

NEW PRODUCTS SUPPLEMENT

SPEX CertiPrep®

Inorganic and Organic
Certified Reference
Materials



ACADEMIA



ENVIRONMENTAL



PHARMACEUTICAL



CONSUMER SAFETY



DRILLING & MINING



CANNABIS



FOOD &
AGRICULTURE

INDUSTRIAL



Over 60 Years Serving the Scientific Industry



SPEX CertiPrep is a leading manufacturer of certified reference materials (CRMs) and calibration standards for analytical spectroscopy and chromatography. We offer a full range of inorganic and organic CRMs. We are certified by UL-DQS for ISO 9001:2008 and are proud to be accredited by A2LA under ISO/IEC 17025:2005 and ISO/IEC Guide 34-2009. The scope of our accreditation is the most comprehensive in the industry and encompasses all our manufactured products.

To assure that we are manufacturing the highest quality CRMs in the market, we only use the highest quality starting materials. The key to all high quality standards are the starting materials and we take the extra steps necessary to assure these materials pass our stringent inspection process.

Some of these steps include:

- Analysis of our inorganic starting materials for trace elements and other impurities such as oxalates, chlorides, sulfates and any other materials that could possibly interact with other elements and cause precipitates and interferences in the solution.
- Use of the finest quality acids and solvents and test them for impurities.
- Stability runs are performed on organic mixes.
- Use of ASTM Type I water. At SPEX CertiPrep we have a reverse osmosis filtration system that runs through our entire building. This system provides each of our labs with ASTM Type I water for all of our manufacturing procedures.

We consistently strive to design and manufacture new products to meet or exceed the requirements set by the newest instrumentation and regulatory concerns. Our team of highly trained chemist work to provide 100% customer satisfaction. Our 2016 Catalog Supplement is an indication of our commitment to continually provide you with new and diverse inorganic and organic products. We are ready to ship! 99% of our stock products ship within 24 hours.

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Based in Metuchen, New Jersey, our products are sold throughout the world. We have built our reputation by providing scientists with products that exhibit high quality, reliability and convenience. We strive to offer you the best customer experience in the industry.



Accredited by A2LA for ISO 17025 and Guide 34,
and Certified by UL-DQS for ISO 9001.



SPEX Inorganics



Our Inorganic Standards are manufactured for AA, ICP, ICP-MS, LC/ICP-MS, IC, XRF, and other analytical instrumentation. From Aluminum to Zirconium, we offer our Inorganic standards in 30 mL, 125 mL, 250 mL and 500 mL leached LDPE bottles. With concentrations from 1 µg/mL to 10,000 µg/mL, we report the found value of up to 68 trace metallic impurities on our Certificate of Analysis.

Product Offering:

- Single and multi-element standards for ICP and AA
- Single and multi-element standards for ICP and ICP-MS
- Standards for Ion Chromatography
- Environmental testing standards
- Organometallic oil standards
- Consumer safety compliance standards
- Contamination control products
- Fusion Flux and Additives

Certified by UL-DQS for ISO 9001
Accredited by A2LA for ISO/IEC 17025
Accredited by A2LA for ISO/IEC Guide 34

The Value of SPEXInorganics

Our 60 year history of providing CRMs that exceed customers' expectations stems from our passion for science and dedication to the analytical community. We produce only the highest quality standards, and guarantee the best, most reliable customer support in the industry.



	AA/ICP	ICP/ICP-MS
Analytical Range for Use	PPM, PPB	PPB, PPT
Single Standards:	✓	✓
1 µg/mL		✓
10 µg/mL		✓
1,000 µg/mL	✓	✓
10,000 µg/mL	✓	
Multi-Element Standards	✓	✓
Custom Standards	✓	✓
Certifications:		
ISO 9001: 2008	✓	✓
ISO 17025: 2005	✓	✓
ISO Guide 34: 2009	✓	✓
Quality:		
Traceable by NIST SRM (where available)	✓	✓
Acid Grade	High Purity	Ultra High Purity
Water Quality	Type I	Type I
# Trace Impurities Measured on Certificate of Analysis	68	68
Trace Impurities Measured to	µg/mL	µg/L
Stock Items Ship in	24-48 hrs	24-48 hrs
Custom Standard Ship in	5 days	5 days

30mL Single Element Standards for ICP-MS and ICP

SPEX CertiPrep now offers the same great quality single element standards in a smaller volume.

Perfectly Sized

- 1/3 the cost of larger volume standards
- No hazardous shipping fees*
- Highly efficient instruments require less solution - less waste
- Ideal for analysis of non-routine elements

*Applies when shipment contains only 30 mL sized standards. Larger volume standards incur hazardous shipping fees

ICP-MS 30mL Single Element Standards			
Element	Matrix	Concentration ($\mu\text{g/mL}$)	Part #
Aluminum (Al)	2% HNO_3	1,000	CLAL2-2M
Antimony (Sb)	$\text{H}_2\text{O}/0.6\%$ Tartaric Acid/ tr HNO_3	1,000	CLSB7-2M
Arsenic (As)	2% HNO_3	1,000	CLAS2-2M
Barium (Ba)	2% HNO_3	1,000	CