M3C

Three certified surrogate component of volatile organic compound at 2000 µg/mL each in P&T methanol for use in EPA Method 8060, available in 1mL and 5 x 1mL ampules.

1-Bromo-4-fluorobenzene (460-00-4)	Dibromofluoromethane (1868-53-7)	Toluene-db (2037-26-5)
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Organic Multicomponent Standards

Find this online at highpuritystandards.com

Trihalomethanes Mixture

Part # THM-HM4C

4 certified halogenated component mixture at 2000 µg/mL in Purge and Trap Methanol for use in EPA Method 501. Available in 1mL and 5 x 1mL ampules

Trihalomethanes Mixture

Part # THM-LM4C

4 certified halogenated component mixture at 200 µg/mL in Purge and Trap Methanol for use in EPA Method 500 series. Available in 1mL and 5 x 1mL ampules

Bromodichloromethane	Chloroform	Bromoform	Dibromochloromethane
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Alcohols Mixture

Part # 8015-M9C

9 certified components of alcohols mixture at 2000 µg/mL in water for use in EPA Method 8015B available in 1mL ampules

1-Butanol	t-Butyl alcohol	Ethanol	Ethylene glycol	Isobutyl alcohol
Methanol	1-Propanol	2-Propanol (Isopropyl alcohol)	2-Propenol (Allyl alcohol)	

Food and Beverage

Organic and Volatile Acids

Fatty Acids Mixture

Part # FA-M6C

6 component fatty acid mixture at 1000 µg/mL in water for use in ASTM Method 5560. Available in 1mL and 5 x 1mL ampules

Acetic acid	Isobutyric acid	Isovaleric acid
Butyric acid	Propionic acid	Valeric acid

Beverage Organic Mixture

Part # OA-M4C

4 component organic acid mixture in water at 2000µg/mL. Available in 1mL and 5 x 1mL ampules

Citric acid	Malic acid	Tartaric acid	Quinic acid
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Carbohydrate-Glucose

Part # CARB-GLU

Glucose Standard at 1000 µg/mL in 0.1% Benzoic acid for sugar analysis by HPLC or IC. Available in 10 mL ampules

Caffeine LC Performance Test Mix Kit

Part # CAF-LCKIT

Use for HPLC calibration in detector wavelength accuracy test. Kit contains 5 - 5mL calibration standards in water at the following concentrations: 5 µg/mL, 25 µg/mL, 125 µg/mL, 250 µg/mL and 500 µg/mL





Over half of the standards manufactured at High-Purity Standards are custom blends. HPS welcomes requests for special blends to meet our customer's needs. If there isn't a product offering that will meet your needs, send us the following information via our online quote form and we will provide a competitive quotation:

- Organics Form: <http://www.highpuritystandards.com/store/organicscustomquote.php>
- Inorganics Form: <http://www.highpuritystandards.com/store/customblends.php>
- Printable Fax form: http://www.highpuritystandards.com/pdfs/HPS_Custom_Blend_Form.pdf
- E-Mail: info@highpuritystandards.com
- Telephone: (Toll Free) 866-767-4771
- Fax: 843-767-7906



Use this QR code for our
Organics Quote Form.

What we need from you:

- Analyte(s) (organic compounds, inorganic metals or components, cations or anions, etc.)
- Concentration, including units, of each analyte (if units are in percent, please specify preparation by weight or by volume)
- Matrix (if industrial hygiene standards: identify material, pore size, and diameter of filter)
- Volume and quantity
- Other requirements
- Intended use (please indicate the instrumentation and/or method of analysis)
- Point of contact for confirmation or to discuss technical questions



Use this QR code for our
Inorganics Quote Form.

Our staff will review your request. If we need to make any changes, either for compatibility or to address expiration periods, we will contact you first to discuss the modification of the custom blend to fit your needs. We will provide a quotation along with a description of your custom standard for your review.

Most special mixtures are prepared within three to five days of receipt of the purchase order. The shipping date of your custom blend will be confirmed upon order.

The staff at High-Purity Standards takes great pride in our ability to provide standards for our customers. We are available for technical support to help you design the right solutions for your laboratory needs.

Single Element Standards

Find this online at highpuritystandards.com

High-Purity Standards stocks a broad range of single-element **Guide 34** certified reference materials in concentrations ranging from 10 µg/mL to 10,000 µg/mL (10.00 mg/mL). Most standards are packaged in 50, 100, 250, and 500 mL HDPE or LDPE laboratory grade bottles. The accuracy of all standards is verified against NIST Spectrometric Standard Solutions where available (otherwise against second source certified reference materials). Standards are certified accurate for a period of 18 months from the date of shipment unless stated otherwise on the Certificate of Analysis. The density is provided on the Certificate of Analysis as additional information for the user.

Element	Source	Concentration	Matrix	Catalog No.	Concentration	Matrix	Catalog No.
Aluminum	Al metal	1000 µg/mL	2% HNO ₃	10001-1	10,000 µg/mL	10% HNO ₃	10M1-1
Aluminum	Al metal	1000 µg/mL	2% HCl	10001-2	10,000 µg/mL	10% HCl	10M1-2
Aluminum	Al metal	10 µg/mL	2% HNO ₃	10 1-1	100 µg/mL	2% HNO ₃	100 1-1
Antimony	Sb metal	1000 µg/mL	20% HCl	10002-2	10,000 µg/mL	50% HCl	10M2-2
Antimony	Sb metal	1000 µg/mL	5% HNO ₃ +0.1% HF	10002-3	10,000 µg/mL	10% HNO ₃ +2%HF	10M2-3
Antimony	Sb metal as Sb ⁺³	1000 µg/mL	20% HCl	10002-6			
Antimony	Sb metal	1000 µg/mL	5% Tartaric Acid + 2% HNO ₃	10002-8			
Antimony	Sb metal	10 µg/mL	2% HNO ₃ +Tr HF	10 2-3	100 µg/mL	2% HNO ₃ +Tr HF	100 2-3
Arsenic	As metal	1000 µg/mL	2% HNO ₃	10003-1	10,000 µg/mL	20% HNO ₃	10M3-1
Arsenic	As metal	1000 µg/mL	2% HCl	10003-2	10,000 µg/mL	10% HCl	10M3-2
Arsenic	As ₂ O ₃ as As ⁺³	1000 µg/mL	2% HCl	10003-6			
Arsenic	Na ₂ HAsO ₄ as As ⁺⁵	1000 µg/mL	H ₂ O	10003-7			
Arsenic	As metal	10 µg/mL	2% HNO ₃	10 3-1	100 µg/mL	2% HNO ₃	100 3-1
Barium	Ba Salt	1000 µg/mL	2% HNO ₃	10004-1	10,000 µg/mL	2% HNO ₃	10M4-1
Barium	Ba Salt	1000 µg/mL	2% HCl	10004-2	10,000 µg/mL	5% HCl	10M4-2
Barium	Ba Salt	10 µg/mL	2% HNO ₃	10 4-1	100 µg/mL	2% HNO ₃	100 4-1
Beryllium	Be acetate	1000 µg/mL	2% HNO ₃	10005-1	10,000 µg/mL	4% HNO ₃	10M5-1
Beryllium	Be acetate	1000 µg/mL	2% HCl	10005-2	10,000 µg/mL	10% HCl	10M5-2
Beryllium	Be acetate	10 µg/mL	2% HNO ₃	10 5-1	100 µg/mL	2% HNO ₃	100 5-1
Bismuth	Bi metal	1000 µg/mL	2% HNO ₃	10006-1	10,000 µg/mL	4% HNO ₃	10M6-1
Bismuth	Bi metal	1000 µg/mL	2% HCl	10006-2			
Bismuth	Bi metal	10 µg/mL	2% HNO ₃	10 6-1	100 µg/mL	2% HNO ₃	100 6-1
Boron	H ₃ BO ₃	1000 µg/mL	H ₂ O	10007-4	5000 µg/mL	H ₂ O	5M7-4
Boron	H ₃ BO ₃				10,000 µg/mL	2% NH ₄ OH	10M7-7
Boron	H ₃ BO ₃	10 µg/mL	H ₂ O	10 7-4	100 µg/mL	H ₂ O	100 7-4
Cadmium	Cd metal	1000 µg/mL	2% HNO ₃	10008-1	10,000 µg/mL	4% HNO ₃	10M8-1
Cadmium	Cd metal	1000 µg/mL	2% HCl	10008-2	10,000 µg/mL	10% HCl	10M8-2
Cadmium	Cd metal	10 µg/mL	2% HNO ₃	10 8-1	100 µg/mL	2% HNO ₃	100 8-1
Calcium	CaCO ₃	1000 µg/mL	2% HNO ₃	10009-1	10,000 µg/mL	4% HNO ₃	10M9-1
Calcium	CaCO ₃	1000 µg/mL	2% HCl	10009-2	10,000 µg/mL	5% HCl	10M9-2
Calcium	CaCO ₃	10 µg/mL	2% HNO ₃	10 9-1	100 µg/mL	2% HNO ₃	100 9-1
Carbon	Na ₂ C ₂ O ₄	1000 µg/mL	H ₂ O	100071-4			
Carbon as TOC	KHC ₈ H ₄ O ₄	1000 µg/mL	H ₂ O	100071-9			
Cerium	CeO ₂	1000 µg/mL	2% HNO ₃	100010-1	10,000 µg/mL	4% HNO ₃	10M10-1
Cerium	CeO ₂	1000 µg/mL	2% HCl	100010-2	10,000 µg/mL	10% HCl	10M10-2
Cerium	CeO ₂	10 µg/mL	2% HNO ₃	10 10-1	100 µg/mL	2% HNO ₃	100 10-1
Cesium	Cs ₂ CO ₃	1000 µg/mL	1% HNO ₃	100011-1	10,000 µg/mL	1% HNO ₃	10M11-1
Cesium	Cs ₂ CO ₃	1000 µg/mL	1% HCl	100011-2	10,000 µg/mL	1% HCl	10M11-2
Cesium	Cs ₂ CO ₃	10 µg/mL	2% HNO ₃	10 11-1	100 µg/mL	2% HNO ₃	100 11-1

Single Element Standards

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Element	Source	Concentration	Matrix	Catalog No.	Concentration	Matrix	Catalog No.
Chromium	Cr metal	1000 µg/mL	2% HNO ₃	100012-1	10,000 µg/mL	10% HNO ₃	10M12-1
Chromium	Cr metal	1000 µg/mL	2% HCl	100012-2	10,000 µg/mL	10% HCl	10M12-2
Chromium	Cr metal as Cr ⁺³	1000 µg/mL	2% HCl	100012-6			
Chromium	K ₂ Cr ₂ O ₇ as Cr ⁺⁶	1000 µg/mL	H ₂ O	100012-7	10,000 µg/mL	H ₂ O	10M12-7
Chromium	Cr metal	10 µg/mL	2% HNO ₃	10 12-1	100 µg/mL	2% HNO ₃	100 12-1
Cobalt	Co metal	1000 µg/mL	2% HNO ₃	100013-1	10,000 µg/mL	4% HNO ₃	10M13-1
Cobalt	Co metal	1000 µg/mL	2% HCl	100013-2	10,000 µg/mL	10% HCl	10M13-2
Cobalt	Co metal	10 µg/mL	2% HNO ₃	10 13-1	100 µg/mL	2% HNO ₃	100 13-1
Copper	Cu metal	1000 µg/mL	2% HNO ₃	100014-1	10,000 µg/mL	4% HNO ₃	10M14-1
Copper	Cu metal	1000 µg/mL	2% HCl	100014-2	10,000 µg/mL	10% HCl	10M14-2
Copper	Cu metal	10 µg/mL	2% HNO ₃	10 14-1	100 µg/mL	2% HNO ₃	100 14-1
Dysprosium	Dy ₂ O ₃	1000 µg/mL	2% HNO ₃	100015-1	10,000 µg/mL	4% HNO ₃	10M15-1
Dysprosium	Dy ₂ O ₃	1000 µg/mL	2% HCl	100015-2	10,000 µg/mL	4% HCl	10M15-2
Dysprosium	Dy ₂ O ₃	10 µg/mL	2% HNO ₃	10 15-1	100 µg/mL	2% HNO ₃	100 15-1
Erbium	Er ₂ O ₃	1000 µg/mL	2% HNO ₃	100016-1	10,000 µg/mL	4% HNO ₃	10M16-1
Erbium	Er ₂ O ₃	10 µg/mL	2% HNO ₃	10 16-1	100 µg/mL	2% HNO ₃	100 16-1
Europium	Eu ₂ O ₃	1000 µg/mL	2% HNO ₃	100017-1	10 µg/mL	4% HNO ₃	10M17-1
Europium	Eu ₂ O ₃	10 µg/mL	2% HNO ₃	10 17-1	100 µg/mL	2% HNO ₃	100 17-1
Gadolinium	Gd ₂ O ₃	1000 µg/mL	2% HNO ₃	100018-1	10,000 µg/mL	4% HNO ₃	10M18-1
Gadolinium	Gd ₂ O ₃	1000 µg/mL	2% HCl	100018-2	10,000 µg/mL	4% HCl	10M18-2
Gadolinium	Gd ₂ O ₃	10 µg/mL	2% HNO ₃	10 18-1	100 µg/mL	2% HNO ₃	100 18-1
Gallium	Ga metal	1000 µg/mL	2% HNO ₃	100019-1	10,000 µg/mL	4% HNO ₃	10M19-1
Gallium	Ga metal	1000 µg/mL	2% HCl	100019-2	10,000 µg/mL	10% HCl	10M19-2
Gallium	Ga metal	10 µg/mL	2% HNO ₃	10 19-1	100 µg/mL	2% HNO ₃	100 19-1
Germanium	(NH ₄) ₂ GeF ₆	1000 µg/mL	1% HNO ₃	100020-1	10,000 µg/mL	1% HNO ₃	10M20-1
Germanium	Ge metal	1000 µg/mL	2% HNO ₃ +0.5% HF	100020-3	10,000 µg/mL	10% HNO ₃ +2% HF	10M20-3
Gold	Au metal	1000 µg/mL	2% HCl	100021-2	10,000 µg/mL	10% HCl	10M21-2
Gold	Au metal	10 µg/mL	2% HCl	10 21-2	100 µg/mL	2% HCl	100 21-2
Hafnium	Hf metal	1000 µg/mL	2% HNO ₃ +0.5% HF	100022-3	10,000 µg/mL	2% HNO ₃ +2% HF	10M22-3
Hafnium	Hf metal	10 µg/mL	2% HNO ₃ +Tr HF	10 22-3	100 µg/mL	2% HNO ₃ +Tr HF	100 22-3
Holmium	Ho ₂ O ₃	1000 µg/mL	2% HNO ₃	100023-1	10,000 µg/mL	4% HNO ₃	10M23-1
Holmium	Ho ₂ O ₃	1000 µg/mL	2% HCl	100023-2	10,000 µg/mL	4% HCl	10M23-2
Indium	In metal	1000 µg/mL	2% HNO ₃	100024-1	10,000 µg/mL	4% HNO ₃	10M24-1
Indium	In metal	1000 µg/mL	2% HCl	100024-2	10,000 µg/mL	10% HCl	10M24-2
Indium	In metal	10 µg/mL	2% HNO ₃	10 24-1	100 µg/mL	2% HNO ₃	100 24-1
Iridium	Ir Salt	1000 µg/mL	2% HCl	100025-2			
Iridium	Ir Salt	10 µg/mL	2% HCl	10 25-2	100 µg/mL	2% HCl	100 25-2
Iron	Fe metal	1000 µg/mL	2% HNO ₃	100026-1	10,000 µg/mL	10% HNO ₃	10M26-1
Iron	Fe metal	1000 µg/mL	2% HCl	100026-2	10,000 µg/mL	10% HCl	10M26-2
Iron*	Fe metal as Fe ⁺²	1000 µg/mL	2% HCl +1% Hydroxylamine Hydrochloride	100026-6			
Iron	Fe metal as Fe ⁺³	1000 µg/mL	2% HNO ₃	100026-7			
Iron	Fe metal	10 µg/mL	2% HNO ₃	10 26-1	100 µg/mL	2% HNO ₃	100 26-1
Lanthanum	La ₂ O ₃	1000 µg/mL	2% HNO ₃	100027-1	10,000 µg/mL	4% HNO ₃	10M27-1
Lanthanum	La ₂ O ₃	1000 µg/mL	2% HCl	100027-2	10,000 µg/mL	2% HCl	10M27-2
Lanthanum	La ₂ O ₃	10 µg/mL	2% HNO ₃	10 27-1	100 µg/mL	2% HNO ₃	100 27-1
Lead	Pb metal	1000 µg/mL	2% HNO ₃	100028-1	10,000 µg/mL	4% HNO ₃	10M28-1
Lead	Pb metal	1000 µg/mL	2% HCl	100028-2			
Lead	Pb metal	10 µg/mL	2% HNO ₃	10 28-1	100 µg/mL	2% HNO ₃	100 28-1

*Iron 100026-6 Exp. Date: 3 Months

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Element	Source	Concentration	Matrix	Catalog No.	Concentration	Matrix	Catalog No.
Lithium	Li ₂ CO ₃	1000 µg/mL	1% HNO ₃	100029-1	10,000 µg/mL	1% HNO ₃	10M29-1
Lithium	Li ₂ CO ₃	1000 µg/mL	1% HCl	100029-2	10,000 µg/mL	1% HCl	10M29-2
⁶ Lithium	⁶ Li ₂ CO ₃	1000 µg/mL	1% HNO ₃	100029-6I			
Lithium	Li ₂ CO ₃	10 µg/mL	2% HNO ₃	10 29-1	100 µg/mL	2% HNO ₃	100 29-1
Lutetium	Lu ₂ O ₃	1000 µg/mL	2% HNO ₃	100030-1	10,000 µg/mL	4% HNO ₃	10M30-1
Lutetium	Lu ₂ O ₃	1000 µg/mL	2% HCl	100030-2	10,000 µg/mL	4% HCl	10M30-2
Lutetium	Lu ₂ O ₃	10 µg/mL	2% HNO ₃	10 30-1	100 µg/mL	2% HNO ₃	100 30-1
Magnesium	Mg metal	1000 µg/mL	2% HNO ₃	100031-1	10,000 µg/mL	4% HNO ₃	10M31-1
Magnesium	Mg metal	1000 µg/mL	2% HCl	100031-2	10,000 µg/mL	10% HCl	10M31-2
Magnesium	Mg metal	10 µg/mL	2% HNO ₃	10 31-1	100 µg/mL	2% HNO ₃	100 31-1
Manganese	Mn Acetate	1000 µg/mL	2% HNO ₃	100032-1	10,000 µg/mL	4% HNO ₃	10M32-1
Manganese	Mn Acetate	1000 µg/mL	2% HCl	100032-2	10,000 µg/mL	10% HCl	10M32-2
Manganese	Mn Acetate	10 µg/mL	2% HNO ₃	10 32-1	100 µg/mL	2% HNO ₃	100 32-1
Mercury	Hg metal	1000 µg/mL	2% HNO ₃	100033-1	10,000 µg/mL	10% HNO ₃	10M33-1
Mercury	Diphenylmercury	1000 µg/mL	2% HNO ₃	100033-1D			
Mercury	HgCl ₂	1000 µg/mL	2% HCl	100033-2			
Mercury	HgCl ₂	1000 µg/mL	4% HCl+3% HNO ₃	100077-12			
Mercury	Hg metal	10 µg/mL	5% HCl	10 33-1	100 µg/mL	5% HNO ₃	100 33-1
Molybdenum	Mo metal	1000 µg/mL	2% HCl	100034-2	10,000 µg/mL	10% HCl	10M34-2
Molybdenum	Mo metal	1000 µg/mL	2% HNO ₃ +0.1% HF	100034-3	10,000 µg/mL	4% HNO ₃ +2% HF	10M34-3
Molybdenum	(NH ₄) ₂ MoO ₄	1000 µg/mL	H ₂ O	100034-4	10,000 µg/mL	H ₂ O	10M34-4
Molybdenum	Mo metal	10 µg/mL	2% HNO ₃ +Tr HF	10 34-3	100 µg/mL	2% HNO ₃ +Tr HF	100 34-3
Neodymium	Nd ₂ O ₃	1000 µg/mL	2% HNO ₃	100035-1	10,000 µg/mL	4% HNO ₃	10M35-1
Neodymium	Nd ₂ O ₃	1000 µg/mL	2% HCl	100035-2	10,000 µg/mL	4% HCl	10M35-2
Neodymium	Nd ₂ O ₃	10 µg/mL	2% HNO ₃	10 35-1	100 µg/mL	2% HNO ₃	100 35-1
Nickel	Ni metal	1000 µg/mL	2% HNO ₃	100036-1	10,000 µg/mL	4% HNO ₃	10M36-1
Nickel	Ni metal	1000 µg/mL	2% HCl	100036-2	10,000 µg/mL	10% HCl	10M36-2
Nickel	Ni metal	10 µg/mL	2% HNO ₃	10 36-1	100 µg/mL	2% HNO ₃	100 36-1
Niobium	Nb metal	1000 µg/mL	2% HNO ₃ +0.5% HF	100037-3	10,000 µg/mL	4% HNO ₃ +1% HF	10M37-3
Niobium	Nb metal	10 µg/mL	2% HNO ₃ +Tr HF	10 37-3	100 µg/mL	2% HNO ₃ +Tr HF	100 37-3
Osmium	(NH ₄) ₂ OsCl ₆	1000 µg/mL	10% HCl	100070-2			
Osmium	(NH ₄) ₂ OsCl ₆	10 µg/mL	2% HCl	10 70-2	100 µg/mL	2% HNO ₃	100 70-2
Palladium	Pd metal	1000 µg/mL	10% HNO ₃ +Tr HCl	100038-1	10,000 µg/mL	10% HNO ₃ +Tr HCl	10M38-1
Palladium	Pd metal	1000 µg/mL	5% HCl	100038-2	10,000 µg/mL	10% HCl	10M38-2
Palladium	Pd metal	10 µg/mL	2% HNO ₃ +Tr HCl	10 38-1	100 µg/mL	2% HNO ₃ +Tr HCl	100 38-1
Phosphorus	NH ₄ H ₂ PO ₄	1000 µg/mL	0.05% HNO ₃	100039-1	10,000 µg/mL	0.05% HNO ₃	10M39-1
Phosphorus	KH ₂ PO ₄	1000 µg/mL	0.05% HNO ₃	100039-1K	10,000 µg/mL	0.05% HNO ₃	10M39-1K
Phosphorus	NH ₄ H ₂ PO ₄	10 µg/mL	2% HNO ₃	10 39-1	100 µg/mL	2% HNO ₃	100 39-1
Platinum	Pt metal	1000 µg/mL	5% HCl	100040-2	10,000 µg/mL	10% HCl	10M40-2
Platinum	Pt metal	10 µg/mL	2% HCl	10 40-2	100 µg/mL	2% HCl	100 40-2
Potassium	KNO ₃	1000 µg/mL	1% HNO ₃	100041-1	10,000 µg/mL	1% HNO ₃	10M41-1
Potassium	KCl	1000 µg/mL	1% HCl	100041-2	10,000 µg/mL	1% HCl	10M41-2
Potassium	KNO ₃	10 µg/mL	2% HNO ₃	10 41-1	100 µg/mL	2% HNO ₃	100 41-1
Praseodymium	Pr ₆ O ₁₁	1000 µg/mL	2% HNO ₃	100042-1	10,000 µg/mL	4% HNO ₃	10M42-1
Praseodymium	Pr ₆ O ₁₁	1000 µg/mL	2% HCl	100042-2	10,000 µg/mL	4% HCl	10M42-2
Praseodymium	Pr ₆ O ₁₁	10 µg/mL	2% HNO ₃	10 42-1	100 µg/mL	2% HNO ₃	100 42-1
Rhenium	Re metal	1000 µg/mL	2% HNO ₃	100043-1	10,000 µg/mL	4% HNO ₃	10M43-1
Rhenium	Re metal	1000 µg/mL	2% HCl	100043-2			
Rhenium	Re metal	10 µg/mL	2% HNO ₃	10 43-1	100 µg/mL	2% HNO ₃	100 43-1

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Element	Source	Concentration	Matrix	Catalog No.	Concentration	Matrix	Catalog No.
Rhodium	RhCl ₃	1000 µg/mL	10% HCl	100044-2	10,000 µg/mL	10% HCl	10M44-2
Rhodium	RhCl ₃	10 µg/mL	2% HCl	10 44-2	100 µg/mL	2% HCl	100 44-2
Rubidium	RbNO ₃	1000 µg/mL	1% HNO ₃	100045-1	10,000 µg/mL	1% HNO ₃	10M45-1
Rubidium	Rb ₂ CO ₃	1000 µg/mL	1% HCl	100045-2	10,000 µg/mL	1% HCl	10M45-2
Rubidium	RbNO ₃	10 µg/mL	2% HNO ₃	10 45-1	100 µg/mL	2% HNO ₃	100 45-1
Ruthenium	(NH ₄) ₂ RuCl ₂	1000 µg/mL	2% HCl	100046-2	10,000 µg/mL	5% HCl	10M46-2
Ruthenium	(NH ₄) ₂ RuCl ₂	10 µg/mL	2% HCl	10 46-2	100 µg/mL	2% HCl	100 46-2
Samarium	Sm ₂ O ₃	1000 µg/mL	2% HNO ₃	100047-1	10,000 µg/mL	4% HNO ₃	10M47-1
Samarium	Sm ₂ O ₃	1000 µg/mL	2% HCl	100047-2	10,000 µg/mL	4% HCl	10M47-2
Samarium	Sm ₂ O ₃	10 µg/mL	2% HNO ₃	10 47-1	100 µg/mL	2% HNO ₃	100 47-1
Scandium	Sc ₂ O ₃	1000 µg/mL	2% HNO ₃	100048-1	10,000 µg/mL	4% HNO ₃	10M48-1
Scandium	Sc ₂ O ₃	1000 µg/mL	2% HCl	100048-2	10,000 µg/mL	10% HCl	10M48-2
Scandium	Sc ₂ O ₃	10 µg/mL	2% HNO ₃	10 48-1	100 µg/mL	2% HNO ₃	100 48-1
Selenium	Se metal	1000 µg/mL	2% HNO ₃	100049-1	10,000 µg/mL	10% HNO ₃	10M49-1
Selenium	Se metal	1000 µg/mL	2% HCl	100049-2	10,000 µg/mL	10% HCl	10M49-2
Selenium	Se metal	10 µg/mL	2% HCl	10 49-1	100 µg/mL	2% HNO ₃	100 49-1
Selenium as Se ⁺⁴	Na ₂ SeO ₃	1000 µg/mL	H ₂ O	100049-6			
Selenium as Se ⁺⁶	Na ₂ SeO ₄	1000 µg/mL	H ₂ O	100049-7			
Silicon	SiO ₂	1000 µg/mL	1% HNO ₃ + TrHF	100050-3			
Silicon	Na ₂ SiO ₃	1000 µg/mL	H ₂ O	100050-4	10,000 µg/mL	H ₂ O	10M50-4
Silicon	(NH ₄) ₂ SiF ₆	1000 µg/mL	H ₂ O	100050-4F	10,000 µg/mL	H ₂ O	10M50-4F
Silicon	Na ₂ SiO ₃	10 µg/mL	H ₂ O	10 50-4	100 µg/mL	H ₂ O	100 50-4
Silica	SiO ₂	1000 µg/mL	1% HNO ₃ + TrHF	1000SI02-3			
Silica	(NH ₄) ₂ SiF ₆	1000 µg/mL	H ₂ O	1000SI02-4F			
Silver	Ag metal	1000 µg/mL	2% HNO ₃	100051-1	10,000 µg/mL	4% HNO ₃	10M51-1
Silver	Ag metal	10 µg/mL	2% HNO ₃	10 51-1	100 µg/mL	2% HNO ₃	100 51-1
Sodium	Na ₂ CO ₃	1000 µg/mL	1% HNO ₃	100052-1	10,000 µg/mL	1% HNO ₃	10M52-1
Sodium	NaCl	1000 µg/mL	1% HCl	100052-2	10,000 µg/mL	1% HCl	10M52-2
Sodium	Na ₂ CO ₃	10 µg/mL	2% HNO ₃	10 52-1	100 µg/mL	2% HNO ₃	100 52-1
Strontium	Sr Salt	1000 µg/mL	1% HNO ₃	100053-1	10,000 µg/mL	1% HNO ₃	10M53-1
Strontium	Sr Salt	1000 µg/mL	2% HCl	100053-2	10,000 µg/mL	10% HCl	10M53-2
Strontium	Sr(NO ₃) ₂	10 µg/mL	2% HNO ₃	10 53-1	100 µg/mL	2% HNO ₃	100 53-1
Sulfur	H ₂ SO ₄	1000 µg/mL	H ₂ O	100054-5	10,000 µg/mL	H ₂ O	10M54-5
Sulfur	H ₂ SO ₄	10 µg/mL	H ₂ O	10 54-5	100 µg/mL	H ₂ O	100 54-5
Tantalum	Ta metal	1000 µg/mL	2% HNO ₃ +0.5% HF	100055-3	10,000 µg/mL	5% HNO ₃ +2% HF	10M55-3
Tantalum	Ta metal	10 µg/mL	2% HNO ₃ +Tr HF	10 55-3	100 µg/mL	2% HNO ₃ +Tr HF	100 55-3
Tellurium	Te metal	1000 µg/mL	20% HCl	100056-2	10,000 µg/mL	40% HCl	10M56-2
Tellurium	Te metal	1000 µg/mL	2% HNO ₃ +0.2% HF	100056-3	10,000 µg/mL	5% HNO ₃ +2% HF	10M56-3
Tellurium	Te metal	10 µg/mL	2% HNO ₃ +Tr HF	10 56-3	100 µg/mL	2% HNO ₃ +Tr HF	100 56-3
Terbium	Tb ₄ O ₇	1000 µg/mL	2% HNO ₃	100057-1	10,000 µg/mL	4% HNO ₃	10M57-1
Terbium	Tb ₄ O ₇	1000 µg/mL	2% HCl	100057-2	10,000 µg/mL	4% HCl	10M57-2
Terbium	Tb ₄ O ₇	10 µg/mL	2% HNO ₃	10 57-1	100 µg/mL	2% HNO ₃	100 57-1
Thallium	Tl metal	1000 µg/mL	2% HNO ₃	100058-1	10,000 µg/mL	4% HNO ₃	10M58-1
Thallium	Tl metal	10 µg/mL	2% HNO ₃	10 58-1	100 µg/mL	2% HNO ₃	100 58-1
Thorium	ThO ₂	1000 µg/mL	2% HNO ₃	100059-1	10,000 µg/mL	4% HNO ₃	10M59-1
Thorium	ThO ₂	1000 µg/mL	2% HCl	100059-2			
Thorium	ThO ₂	10 µg/mL	2% HNO ₃	10 59-1	100 µg/mL	2% HNO ₃	100 59-1
Thulium	Tm ₂ O ₃	1000 µg/mL	2% HNO ₃	100060-1	10,000 µg/mL	4% HNO ₃	10M60-1
Thulium	Tm ₂ O ₃	1000 µg/mL	2% HCl	100060-2	10,000 µg/mL	4% HCl	10M60-2

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Element	Source	Concentration	Matrix	Catalog No.	Concentration	Matrix	Catalog No.
Thulium	Tm ₂ O ₃	10 µg/mL	2% HNO ₃	10 60-1	100 µg/mL	2% HNO ₃	100 60-1
Tin	Sn metal	1000 µg/mL	20% HCl	100061-2	10,000 µg/mL	60% HCl	10M61-2
Tin	Sn metal	1000 µg/mL	2% HNO ₃ +0.5% HF	100061-3	10,000 µg/mL	5% HNO ₃ +2% HF	10M61-3
Tin	Sn metal	10 µg/mL	2% HNO ₃ +Tr HF	10 61-3	100 µg/mL	2% HNO ₃ +Tr HF	100 61-3
Tin	(NH ₄) ₂ SnF ₆	1000 µg/mL	H ₂ O	100061-4	10,000 µg/mL	H ₂ O	10M61-4
Tin	(NH ₄) ₂ SnF ₆	10 µg/mL	H ₂ O	10 61-4	100 µg/mL	H ₂ O	100 61-4
Titanium	Ti metal	1000 µg/mL	20% HCl	100062-2	10,000 µg/mL	40% HCl	10M62-2
Titanium	Ti metal	1000 µg/mL	2% HNO ₃ +0.1% HF	100062-3	10,000 µg/mL	5% HNO ₃ +2% HF	10M62-3
Titanium	Ti metal	10 µg/mL	2% HNO ₃ +Tr HF	10 62-3	100 µg/mL	2% HNO ₃ +Tr HF	100 62-3
Titanium	(NH ₄) ₂ TiF ₆	1000 µg/mL	H ₂ O	100062-4	10,000 µg/mL	H ₂ O	10M62-4
Titanium	(NH ₄) ₂ TiF ₆	10 µg/mL	H ₂ O	10 62-4	100 µg/mL	H ₂ O	100 62-4
Tungsten	W metal	1000 µg/mL	2% HNO ₃ +1% HF	100063-3	10,000 µg/mL	5% HNO ₃ +2% HF	10M63-3
Tungsten	W metal	10 µg/mL	2% HNO ₃ +Tr HF	10 63-3	100 µg/mL	2% HNO ₃ +Tr HF	100 63-3
Tungsten	(NH ₄) ₂ WO ₄	1000 µg/mL	0.1% NH ₄ OH	100063-4	10,000 µg/mL	H ₂ O	10M63-4
Tungsten	(NH ₄) ₂ WO ₄	10 µg/mL	0.1% NH ₄ OH	10 63-4	100 µg/mL	0.1% NH ₄ OH	100 63-4
Uranium	U ₃ O ₈ or UO ₂	1000 µg/mL	2% HNO ₃	100064-1	10,000 µg/mL	4% HNO ₃	10M64-1
Uranium	U ₃ O ₈ or UO ₂	10 µg/mL	2% HNO ₃	10 64-1	100 µg/mL	2% HNO ₃	100 64-1
Vanadium	NH ₄ VO ₃	1000 µg/mL	2% HNO ₃	100065-1	5,000 µg/mL	5% HNO ₃	5M65-1
Vanadium	NH ₄ VO ₃	1000 µg/mL	2% HCl	100065-2	10,000 µg/mL	10% HCl	10M65-2
Vanadium	NH ₄ VO ₃	10,000 µg/mL	10% HNO ₃ +Tr HF	10M65-3			
Vanadium	NH ₄ VO ₃	10 µg/mL	2% HNO ₃	10 65-1	100 µg/mL	2% HNO ₃	100 65-1
Ytterbium	Yb ₂ O ₃	1000 µg/mL	2% HNO ₃	100066-1	10,000 µg/mL	4% HNO ₃	10M66-1
Ytterbium	Yb ₂ O ₃	1000 µg/mL	2% HCl	100066-2	10,000 µg/mL	4% HCl	10M66-2
Ytterbium	Yb ₂ O ₃	10 µg/mL	2% HNO ₃	10 66-1	100 µg/mL	2% HNO ₃	100 66-1
Yttrium	Y ₂ O ₃	1000 µg/mL	2% HNO ₃	100067-1	10,000 µg/mL	4% HNO ₃	10M67-1
Yttrium	Y ₂ O ₃	1000 µg/mL	2% HCl	100067-2	10,000 µg/mL	4% HCl	10M67-2
Yttrium	Y ₂ O ₃	10 µg/mL	2% HNO ₃	10 67-1	100 µg/mL	2% HNO ₃	100 67-1
Zinc	Zn metal	1000 µg/mL	2% HNO ₃	100068-1	10,000 µg/mL	4% HNO ₃	10M68-1
Zinc	Zn metal	1000 µg/mL	2% HCl	100068-2	10,000 µg/mL	10% HCl	10M68-2
Zinc	Zn metal	10 µg/mL	2% HNO ₃	10 68-1	100 µg/mL	2% HNO ₃	100 68-1
Zirconium	ZrO(NO ₃) ₂	1000 µg/mL	0.5% HNO ₃	100069-1			
Zirconium	ZrOCl ₂	1000 µg/mL	2% HCl	100069-2	10,000 µg/mL	2% HCl	10M69-2
Zirconium	Zr metal	1000 µg/mL	2% HNO ₃ +0.5% HF	100069-3	10,000 µg/mL	4% HNO ₃ +2% HF	10M69-3
Zirconium	Zr metal	10 µg/mL	2% HNO ₃ +Tr HF	10 69-3	100 µg/mL	2% HNO ₃ +Tr HF	100 69-3

Halide Standards for ICP-MS & Analytical Reagents

Find this online at highpuritystandards.com

High-Purity Standards offers halide single element standards for use on the ICP-MS from either ammonium salt or the sodium salt sources. The following are ISO Guide 34 products from ammonium salt sources. Please refer to page 30 for products from sodium salts.

Catalog No.	Element	Source	Concentration	Matrix
ICP-CL-10	Chloride	NH ₄ Cl	10 µg/mL	H ₂ O
ICP-BR-10	Bromide	NH ₄ Br	10 µg/mL	H ₂ O
ICP-II-10	Iodide	NH ₄ I	10 µg/mL	H ₂ O



For a helpful hint, use this convenient QR code.

Single-Element Dilutions

All single-element standards are available as dilutions at any concentration. Call Customer Service for pricing on other concentrations.

Analytical Reagents

Acid Reagent Blanks

Catalog No.	Description	Volume
RB-HNO3-2	2% Nitric Acid Reagent Blank	500 and 1000 mL
RB-HNO3-5	5% Nitric Acid Reagent Blank	500 and 1000 mL
RB-HCl-2	2% Hydrochloric Acid Reagent Blank	500 and 1000 mL
RB-HCl-5	5% Hydrochloric Acid Reagent Blank	500 and 1000 mL
RB-H2O	High Purity Reagent Blank Water	500 and 1000 mL
RB-MMA-1	2% Nitric Acid + 0.5% HF	500 and 1000 mL



For Analytical Reagents online, use this convenient QR code.

High-Purity Subboiling Distilled Acids

All acids are bottled in Teflon bottles.

Catalog No.	Description	Volume
SB-HNO3-500	Nitric Acid	500 mL
SB-HNO3-1L	Nitric Acid	1000 mL
SB-HCl-500	Hydrochloric Acid	500 mL
SB-HCl-1L	Hydrochloric Acid	1000 mL

ICP-OES Starter Kits

These kits are designed for ICP-OES to provide the analyst with a modest supply of high-purity single-element certified reference materials.

Individual kits are designed to meet the analyst's needs for a variety of environmental and industrial applications.

Each kit contains individual 100 or 250 mL bottles of the listed elements at 1000 µg/mL. The complete kit, ICP-KIT-A-E, contains all 60 single-element solutions listed below.

Catalog No.	1000 µg/mL									Matrix
ICP-KIT-A	Ag	Ba	Ca	Cr	Hg	Mg	Ni	Si**	V	2-5% HNO ₃ ** (NH ₄) ₂ SiF ₆ in H ₂ O
	Al	Be	Cd	Cu	In	Mn	Pb	Sr	Zn	
	As	Bi	Co	Fe	K	Na	Se	Tl		
ICP-KIT-B	Hf	Nb	Sb	Sn	Ta	Te	Ti	W	Zr	2-5% HNO ₃ + HF
	Mo									
ICP-KIT-C	B	P	S							H ₂ O
ICP-KIT-D	Au	Pd	Pt							2-5% HCl
ICP-KIT-E	Ce	Er	Gd	La	Nd	Sc	Tb	Tm	Yb	2% HNO ₃
	Dy	Eu	Ho	Lu	Pr	Sm	Th	U	Y	

ICP-KIT-A-E - Complete ICP Starter Kit (Includes all of the above kits)

ICP-MS Starter Kits

These kits are designed for ICP-MS to provide the analyst with a modest supply of high-purity single-element certified reference materials. Individual kits are designed to meet the analyst's needs for a variety of environmental and industrial applications. Each kit contains individual 100 mL bottles of the listed elements at 10 µg/mL. The complete kit, ICP-MS-KIT-A-E, contains all 74 single element solutions listed below.

For a standard containing most of these elements as a multielement mix, please reference ICP-MS-68A on page 26.

Catalog No.	10 µg/mL									Matrix
ICP-MS-KIT-A	Ag	Be	Co	Fe	In	Mn	Pb	Se	Tl	2-5% HNO ₃ **from (NH ₄) ₂ SiF ₆ in H ₂ O
	Al	Bi	Cr	Ga	K	Na	Rb	Si**	U	
	As	Ca	Cs	Ge	Li	Ni	Re	Sr	V	
	B	Cd	Cu	Hg	Mg	P	S	Th	Zn	
	Ba									
ICP-MS-KIT-B	Hf	Nb	Sb	Sn	Ta	Te	Ti	W	Zr	2% HNO ₃ + Tr HF
	Mo									
ICP-MS-KIT-C	Au	Ir	Os	Pd	Pt	Rh	Ru			2% HCl
ICP-MS-KIT-D	Ce	Er	Gd	La	Nd	Sc	Tb	Y	Yb	2% HNO ₃
	Dy	Eu	Ho	Lu	Pr	Sm	Tm			
ICP-MS-KIT-E	Br	Cl	F	I						H ₂ O

ICP-MS-KIT-A-E - Complete ICP-MS Starter Kit (Includes all of the above kits)

The multielement standards listed on the next several pages are prepared from certified reference materials. Elements are certified against NIST SRM where available, and certified against a second source when not available. Each standard is accompanied by a Certificate of Analysis and a Material Safety Data Sheet. Refer to our website for details on the Certificate of Analysis. Standards are certified accurate for a period of one year from the date of shipment. If you still do not find what you need, we will be pleased to provide a quotation.

ICP Calibration Solutions

Catalog No.	Element	Conc.	Element	Conc.	Element	Conc.	Matrix
ICP-MCS-1	As	500 µg/mL	Cd	100 µg/mL	Se	200 µg/mL	2% HNO ₃
	B	100	Mn	100	Zn	100	
	Be	50	Pb	500			
ICP-MCS-2	Ba	100	Fe	100	Si	100	2% HNO ₃
	Ca	100	Mg	100	V	100	
	Co	100	Ni	100			
ICP-MCS-3	Al	200	K	400	Na	200	5% HCl
	Cr	20	Mo	100	Sb	200	
ICP-MCS-5	Be	50	Mn	100	Se	200	2% HNO ₃
	Cd	150	Pb	500	Zn	150	
ICP-MCS-6	As	500	Mo	100			2% HNO ₃ + Tr HF
ICP-MCS-7	Ag	50	Sb	200	Tl	200	2% HNO ₃ + Tr HF
	Mg	1000					
ICP-MCS-8	Al	200	K	400	Ni	20	2% HNO ₃
	Ca	1000	Li	100	Sr	10	
	Cr	20	Na	200			
ICP-MCS-10	Al	2000	Co	500	V	500	4% HNO ₃
	Ba	2000	Cu	250			
	Be	50	Fe	1000			

ICP Working Calibration Solutions

Catalog No.	Element	Conc.	Element	Conc.	Element	Conc.	Matrix
ICP-WS-1	Ag	1 µg/mL	Mo	10 µg/mL	Ti	10 µg/mL	2% HNO ₃ + Tr HF
	Al	10	Pb	10	Tl	10	
	As	10	Sb	10	Zn	10	
	Be	1	Se	10			
	Fe	10	Sn	10			
ICP-WS-2	B	10	Co	10	Mn	10	2% HNO ₃
	Ba	10	Cr	10	Na	50	
	Bi	10	Cu	10	Ni	10	
	Ca	50	K	50	Sr	10	
	Cd	10	Mg	50	V	10	
ICP-WS-3	Au	10	Pd	10	Ru	10	5% HCl
	Ir	10	Pt	50	Te	50	
	Os	10	Rh	10			
ICP-WS-4	Ce	10	La	10	Tb	10	2% HNO ₃
	Dy	10	Lu	10	Th	10	
	Er	10	Nd	10	Tm	10	
	Eu	10	Pr	10	U	10	
	Gd	10	Sc	10	Y	10	
	Ho	10	Sm	10	Yb	10	

ICP Multielement Standards

Find this online at highpuritystandards.com

ICP Analytical Mixtures

HPS analytical mixtures are designed to calibrate the instrument response or as a quality control check for the analysis of geological, wastewater, air particulate, soil, plant and animal tissue samples.

ICP Multielement Standards

Catalog No.	Element	Conc.	Element	Conc.	Element	Conc.	Element	Conc.	Matrix
ICP-AM-1	Ba	25 µg/mL	K	500 µg/mL	Mo	50 µg/mL	Na	500 µg/mL	2% HNO ₃ + Tr HF
	Ca	250	Mg	100					
ICP-AM-2	Ag	200	B	100	Sb	200	Tl	200	2% HNO ₃ + Tr HF
ICP-AM-3	Al	100	Co	100	Hg	5	Se	50	2% HNO ₃
	As	50	Cr	100	Mn	100	V	100	
	Be	10	Cu	100	Ni	50	Zn	100	
	Cd	100	Fe	50	Pb	100			
ICP-AM-4	Ca	100	Na	100	Sb	100	Sn	100	20% HCl
	Mg	100	S	100	Se	100	Te	100	
ICP-AM-5	Al	100	Cd	100	Fe	100	Zn	100	5% HCl
	As	100	Co	100	Mn	100			
	Ba	100	Cr	100	Ni	100			
	Be	100	Cu	100	Pb	100			
ICP-AM-6	Ag*	100	Cd	100	Li	100	Sb	100	4% HNO ₃ + Tr HF
	Al	100	Co	100	Mg	100	Si	100	*Solution B
	B	100	Cr	100	Mn	100	Sr	100	4% HNO ₃
	Ba	100	Cu	100	Na	100	Tl	100	
	Be	100	Fe	100	Ni	100	V	100	
	Ca	100	K	100	Pb	100	Zn	100	
ICP-AM-7	Ag	1000	Ba	10000	Cr	1000	Pb	1000	4% HNO ₃
	As	1000	Cd	250	Hg*	50	Se	250	*Sol B - 5% HNO ₃
ICP-AM-11	B	1000	Sb	1000	Sn	1000			4% HNO ₃ +1% HF
	Mo	200	Si	2000	Ti	200			
ICP-AM-12	Al	100	Cr	100	Pb	100	Tl	100	4% HNO ₃ + Tr HF
	As	100	Cu	100	Sb	100	U	100	
	Be	100	Mo	100	Se	100	V	100	*Solution B
	Cd	100	Mn	100	Th*	100	Zn	100	4% HNO ₃
	Co	100	Ni	100					
ICP-AM-15	Ca	10000	K	10000	Mg	10000	Na	10000	5% HNO ₃
ICP-AM-15-5M	Ca	5000	K	5000	Mg	5000	Na	5000	5% HNO ₃
ICP-AM-15-1M	Ca	1000	K	1000	Mg	1000	Na	1000	2% HNO ₃
ICP-AM-16	Ca	1000	K	1000	Mg	1000	Na	1000	5% HNO ₃
	Fe	1000							

Initial Check Verification Standards

Catalog No.	Element	Conc.	Element	Conc.	Element	Conc.	Matrix
ICV-1	Al	100 µg/mL	Cu	100 µg/mL	Pb	100 µg/mL	4% HNO ₃ + Tr HF *Solution B H ₂ O
	As	100	Fe	100	S*	200	
	Ba	50	K	200	Se	200	
	Be	50	Li	100	Si*	100	
	Bi	100	Mg	100	Sr	100	
	B	100	Mn	50	Ti	100	
	Ca	100	Mo	100	V	50	
	Cd	50	Na*	162	Zn	50	
	Co	50	Ni	100			
	Cr	50	P	200			
	ICV-2	Sb	100	Sn	100	Ti	
ICV-3	Au	50	Pd	50	Pt	50	2% HCl
ICV-4	Ag	10	Cr	10	Pb	5	4% HNO ₃ + Tr HF
	Al	200	Cu	25	Sb	60	
	As	10	Fe	100	Se	5	
	Ba	200	K	5000	Tl	10	
	Be	5	Mg	5000	V	50	
	Ca	5000	Mn	15	Zn	20	
	Cd	5	Na	5000			
	Co	50	Ni	40			

Continuing Check Verification Standards

Catalog No.	Element	Conc.	Element	Conc.	Element	Conc.	Matrix
CCV-1	Al	200 µg/mL	Cu	200 µg/mL	Pb	200 µg/mL	4% HNO ₃ + Tr HF *Solution B H ₂ O
	As	200	Fe	200	S*	500	
	B	200	K	500	Se	200	
	Ba	100	Li	200	Si*	500	
	Be	100	Mg	200	Sr	200	
	Bi	200	Mn	100	Tl	200	
	Ca	200	Mo	200	V	100	
	Cd	100	Na*	810	Zn	100	
	Co	100	Ni	200			
	Cr	50	P	500			
	CCV-2	Sb	200	Sn	200	Ti	
CCV-3	Au	100	Pd	100	Pt	100	2% HCl

ICP Multielement Standards

Find this online at highpuritystandards.com

ICP Multielement Standards

Wavelength Calibration Solution

Catalog No.	Element	Conc.	Element	Conc.	Element	Conc.	Matrix
WAVECAL	As	20 µg/mL	Mn	20 µg/mL	P	100 µg/mL	2% HCl
	K	100	Mo	20	S	100	
	La	20	Na	20	Sc	20	
	Li	20	Ni	20			
WAVECAL-2	Al	50	Cr	50	Ni	50	5% HNO ₃
	As	50	Cu	50	Pb	50	
	Ba	50	K	500	Se	50	
	Cd	50	Mn	50	Sr	50	
	Co	50	Mo	50	Zn	50	
WAVECAL-PE	Ba	1	La	10	Na	50	2% HNO ₃
	Ca	1	Li	10	Sr	10	
	K	50	Mn	10			

EPA Method 200.7 Calibration Standards



Use this convenient QR code for more information.

Catalog No.	Element	Conc.	Element	Conc.	Element	Conc.	Matrix
ICP-200.7-1	Ag*	500 µg/mL	Cr	500 µg/mL	Na	1000 µg/mL	2% HNO ₃ *Solution B
	Al	1000	K	1000	Ni	500	
	Ca	1000	Mg	1000	Zn	500	
ICP-200.7-2	Ba	100	Cu	100	Sr	1000	2% HNO ₃
	Be	100	Fe	1000	V	100	
	Co	200	Mn	100			
ICP-200.7-3	As	1000	Cd	500	Se	500	2% HNO ₃
	B	200	Pb	1000	Tl	1000	
ICP-200.7-5	Ag	2.5	Cu	25	Sb	25	2% HNO ₃ + Tr HF
	Al	25	Fe	25	Se	25	
	As	25	Hg	5	Si	25	
	B	25	Li	25	Sn	10	
	Ba	25	Mn	25	Sr	25	
	Be	5	Mo	10	Tl	25	
	Cd	10	Ni	25	V	10	
	Co	10	P	50	Zn	25	
	Cr	25	Pb	25			
ICP-200.7-6	Ag	5	Cu	20	P	100	2% HNO ₃ + Tr HF *Solution B 5% HNO ₃
	Al	20	Fe	20	Pb	20	
	As	20	Hg*	20	Sb	20	
	B	20	K	100	Se	20	
	Ba	20	Li	20	Si	100	
	Be	20	Mg	20	Sn	20	
	Ca	20	Mn	20	Sr	20	
	Cd	20	Mo	20	Tl	20	
	Co	20	Na	20	V	20	
	Cr	20	Ni	20	Zn	20	
ICP-200.7-8	Al	200	Co	50	Ni	50	2% HNO ₃ + Tr HF
	Ba	50	Cr	50	SiO ₂	50	
	Be	50	Cu	50	Sn	50	
	Ca	50	Fe	300	Ti	50	
	Cd	50	Mn	50	Tl	50	
			Mo	50	V	50	

EPA Method 200.7 Calibration Standards

Catalog No.	Element	Conc.	Element	Conc.	Element	Conc.	Element	Conc.	Matrix
ICP-200.7-9	Mo	200 µg/mL	SiO ₂	1000 µg/mL	Sn	200 µg/mL	Ti	200 µg/mL	2% HNO ₃ + Tr HF
	Sb	200							
ICP-200.7-10	Ag	25	Cd	200	K	1000	Se	200	5% HNO ₃
	Al	200	Ce	200	Li	200	Tl	200	
	As	200	Co	200	Mg	200	V	200	
	B	200	Cr	200	Mn	200	Zn	200	
	Ba	200	Cu	200	Ni	200			
	Be	200	Fe	200	P	1000			
	Ca	200	Hg	200	Pb	200			

Interference Check Standards

Catalog No.	Element	Conc.	Element	Conc.	Element	Conc.	Element	Conc.	Matrix
INFCS-1	Ag*	300	Cr	300	Mn	200	V	300	4% HNO ₃ *Solution B
	As	1000	Co	300	Ni	300	Zn	300	
	Ba	300	Cu	300	Pb	1000			
	Be	100	Hg	50	Se	500			
	Cd	300	K	20000	Tl	1000			
INFCS-2	Sb	1000						20% HCl	
INFCS-3	B	500	Mo	300	Si	250	Ti	1000	2% HNO ₃ + Tr HF
INFCS-4	Al	5000	Ca	5000	Fe	5000	Mg	5000	5% HNO ₃
INFCS-5	K	5000	Na	5000					2% HCl
INFCS-6	Al	1200	Fe	5000	Mg	3000	Na	1000	4% HNO ₃
	Ca	6000							
INFCS-7*	Al	1000	Fe	1000	Mg	1000	Na	1000	5% HNO ₃
	Ca	1000	K	1000					

*Also see page 21 for additional interference check standards

ICP Stock Solution

Used to prepare working calibration standards and instrument performance check standards. These working calibration solutions are prepared from the stock solutions by making 100-, 20- and 10- fold dilutions. The working matrix is 1% HNO₃. To prepare an instrument check standard, the stock solution is diluted 40 fold in 1% HNO₃.

Catalog No.	Element	Conc.	Element	Conc.	Element	Conc.	Element	Conc.	Matrix
ICP-SS	Ag	1.5 µg/mL	Cd	20 µg/mL	Mn	20 µg/mL	Sn	20	2% HNO ₃ + Tr HF
	Al	100	Co	20	Na	2000	Sr	100	
	As	25	Cr	20	Ni	20	Tl	10	
	B	20	Cu	20	Pb	25	V	20	
	Ba	20	Fe	100	Sb	50	Zn	100	
	Be	20	K	150	Se	50			
	Ca	2000	Mg	500	Si	500			

ICP Multielement Standards

Find this online at highpuritystandards.com

Quality Control Standards

ICP Multielement Standards

Catalog No.	Element	Conc.	Element	Conc.	Element	Conc.	Element	Conc.	Matrix
QCS-1	Al	100 µg/mL	Cd	100 µg/mL	Mg	100 µg/mL	Se	100 µg/mL	4% HNO ₃ + Tr HF *Solution B in H ₂ O
	As	100	Co	100	Mn	100	Si	100	
	B	100	Cr	100	Mo	100	U	100	
	Ba	100	Fe	100	Ni	100	V	100	
	Be	100	K	100	P	100	Y	500	
	Ca	100	Li	100	S*	100	Zn	100	
QCS-2	Na	100	Sb	100	Sn	100	Y	100	5% HCl
QCS-3	Ag	100	Pb	100	Tl	100	Y	500	2% HNO ₃
	Cu	100							
QCS-7	Al	100	B	100	K	1000	Si	50	2% HNO ₃
	Ag	100	Ba	100	Na	100			
QCS-7-M	Al	100	B	100	K	1000	Si	100	2% HNO ₃
	Ag	50	Ba	100	Na	100			
QCS-19	As	100	Cr	100	Mo	100	Ti	100	4% HNO ₃ + Tr HF
	Be	100	Cu	100	Ni	100	Tl	100	
	Ca	100	Fe	100	Pb	100	V	100	
	Cd	100	Mg	100	Sb	100	Zn	100	
	Co	100	Mn	100	Se	100			
QCS-21	As	100	Cu	100	Ni	100	Tl	100	4% HNO ₃ + Tr HF
	Be	100	Fe	100	Pb	100	V	100	
	Ca	100	Li	100	Sb	100	Zn	100	
	Cd	100	Mg	100	Se	100			
	Co	100	Mn	100	Sr	100			
	Cr	100	Mo	100	Ti	100			
QCS-26	Ag	100	Cd	100	Mn	100	Si	50	4% HNO ₃ + Tr HF
	Al	100	Co	100	Mo	100	Ti	100	
	As	100	Cr	100	Na	100	Tl	100	
	B	100	Cu	100	Ni	100	V	100	
	Ba	100	Fe	100	Pb	100	Zn	100	
	Be	100	K	1000	Sb	100			
	Ca	100	Mg	100	Se	100			
QCS-26-R	Ag	100	Cd	100	Mn	100	Si	100	5% HNO ₃ + Tr HF
	Al	100	Co	100	Mo	100	Ti	100	
	As	100	Cr	100	Na	100	Tl	100	
	B	100	Cu	100	Ni	100	V	100	
	Ba	100	Fe	100	Pb	100	Zn	100	
	Be	100	K	100	Sb	100			
	Ca	100	Mg	100	Se	100			
QCS-27	Ag	100	Cd	100	Mn	100	Si	100	4% HNO ₃ + Tr HF
	Al	100	Co	100	Mo	100	Sr	100	
	As	100	Cr	100	Na	100	Ti	100	
	B	100	Cu	100	Ni	100	Tl	100	
	Ba	100	Fe	100	Pb	100	V	100	
	Be	100	K	100	Sb	100	Zn	100	
	Ca	100	Mg	100	Se	100			

Any multielement standards in the HPS Catalog can be modified to meet your needs.
Call (866) 767-4771 toll free to discuss your needs with our staff.

Contract Laboratory Program Calibration Standards

Catalog No.	Element	Conc.	Element	Conc.	Element	Conc.	Element	Conc.	Matrix
CLP-CAL-1	Ag*	250 µg/mL	Ca	5000 µg/mL	Fe	1000 µg/mL	Na	5000	4% HNO ₃
	Al	2000	Co	500	K	5000	Ni	500	*Solution B
	Ba	2000	Cr	200	Mg	5000	V	500	
	Be	50	Cu	250	Mn	500	Zn	500	
CLP-CAL-2	Sb	1000							5% Tartaric Acid + 2% HNO ₃
CLP-CAL-3	As	1000	Pb	1000	Se	1000	Tl	1000	2% HNO ₃
	Cd	500							

Contract Laboratory Program Check Verification Standards

Catalog No.	Element	Conc.	Element	Conc.	Element	Conc.	Element	Conc.	Matrix
CLP-CV-1	Ag	125 µg/mL	Ca	2500 µg/mL	Fe	500 µg/mL	Na	2500 µg/mL	4% HNO ₃
	Al	1000	Co	250	K	2500	Ni	250	
	Ba	1000	Cr	100	Mg	2500	V	250	
	Be	25	Cu	125	Mn	250	Zn	250	
CLP-CV-2	Sb	500							2% HNO ₃ + Tr HF
CLP-CV-3	As	500	Pb	500	Se	500	Tl	500	2% HNO ₃
	Cd	250							

Contract Laboratory Program Interference Check Standards

Catalog No.	Element	Conc.	Element	Conc.	Element	Conc.	Element	Conc.	Matrix
CLP-INF-1	Al	5000 µg/mL	Ca	5000 µg/mL	Fe	2000 µg/mL	Mg	5000 µg/mL	5% HNO ₃

Contract Laboratory Program Spike Standards

Catalog No.	Element	Conc.	Element	Conc.	Element	Conc.	Element	Conc.	Matrix
CLP-SP-1	Ag*	50 µg/mL	Be	50 µg/mL	Cu	250 µg/mL	Ni	500 µg/mL	4% HNO ₃
	Al	2000	Co	500	Fe	1000	V	500	*Solution B
	Ba	2000	Cr	200	Mn	500	Zn	500	
CLP-SP-2	Sb	500							5% Tartaric Acid+ 2% HNO ₃
CLP-SP-3	As	2000	Pb	500	Se	2000	Tl	2000	4% HNO ₃
	Cd	50							
CLP-SS	Ag	5	Cd	5	Mn	50	Se	200	2% HNO ₃ +Tr HF
	Al	200	Co	50	Ni	50	Tl	200	
	As	200	Cr	20	Pb	5	V	50	
	Ba	200	Cu	25	Sb	50	Zn	50	
	Be	5	Fe	100					

ICP Multi-element Standards

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ICP Multi-element Standards

Contract Laboratory Program Analyte Standards

Catalog No.	Element	Conc.	Element	Conc.	Element	Conc.	Element	Conc.	Matrix
ANALCS	Ag	100 µg/mL	Cd	100 µg/mL	Cu	50 µg/mL	Pb	100 µg/mL	2% HNO ₃
	Ba	50	Co	50	Mn	50	V	50	
	Be	50	Cr	50	Ni	100	Zn	100	
ANALCS-R	Ag	20	Cd	100	Mn	50	Se	5	2% HNO ₃ +Tr HF
	As	10	Co	50	Ni	100	Tl	10	
	Ba	50	Cr	50	Pb	5	V	50	
	Be	50	Cu	50	Sb	60	Zn	100	
ICP-RCRA-1	As	1000	Cd	1000	Cu	1000	Pb	1000	5% HNO ₃
	Ba	1000	Cr	1000	Ni	1000	Zn	1000	
ICP-RCRA-2	Ag	100	Ba	100	Cr	100	Pb	100	5% HNO ₃
	As	100	Cd	100	Hg	100	Se	100	

CRDL Detection Limit Standard

Catalog No.	Element	Conc.	Element	Conc.	Element	Conc.	Element	Conc.	Matrix
CRDL	As	20 µg/mL	Co	100 µg/mL	Ni	80 µg/mL	Tl	20 µg/mL	2% HNO ₃ +Tr HF
	Ag	20	Cr	20	Pb	6	V	100	
	Be	10	Cu	50	Sb	120	Zn	40	
	Cd	10	Mn	30	Se	10			

ICP-MS Calibration Standards

The following solutions include elements chosen to calibrate the ICP-MS over the entire mass spectrum. These multielement standards are designed to assist the analyst in the verification of the mass range.

Catalog No.	Element	Conc.	Element	Conc.	Element	Conc.	Element	Conc.	Matrix
ICP-MSCS	Ag	10 µg/mL	Cr	10 µg/mL	Mn	10 µg/mL	Sr	10 µg/mL	2% HNO ₃ + Tr HF
	Al	10	Co	10	Mo	10	Th	10	
	As	10	Cu	10	Na	10	Tl	10	
	B	10	Eu	10	Ni	10	U	10	
	Ba	10	Ho	10	Pb	10	V	10	
	Be	10	La	10	Sb	10	Yb	10	
	Ca	10	Li	10	Sc	10	Zn	10	
	Cd	10	Mg	10	Se	10			
ICP-MSCS-M	Ag	10	Cd	10	Li	10	Se	10	2% HNO ₃ + Tr HF
	Al	10	Co	10	Mg	10	Sr	10	
	As	10	Cr	10	Mn	10	Th	10	
	B	10	Cu	10	Mo	10	Tl	10	
	Ba	10	Eu	10	Na	10	V	10	
	Be	10	Fe	10	Ni	10	U	10	
	Bi	10	Ho	10	Pb	10	Yb	10	
	Ca	10	La	10	Sb	10	Zn	10	
ICP-MSCS-PE3	Ag	10	Co	10	K	10	Se	10	5% HNO ₃ * Solution B
	Al	10	Cr	10	Li	10	Sr	10	
	As	10	Cs	10	Mg	10	Tl	10	
	Ba	10	Cu	10	Mn	10	U	10	
	Be	10	Fe	10	Na	10	V	10	
	Bi	10	Ga	10	Ni	10	Zn	10	
	Ca	10	Hg*	10	Pb	10			
	Cd	10	In	10	Rb	10			

Interference Check Solutions

These solutions contain known concentrations that will demonstrate the magnitude of interference and provide adequate tests for many corrections.

Catalog No.	Element	Conc.	Element	Conc.	Element	Conc.	Element	Conc.	Matrix
ICP-MS-ICS Solution A	Al	500 mg/L	Cl	3600 mg/L	Mg	500 mg/L	Na	500 mg/L	2% HNO ₃ +Tr HF
	C	1000	Fe	500	Mo	10	S	500	
	Ca	500	K	500	P	500	Ti	10	
Solution AB	All elements in Solution A plus the following:								
	Ag	0.10	Co	0.20	Mn	0.10	V	0.20	2% HNO ₃ +Tr HF
	As	0.10	Cr	0.10	Ni	0.20	Zn	0.10	
	Cd	0.05	Cu	0.10	Se	0.10			
ICP-MS-ICS-2 Solution A	Al	1000	Cl	20000	Mg	1000	P	1000	5% HNO ₃ +Tr HF
	C	2000	Fe	2500	Mo	20	S	1000	
	Ca	3000	K	1000	Na	2500	Ti	20	
Solution B	Ag	5	Co	20	Mn	20	V	20	2% HNO ₃
	As	10	Cr	20	Ni	20	Zn	10	
	Cd	10	Cu	20	Se	10			
ICP-MS-ICS-3 Solution A	Al	1000	Cl	18000	Mg	1000	P	1000	2% HNO ₃ +Tr HF
	C	2000	Fe	2500	Mo	20	S	1000	
	Ca	3000	K	1000	Na	2500	Ti	20	
Solution B	Ag	20	Co	20	Mn	20	V	20	2% HNO ₃
	As	10	Cr	20	Ni	20	Zn	10	
	Cd	10	Cu	20	Se	10			

ICP-MS Multielement Standards

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ICP-MS Multielement Standards

ICP-MS Verification Standards

The following series of ICP-MS standards are used as concentration verification checks.

Catalog No.	Element	Conc.	Element	Conc.	Element	Conc.	Element	Conc.	Matrix
ICP-MS-B	Ce	10 µg/mL	Ho	10 µg/mL	Sm	10 µg/mL	Yb	10 µg/mL	2% HNO ₃
	Dy	10	La	10	Sc	10	Y	10	
	Er	10	Lu	10	Tb	10			
	Eu	10	Nd	10	Th	10			
	Gd	10	Pr	10	Tm	10			
ICP-MS-C	Au	10	Pd	10	Ru	10	Te	10	10% HCl
	Hf	10	Pt	10	Sb	10			
	Ir	10	Rh	10	Sn	10			
ICP-MS-D	B	10	Nb	10	S	10	Ti	10	2% HNO ₃ + Tr HF
	Ge	10	P	10	Si	10	W	10	
	Mo	10	Re	10	Ta	10	Zr	10	
ICP-MS-D-M	B	10	P	10	Si	10	W	10	2% HNO ₃ + Tr HF
	Mo	10	Re	10	Ta	10	Zr	10	
	Nb	10	S	10	Ti	10			
ICP-MS-E	Ag	10	Co	10	Li	10	Se	10	2% HNO ₃
	Al	10	Cr	10	Mg	10	Sr	10	
	As	10	Cs	10	Mn	10	Tl	10	
	Ba	10	Cu	10	Na	10	U	10	
	Be	10	Fe	10	Ni	10	V	10	
	Ca	10	Ga	10	Pb	10	Zn	10	
	Cd	10	K	10	Rb	10			
ICP-MS-F	Be	10	Co	10	Mg	10	Pb	10	2% HNO ₃
	Bi	10	In	10	Ni	10	U	10	
	Ce	10							

ICP-MS Method 6020

When the following solution is diluted 100-fold, the Contract Required Detection Limits (CRDL) of the elements approved for ICP-MS Method 6020 CLP-M are met.

Catalog No.	Element	Conc.	Element	Conc.	Element	Conc.	Element	Conc.	Matrix
ICP-MS-6020	Ag	10 µg/L	Cd	5 µg/L	Mg	5000 µg/L	Se	5 µg/L	4% HNO ₃ Tr HF
	Al	200	Co	50	Mn	15	Tl	10	
	As	10	Cr	10	Na	5000	V	50	
	Ba	200	Cu	25	Ni	40	Zn	20	
	Be	5	Fe	100	Pb	5			
	Ca	5000	K	5000	Sb	60			
ICP-MS-MCS** Solution A	Al	500 mg/L	Cr	10 mg/L	Ni	10 mg/L	V	10 mg/L	2% HNO ₃ + Tr HF
	Be	10	Mg	500	S	500	Zn	10	
	C	1000	Mn	10	Sb	10			
	Cl	3600	Na	500	Ti	10			
Solution B	Ag	10	Cd	10	K	500	Se	10	2% HNO ₃ + Tr HF
	As	10	Co	10	Mo	10	Tl	10	
	Ba	10	Cu	10	P	500			
	Ca	500	Fe	500	Pb	10			

**Method 6020 CLP-M requires a memory test be performed after calibration of ICP-MS and before performing any analysis. This standard supports that test in the detection of the presence of any memory problems that would affect the quality of the data. To obtain the listed concentrations, the analyst must combine an equal volume of Solution A and B.

EPA Method 200.8 Calibration Standards

Catalog No.	Element	Conc.	Element	Conc.	Element	Conc.	Element	Conc.	Matrix
ICP-200.8-1	Ag	10 µg/mL	Cd	10 µg/mL	Mo	10 µg/mL	Th	10 µg/mL	2% HNO ₃ +Tr HF
	Al	10	Co	10	Ni	10	Tl	10	
	As	10	Cr	10	Pb	10	U	10	
	Ba	10	Cu	10	Sb	10	V	10	
	Be	10	Mn	10	Se	10	Zn	10	
ICP-200.8-2	Ag	10 µg/mL	Cd	10 µg/mL	Mo	10 µg/mL	Th	10 µg/mL	2% HNO ₃ +Tr HF
	Al	10	Co	10	Ni	10	Tl	10	
	As	10	Cr	10	Pb	10	U	10	
	Ba	10	Cu	10	Sb	10	V	10	
	Be	10	Mn	10	Se	10	Zn	10	
ICP-200.8-3	Ag	20 µg/mL	Cd	20 µg/mL	Mo*	20 µg/mL	Th	20 µg/mL	2% HNO ₃ *Solution B 2% HNO ₃ +Tr HF
	Al	20	Co	20	Ni	20	Tl	20	
	As	20	Cr	20	Pb	20	U	20	
	Ba	20	Cu	20	Sb*	20	V	20	
	Be	20	Mn	20	Se	100	Zn	20	

Tuning Solutions

The following solutions include elements chosen to calibrate the ICP-MS over the entire mass spectrum. These multielement standards are designed to assist the analyst in the verification of the mass range.

Catalog No.	Element	Conc.	Element	Conc.	Element	Conc.	Element	Conc.	Matrix
ICP-MS-TS-1	Co	10 µg/mL	In	10 µg/mL	Li	10 µg/mL	Tl	10 µg/mL	2% HNO ₃
ICP-MS-TS-2	Ce	10	Li	10	Tl	10	Y	10	2% HNO ₃
ICP-MS-TS-3	Be	10	In	10	Mg	10	Pb	10	2% HNO ₃
	Co	10							
ICP-MS-TS-4	Al	10	Bi	10	In	10	Pb	10	2% HNO ₃
	Ba	10	Ce	10	Mg	10	V	10	
	Be	10	Co	10	Ni	10	Y	10	
ICP-MS-TS-5	Bi	10	In	10	Sc	10	U	10	2% HNO ₃
	Ho	10	⁶ Li	10	Tb	10	Y	10	
ICP-MS-TS-6	Ba	10	Ce	10	In	10	Pb	10	2% HNO ₃ +Tr HCl
	Be	10	Co	10	Mg	10	Rh	10	
ICP-MS-TS-7	Ba	10	Co	10	Mg	10	Th	10	2% HNO ₃
	Be	10	In	10	Pb	10	Tl	10	
	Ce	10							
ICP-MS-TS-8	Ba	10	Ce	10	Li	10	U	10	2% HNO ₃
	Be	10	Co	10	Ni	10			
	Bi	10	In	10	Pb	10			

ICP-MS Multielement Standards

Find this online at highpuritystandards.com

ICP-MS Multielement Standards

68-Element Standard

These 3-standard kits were designed for use when screening for a large number of elements. They are offered at two concentrations: 10 µg/mL (68A) and 100 µg/mL (68B). They may be purchased as a kit or their individual standards may be purchased separately. Volumes of 100, 250 and 500 mL are stocked.

Catalog No.	Element	Element	Element	Element	Element	Element	Element
Solution A	Al	Cd	Er	K	Nd	Sc	Tm
ICP-MS-68A in 2% HNO ₃	As	Ce	Eu	La	Ni	Se	U
ICP-MS-68B in 4% HNO ₃	B	Co	Fe	Li	P	Sm	V
	Ba	Cr	Ga	Lu	Pb	Sr	Y
	Be	Cs	Gd	Mg	Pr	Tb	Yb
	Bi	Cu	Ho	Mn	Rb	Tl	Zn
	Ca	Dy	In	Na	Re	Th	
Solution B	Ag	Hf	Nb	Si	Ta	Ti	Zr
ICP-MS-68A in 2% HNO ₃ + Tr HF	Ge	Mo	Sb	Sn	Te	W	
ICP-MS-68B in 2% HNO ₃ + Tr HF							
Solution C	Au	Ir	Os	Pd	Pt	Rh	Ru
ICP-MS-68A in 2% HCl							
ICP-MS-68B in 4% HNO ₃ + 2% HCl							

ICP-MS Internal Standards

Below are popular ICP-MS internal standard solutions. ICP-MS-IS-1 can be used with EPA Method 6020 and ICP-MS-IS-2 can be used with EPA Method 200.8.

Catalog No.	Element	Conc.	Element	Conc.	Element	Conc.	Element	Conc	Matrix
ICP-MS-IS-1	Bi	10 µg/mL	⁶ Li	10 µg/mL	Sc	10 µg/mL	Y	10 µg/mL	2% HNO ₃ + Tr HCl
	Ho	10	Lu	10	Tb				
	In	10	Rh	10					
ICP-MS-IS-2	Bi	100	Sc	100	Tb	100	Y	100	in 2% HNO ₃
	In	100							
ICP-MS-IS-3	Bi	10	In	10	Sc	10	Y	10	in 2% HNO ₃
	Ge	10	⁶ Li	10	Tb	10			



For more information, use this convenient QR code.

Hygiene and Ambient Air Analysis

High-Purity Standards offers a wide range of standards for trace metals on filter media. Custom standards of metals in acid matrices or in natural matrices such as soil, coal dust, etc. can be prepared. These standards can be deposited on mixed cellulose esters, PTFE, glass, or quartz filters. Contact us for a quotation.

The following trace metals on mixed cellulose ester are designed to meet the QC requirements for Method 7300. Trace metals on PTFE are designed to meet the requirements of EPA IO methods. Additional blanks are available on request.

Catalog No.								
QC-TMFM-A-G		Trace metals on mixed cellulose ester; 10 spiked filters + 5 blanks						
QC-PTFE-A-G		Trace metals on PTFE; 5 spiked filters + 2 blanks						
	A	B	C	D	E	F	G	
Element	µg / filter	µg / filter	µg / filter	µg / filter	µg / filter	µg / filter	µg / filter	
Aluminum				50	100			
Arsenic	10	50	100	10	20	10	50	
Barium	2.5	10	25	2.5	5	2.5	10	
Beryllium	1	10	25	0.1	0.2	1	10	
Cadmium	1	10	25	1	2	1	10	
Chromium	2.5	10	25	2.5	5	2.5	10	
Cobalt	2.5	10	25	2.5	5	2.5	10	
Copper	2.5	25	50	2.5	5	2.5	25	
Iron	2.5	25	50	2.5	5	2.5	25	
Lead	2.5	25	50	2.5	5	2.5	25	
Manganese	1	10	25	1	2	1	10	
Nickel	2.5	10	25	2.5	5	2.5	10	
Silver	1	5	10	1	2	1	5	
Thallium	2.5	10	25	2.5	5	2.5	10	
Uranium						2.5	5	
Vanadium	2.5	10	25	2.5	5	2.5	10	
Zinc	2.5	50	100	2.5	5	2.5	50	

The following trace metals on quartz filters are designed to meet the QC requirements of EPA IO methods.

Catalog No.	Element	Conc.	Element	Conc.	Element	Conc.	Element	Conc.	Media
QC-TOXM-B	As	50 µg	Cd	10 µg	Mn	10 µg	Pb	25 µg	Quartz QM-A grade filter
	Be	10	Cr	10	Ni	10	Sb	10	

High-Purity Standards offers a line of high-fired beryllium oxide solids on mixed cellulose ester filters. These products include two options for source material: industrial-grade, fine particle or the highly-characterized source of BeO, using NIST SRM® 1877. Concentrations range from 0.05 to 25 µg/filter.

Catalog No.		Catalog No.	
TMFM-CBEO	NIST BeO source; 2 spiked filters/set	TMFM-CBEO-BLANK	Blank filters for TMFM-CBEO

For more information, visit our website using this convenient QR code.



Matrix Modifiers for Graphite Furnace

HPS Matrix Modifiers are designed for use with Graphite Furnace Atomic Absorption (GFAAS). A matrix modifier is added to the sample to prevent analyte loss during the ashing step by converting the analyte to a less volatile form.

Catalog No.	Description
MM-9001	0.1% NH ₄ H ₂ PO ₄ in 0.05% HNO ₃
MM-9002	1% NH ₄ H ₂ PO ₄ in 0.05% HNO ₃
MM-9003	10% NH ₄ H ₂ PO ₄ in 0.05% HNO ₃
MM-9004	20% NH ₄ H ₂ PO ₄ in 0.05% HNO ₃
MM-9010	0.1% Mg(NO ₃) ₂ in 1% HNO ₃
MM-9011	1% Mg(NO ₃) ₂ in 1% HNO ₃
MM-9012	5% Mg(NO ₃) ₂ in 1% HNO ₃
MM-9020	0.1% Pd in 10% HNO ₃ + Tr HCl
MM-9023	0.5% Pd in 10% HNO ₃ + Tr HCl
MM-9021	1% Pd in 10% HNO ₃ + Tr HCl
MM-9022	2% Pd in 10% HNO ₃ + Tr HCl
MM-9030	0.1% Ni(NO ₃) ₂ in 1% HNO ₃

Catalog No.	Description
MM-9031	1% Ni(NO ₃) ₂ in 1% HNO ₃
MM-9032	5% Ni(NO ₃) ₂ in 1% HNO ₃
MM-9040	0.1% NH ₄ NO ₃ in H ₂ O
MM-9041	1% NH ₄ NO ₃ in H ₂ O
MM-9042	5% NH ₄ NO ₃ in H ₂ O
MM-9100	1000 µg Pd/mL - 600 µg Mg(NO ₃) ₂ /mL in 10% HNO ₃ + Tr HCl
MM-9101	1500 µg Pd/mL - 1000 µg Mg(NO ₃) ₂ /mL in 10% HNO ₃ + Tr HCl
MM-9102	750 µg Pd/mL - 500 µg Mg(NO ₃) ₂ /mL in 10% HNO ₃ + Tr HCl
MM-9110	10,000 µg NH ₄ H ₂ PO ₄ /mL - 500 µg Mg(NO ₃) ₂ in 1% HNO ₃

Ionization Buffers for Flame AAS

Ionization Buffers are used to increase the free electron population in flame emission or absorption and thereby suppress ionization interference effects of many ions in high temperature flames such as nitrous oxide - acetylene. While the alkali metals are known to be ionized at various degrees, many metals including aluminum and silicon are ionized to an appreciable extent in a nitrous oxide - acetylene flame. Ionization buffers are always recommended with the nitrous oxide - acetylene flame. It is of interest to note that the ionization potential of lanthanum (5.6 eV) is very close to that of lithium (5.39 eV). Therefore, lanthanum acts as an ionization buffer as well as a releasing agent for the alkaline earth metals, silicon, and aluminum. The cesium ionization buffer is recommended by the manufacturers of the ICP and AAS instrumentation.

Catalog No.	Description
IB-CS-B1	1% Cesium in 1% HNO ₃
IB-CS-B5	5% Cesium in 1% HNO ₃
IB-LA-B5	5% Lanthanum in 1% HNO ₃ *
IB-LA-A1	1% Lanthanum in 1% HCl*
IB-LA-A5	5% Lanthanum in 1% HCl*

Also used as releasing agents in flame AAS

For more information, visit our website
using this convenient QR code.



Organometallic Oil Standards

The standards listed below are for determination of wear metals in oils and lubricants. The standards below can also be ordered in paraffin 20 Base Oil, 75 Base Oil, Soybean Oil, and Xylene. Blank oil standards are available as well.

Catalog No.	Element	Concentration (µg/g)	Weight (g)
ALOMS	Aluminum	1000	100
SBOMS	Antimony	1000	100
ASOMS	Arsenic	50	100
BAOMS	Barium	1000	100
BEOMS	Beryllium	1000	100
BIOMS	Bismuth	1000	100
BBOMS	Boron	1000	100
CDOMS	Cadmium	1000	100
CAOMS	Calcium	1000	100
CROMS	Chromium	1000	100
COOMS	Cobalt	1000	100
CUOMS	Copper	1000	100
INOMS	Indium	1000	100
FEOMS	Iron	1000	100
PBOMS	Lead	1000	100
LIOMS	Lithium	1000	100
MGOMS	Magnesium	1000	100
MNOMS	Manganese	1000	100
HGOMS	Mercury	50	100
MOOMS	Molybdenum	1000	100
NIOMS	Nickel	1000	100
PPOMS	Phosphorus	1000	100
KKOMS	Potassium	1000	100
SEOMS	Selenium	50	100
SIOMS	Silicon	1000	100
AGOMS	Silver	1000	100
NAOMS	Sodium	1000	100
SNOMS	Tin	1000	100
TIOMS	Titanium	1000	100
WWOMS	Tungsten	1000	100
VVOMS	Vanadium	1000	100
ZNOMS	Zinc	1000	100
BMOMS	Base Mineral Oil	500 mL	
OMS-12	Ag, Al, Cr, Cu, Fe, Mg, Na, Ni, Pb, Si, Sn, Ti, all elements at 200 µg/g	Mineral Oil	100 g and 200 g
OMS-21	Ag, Al, B, Ba, Ca, Cd, Cr, Cu, Fe, Mg, Mn, Mo, Na, Ni, P, Pb, Si, Sn, Ti, V, Zn all elements at 200 µg/g	Mineral Oil	100 g and 200 g

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Ion Chromatography Standards

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Single Component IC Standards

Anions	Source	Concentration	Catalog No.	Concentration	Catalog No.
Acetate	Na Acetate	100 µg/mL	IC-AC	1000 µg/mL	IC-AC-M
Bromide	NaBr	100	IC-BR	1000	IC-BR-M
Bromide	NaBr	10,000	IC-BR-10M		
Bromate	NaBrO ₃	100	IC-BRO3	1000	IC-BRO3-M
Chloride	NaCl	100	IC-CL	1000	IC-CL-M
Chloride	NaCl	10,000	IC-CL-10M		
Chlorite	NaClO ₂	100	IC-CLO2	1000	IC-CLO2-M
Chlorate	NaClO ₃	100	IC-CLO3	1000	IC-CLO3-M
Perchlorate	NaClO ₄	100	IC-CLO4	1000	IC-CLO4-M
Fluoride	NaF	100	IC-FF	1000	IC-FF-M
Fluoride	NaF	10,000	IC-FF-10M		
Formate	Na Formate	100	IC-FM	1000	IC-FM-M
Iodide	NaI	100	IC-II	1000	IC-II-M
Lactate	Na Lactate	100	IC-LAC	1000	IC-LAC-M
Nitrate	NaNO ₃	100	IC-NO	1000	IC-NO-M
Nitrate	NaNO ₃	10,000	IC-NO-10M		
Nitrite	NaNO ₂	100	IC-N	1000	IC-N-M
Nitrogen	NaNO ₂	100	IC-NO2	1000	IC-NO2-M
Nitrogen	NaNO ₃	100	IC-NO3	1000	IC-NO3-M
Nitrogen	NH ₄ Cl	100	IC-NT	1000	IC-NT-M
Oxalate	Na Oxalate	100	IC-OX	1000	IC-OX-M
Phosphate	NH ₄ H ₂ PO ₄	100	IC-PP	1000	IC-PP-M
Phosphate	NH ₄ H ₂ PO ₄	10,000	IC-PP-10M		
Phosphate	KH ₂ PO ₄	100	IC-KPP	1000	IC-KPP-M
Phosphorus	NH ₄ H ₂ PO ₄	100	IC-P	1000	IC-P-M
Phosphorus	KH ₂ PO ₄	100	IC-KP	1000	IC-KP-M
Propionate	Na Propionate	100	IC-PRO	1000	IC-PRO-M
Sulfate	Na ₂ SO ₄	100	IC-SS	1000	IC-SS-M
Sulfate	Na ₂ SO ₄	10,000	IC-SS-10M		
Sulfur	Na ₂ SO ₄	100	IC-SR	1000	IC-SR-M
Thiocyanate	NaSCN	100	IC-SCN	1000	IC-SCN-M
Thiosulfate	Na ₂ S ₂ O ₃	100	IC-S2O3	1000	IC-S2O3-M
Cations					
Ammonium	NH ₄ Cl	100	IC-NH	1000	IC-NH-M
Calcium	CaCl ₂	100	IC-CA	1000	IC-CA-M
Lithium	LiNO ₃	100	IC-LI	1000	IC-LI-M
Magnesium	MgCl ₂	100	IC-MG	1000	IC-MG-M
Potassium	KCl	100	IC-K	1000	IC-K-M
Sodium	NaCl	100	IC-NA	1000	IC-NA-M

Multielement IC Standards

Catalog No.	Element	Conc.	Element	Conc.	Element	Conc.	Element	Conc.	Matrix
IC-1	Bromide	100 µg/mL	Fluoride	100 µg/mL	Nitrite*	100 µg/mL	Sulfate	100 µg/mL	H ₂ O
	Chloride	100	Nitrate	100	Phosphorus	100			*Solution B
IC-2	Bromide	1000	Fluoride	1000	Nitrite*	1000	Sulfate	1000	H ₂ O
	Chloride	1000	Nitrate	1000	Phosphorus	1000			*Solution B
IC-4	Ammonium	100	Magnesium	100	Potassium	100	Sodium	100	H ₂ O
	Calcium	100							
IC-AN5-1	Chloride	30	Nitrate	100	Phosphate	150	Sulfate	150	H ₂ O
	Fluoride	20							
IC-AN6-1	Bromide	400	Fluoride	100	Phosphate	600	Sulfate	400	H ₂ O
	Chloride	200	Nitrate	400					

*Solution B

Bio IC Calibration Standards

This kit is a set of 6 solutions in water. BIO-IC-CAL is designed to establish the calibration curve of varying concentrations plus a quality control check to meet ASTM D7328. It is available in 100 or 250mL sizes.

Catalog No.	Solution	Components	Concentration	Solution	Components	Concentration
BIO-IC-CAL	A	Cl, SO ₄	0.5 µg/mL	D	Cl, SO ₄	5 µg/mL
	B	Cl, SO ₄	1	E	Cl, SO ₄	10
	C	Cl, SO ₄	3	Check Solution	Cl, SO ₄	3

Wet Chemical Standards

High-Purity Standards has increased our ISO/IEC 17025:2005 scope to include titrations. We offer the following products with ISO/IEC 17025:2005 Certificates. Custom titration standards with similar Certificates of Analysis are available. Please call 1 (866) 767-4771 for more information.

Catalog No.	Concentration	Matrix	Sizes
IC-CN	100 µg/mL	2% KOH	Available in 100, 250 and 500 mL
IC-CN-M	1000 µg/mL	2% KOH	Available in 100, 250 and 500 mL

Need technical assistance? Call us for help with all your laboratory questions.

For more information, visit our website using this convenient QR code.

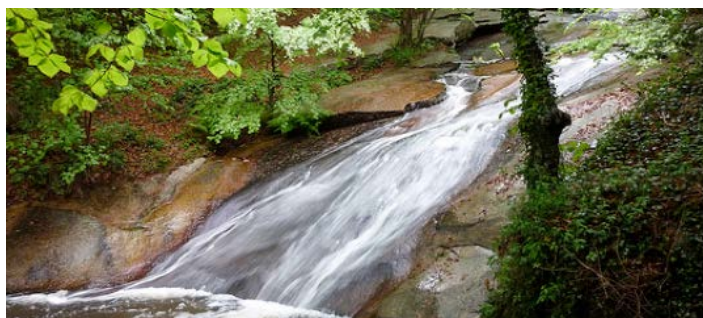


Trace Metals in Drinking Water Standards

Catalog No.	Element Conc.		Element Conc.		Element Conc.		Element Conc.		Matrix
CRM-TMDW	Ag	2 µg/L	Co	25 µg/L	Mo	100 µg/L	Te	3 µg/L	2% HNO ₃ + Tr HF
	Al	120	Cr	20	Na	6000	Tl	10	
	As	80	Cu	20	Ni	60	U	10	
	Ba	50	Fe	100	Pb	40	V	30	
	Be	20	K	2500	Rb	10	Zn	70	
	Bi	10	Li	20	Sb	10			
	Ca	35000	Mg	9000	Se	10			
	Cd	10	Mn	40	Sr	250			
CRM-TMDW-A	Ag	2	Cd	10	Mg	8000	Se	11	2% HNO ₃ + Tr HF
	Al	125	Co	25	Mn	40	Sr	300	
	As	55	Cr	20	Mo	110	Tl	10	
	B	150	Cu	20	Na	2300	V	35	
	Ba	500	Fe	90	Ni	60	Zn	75	
	Be	15	K	2500	Pb	20			
	Ca	31000	Li	15	Sb	55			
CRM-TMDW-B	Ag	2	Cd	10	Mg	8000	Se	11	2% HNO ₃ + Tr HF
	Al	125	Co	25	Mn	40	Sr	300	
	As	10	Cr	20	Mo	110	Tl	10	
	B	150	Cu	20	Na	22000	V	35	
	Ba	500	Fe	90	Ni	60	Zn	75	
	Be	15	K	2500	Pb	20			
	Ca	31000	Li	15	Sb	55			
Primary Drinking Water Metals									
DWPS	Ag	10 µg/mL	Ba	50 µg/mL	Cr	100 µg/mL	Pb	100 µg/mL	2% HNO ₃ *Solution B 5% HNO ₃
	As	100	Cd	50	Hg*	20	Se	50	
Secondary Drinking Water Metals									
DWSS	Cu	50	Fe	100	Mn	50	Zn	50	2% HNO ₃

Simulated Rainwater

Simulated Rainwater standards are available in 250mL, packaged as 5 x 50 mL bottles. The concentrations shown are the targeted values for each level.



Catalog No.	SR-1	SR-2
pH, 25°C	4.3	3.6
Specific Conductance (µS/cm, 25°C)	26	130
Components	mg/L	mg/L
Ammonium	0.10	1
Calcium	0.01	0.05
Chloride	0.25	1
Fluoride	0.05	0.10
Magnesium	0.02	0.05
Nitrate	0.50	7
Potassium	0.05	0.10
Sodium	0.20	0.40
Sulfate	2.5	11

Spiking Solutions for Water and Soil Samples

Catalog No.	Element	Conc.	Element	Conc.	Element	Conc.	Element	Conc.	Matrix
AAS-SSWS-R	As	40 µg/mL	Pb	20 µg/mL	Se	10 µg/mL	Tl	50 µg/mL	2% HNO ₃ + Tr HF
	Cd	5	Sb	100					
ICP-SSWS	Ag	5	Cd	5	Mn	50	Se	200	2% HNO ₃ + Tr HF
	Al	200	Co	50	Ni	50	Tl	200	
	As	200	Cr	20	Pb	50	V	50	
	Ba	200	Cu	25	Sb	50	Zn	50	
	Be	5	Fe	100					
ICP-SSWS-M	Ag	5	Cd	5	Mn	50	Tl	5	2% HNO ₃ + Tr HF
	Al	200	Co	50	Ni	50	V	50	
	As	4	Cr	20	Pb	2	Zn	50	
	Ba	200	Cu	25	Sb	50	Zn	50	
	Be	5	Fe	100	Se	1			

Simulated Seawater Standard in 2% HNO₃

Catalog No.	Primary Elements	mg/kg	Trace Elements	mg/kg	Trace Elements	mg/kg
CRM-SW	Bromide	65	Aluminum	0.5	Lithium	0.1
	Calcium	400	Arsenic	0.02	Manganese	0.01
	Chloride	19000	Barium	0.05	Phosphorus	0.1
	Magnesium	1250	Boron	5.0	Rubidium	0.2
	Potassium	380	Copper	0.01	Selenium	0.004
	Sodium	10500	Iodide	0.05	Silicon	4
	Strontium	12	Iron	0.02	Uranium	0.0015
	Sulfur	900	Lead	0.004	Zinc	0.005

Certified Wastewater - Trace Metals Solutions

These solutions, which are directly traceable to NIST, simulate the concentrations found of a variety of materials, and may be used in laboratory performance evaluation, quality control, and method development. Ideally suited for AAS, ICP, and ICP-MS. Listed below are concentrations found when each **10 mL sample is diluted to one liter. Matrix is 10% HNO₃ + Tr HF.**

Catalog No.	CWW-TM-A	CWW-TM-B	CWW-TM-C	CWW-TM-D	CWW-TM-E	CWW-TM-F	CWW-TM-G	CWW-TM-H
Elements	µg/mL	µg/mL	µg/mL	µg/mL	µg/mL	µg/mL	µg/mL	µg/mL
Aluminum	0.050	0.200	0.500	1	0.025	0.025	1	0.100
Antimony	0.010	0.050	0.150	0.250	0.005	0.250	0.005	0.200
Arsenic	0.010	0.050	0.150	0.250	0.005	0.005	0.250	0.100
Barium	0.050	0.200	0.500	1	0.025	1	0.025	0.100
Beryllium	0.010	0.050	0.150	0.250	0.005	0.005	0.250	0.020
Boron	0.050	0.200	0.500	1	0.025	1	0.025	0.250
Cadmium	0.010	0.050	0.150	0.250	0.025	0.005	0.250	0.100
Chromium	0.050	0.200	0.500	1	0.025	1	0.025	0.500
Cobalt	0.050	0.200	0.500	1	0.025	0.025	1	0.500
Copper	0.050	0.200	0.500	1	0.025	1	0.025	0.500
Iron	0.050	0.200	0.500	1	0.025	0.025	1	0.250
Lead	0.050	0.200	0.500	1	0.025	1	0.025	0.500
Manganese	0.050	0.200	0.500	1	0.025	0.025	1	0.100
Mercury*	0.001	0.005	0.010	0.02	0.001	0.020	0.005	0.0010
Molybdenum	0.050	0.200	0.500	1	0.025	0.025	1	0.100
Nickel	0.050	0.200	0.500	1	0.025	1	0.250	0.500
Selenium	0.010	0.05	0.150	0.250	0.005	0.005	0.250	0.050
Silver	0.010	0.050	0.150	0.250	0.005	0.250	0.005	0.020
Strontium	0.050	0.200	0.500	1	0.025	0.025	1	0.100
Thallium	0.010	0.050	0.150	0.250	0.005	0.025	0.005	0.250
Vanadium	0.050	0.200	0.500	1	0.025	0.025	1	0.500
Zinc	0.050	0.200	0.500	1	0.025	1	0.025	0.500

*The concentration of Mercury cannot be guaranteed for any extended period of time due to the nature of the element.

Certified Wastewater - Nutrients Solutions

Listed below are the concentrations that will be found when each **10 mL sample is diluted to one liter.**

Catalog No.	CWW-N-A	CWW-N-B	CWW-N-C
Components:	µg/mL	µg/mL	µg/mL
Nitrogen from NH ₄ Cl	1	15	25
Nitrogen from NaNO ₂ + NaNO ₃	1	15	25
Phosphorus from Na ₂ HPO ₄	1	5	10

Certified Wastewater - Cyanide Solutions

Listed below are the concentrations that will be found when each **10 mL sample is diluted to one liter.**

Catalog No.	CWW-CN-B	CWW-CN-C	CWW-CN-D	CWW-CN-E	CWW-CN-F
Components:	µg/mL	µg/mL	µg/mL	µg/mL	µg/mL
Complex Cyanide	0.1	0.5	0.02	0.2	0.35
Free Cyanide	0.1	0.5	0.02	0.2	0.35
Total Cyanide	0.2	1.0	0.04	0.4	0.7

Certified Wastewater - Demand Solutions

Listed below are the concentrations that will be found when each **5 mL sample is diluted to one liter.**

Catalog No.	CWW-TOC-A	CWW-TOC-B	CWW-TOC-C	CWW-TOC-D	CWW-TOC-E	CWW-TOC-F	CWW-TOC-G
Components:	µg/mL	µg/mL	µg/mL	µg/mL	µg/mL	µg/mL	µg/mL
Total Organic Carbon	1	10	20	30	40	50	100

Any of our wastewater standards can be modified to meet your needs. Call (866) 767-4771 toll free to discuss your needs with our staff.

Natural and Simulated Matrix Reference Materials

Find this online at highpuritystandards.com

High-Purity Standards offers two lines of solid standards (food and non-food) designed to address the need for standards in natural matrices. These standards are derived from materials that have been collected, dried, ground, blended and tested. At least two different analytical techniques were used to certify these standards for major and trace elements. Data for additional digestion techniques, such as EPA-3050, are included for most. Details on the elements certified in these products can be found on the website.

Solid CRM List

For more information on Solids, visit our website using this convenient QR code.



Catalog No.	Matrix	Certified For	Weight/grams
CRM-DF-A	Dog Food	Metals, Carbon, Sulfur, Nitrogen	50
CRM-CM-A	Corn Meal	Metals	50
CRM-COAL-A1	Coal	Metals, Sulfur	50
CRM-LO-B	Loam	Metals	50
CRM-LO-C	Loam	Metals	40
CRM-LO-D	Loam	Metals	40
CRM-LO-X	Loam	Metals	50
CRM-MP-A	Milk Powder	Metals, Sulfur	40
CRM-MS-S	Marine Sediment	Metals	50
CRM-PC-B	Paint Chips	0.5% Lead	40
CRM-PC-C	Paint Chips	4% Lead	40
CRM-PN-A	Pine Needles	Metals, Carbon, Sulfur, Nitrogen	30
CRM-S-D	Sludge - Domestic	Metals	50
CRM-S-I	Sludge - Industrial	Metals	50
CRM-SA-A	Sand	Metals	50
CRM-SA-B	Sand	Metals	50
CRM-SA-C	Sand	Metals	50
CRM-SBM-S	Soybean Meal	Metals, Carbon, Sulfur, Nitrogen	50
CRM-WF-S	Wheat Flour	Carbon, Sulfur, Nitrogen	40

The simulated matrix reference materials are standards that typically replicate 1-2 grams of natural matrix reference materials after they have undergone acid digestions and have been diluted to 100 mL. Details on the elements certified in these products can be found on the website.

Soil and Biological Solutions

For more information on Sediments, visit our website using this convenient QR code.



Catalog No.	Simulated Material	Matrix	Catalog No.	Simulated Material	Matrix
CRM-SW	Sea Water	2% HNO ₃	CRM-MFD	Mixed Food Diet	2% HNO ₃
CRM-RS-A	River Sediment	4% HNO ₃	CRM-MP	Milk Powder	4% HNO ₃
CRM-RS-B	River Sediment	4% HNO ₃	CRM-BL	Bovine Liver	4% HNO ₃
CRM-ES	Estuarian Sediment	4% HNO ₃	CRM-OT	Oyster Tissue	4% HNO ₃
CRM-SOIL-A	Soil Solution	4% HNO ₃	CRM-WF	Wheat Flour	4% HNO ₃
CRM-SOIL-B	Soil Solution	4% HNO ₃			
CRM-OL	Orchard Leaves	4% HNO ₃			

For more information on Biological Solutions, visit our website using this convenient QR code.



USP Methods Standards

The following multielement standards are specifically designed for use with methods in USP chapters 232, 233 and 2332. These standards are manufactured as ISO Guide 34 Certified Reference Materials.

Catalog No.	Element	Conc.	Element	Conc.	Element	Conc.	Element	Conc.	Matrix
USP 232-1	Oral Elemental Impurities Standard								
	As	1.5 µg/mL	Cd	25 µg/mL	Hg	15 µg/mL	Pb	5 µg/mL	7% HNO ₃
USP 232-2	Oral/Parenteral Elemental Impurities Standard								
	Cu	1000	Mo	100	Ni	500	V	100	7% HNO ₃
USP 232-3A	Precious Metal Impurities Standard 3A								
	Ir	100	Pd	100	Rh	100	Ru	100	15%HCl
	Os	100	Pt	100					
USP 232-3B	Precious Metal Impurities Standard 3B								
	Ir	100	Pt	100	Rh	100	Ru	100	15%HCl
	Pd	100							
USP 232-4	Parenteral Elemental Impurities Standard								
	As	1.5	Cd	2.5	Hg	1.5	Pb	5	7% HNO ₃
USP 2232	Elemental Contaminants in Dietary Supplements								
	As	15	Cd	5	Hg	15	Pb	10	5% HCl

Ph. Eur. Standard Solution for Test Limits

The European Pharmacopoeia publishes a collection of monographs that describe both the individual and general quality standards for ingredients, dosage forms and methods of analysis for medicines. These standards apply to medicines for both human and veterinary use.

High-Purity Standards now offers Guide 34 standard solutions acceptable for limit tests as outlines in Chapter 4.1.2 of the European Pharmacopoeia.

Catalog No.	Description	Source	Concentration	Matrix
EUP-5000700-2	Cadmium Standard	Cd metal	1000 µg/mL	1% HCl and distilled water
EUP-5001000-2	Chromium Standard	Potassium dichromate	100 µg/mL	Distilled water
EUP-5001100-4	Copper Standard	Copper Sulfate	1000 µg/mL	Distilled water
EUP-5001701-4	Concentrate for Lead Standard	Lead Nitrate	1000 µg/mL	Distilled water
EUP-5001900-1	Mercury Standard	Mercuric Chloride	1000 µg/mL	1% HNO ₃ and distilled water
EUP-5002100-4	Nitrate Standard	Potassium nitrate	1000 µg/mL	Distilled water
EUP-5002200-4	Phosphate standard	Potassium dihydrogen phosphate	5 µg/mL	Distilled water
EUP-5003401-4	Zinc Standard	Zinc Sulfate	1000 µg/m	1% acetic acid and distilled water
EUP-5003200-2	Titanium Standard	Ti metal	100 µg/mL	3% HCl and distilled water



Over half of the standards manufactured at High-Purity Standards are custom blends. HPS welcomes requests for special blends to meet our customer's needs. If there isn't a product offering that will meet your needs, send us the following information via our online quote form and we will provide a competitive quotation:

- Organics Form: <http://www.highpuritystandards.com/store/organicscustomquote.php>
- Inorganics Form: <http://www.highpuritystandards.com/store/customblends.php>
- Printable Fax form: http://www.highpuritystandards.com/pdfs/HPS_Custom_Blend_Form.pdf
- E-Mail: info@highpuritystandards.com
- Telephone: (Toll Free) 866-767-4771
- Fax: 843-767-7906



Use this QR code for our
Organics Quote Form.

What we need from you:

- Analyte(s) (organic compounds, inorganic metals or components, cations or anions, etc.)
- Concentration, including units, of each analyte (if units are in percent, please specify preparation by weight or by volume)
- Matrix (if industrial hygiene standards: identify material, pore size, and diameter of filter)
- Volume and quantity
- Other requirements
- Intended use (please indicate the instrumentation and/or method of analysis)
- Point of contact for confirmation or to discuss technical questions



Use this QR code for our
Inorganics Quote Form.

Our staff will review your request. If we need to make any changes, either for compatibility or to address expiration periods, we will contact you first to discuss the modification of the custom blend to fit your needs. We will provide a quotation along with a description of your custom standard for your review.

Most special mixtures are prepared within three to five days of receipt of the purchase order. The shipping date of your custom blend will be confirmed upon order.

The staff at High-Purity Standards takes great pride in our ability to provide standards for our customers. We are available for technical support to help you design the right solutions for your laboratory needs.



HIGH-PURITY STANDARDS

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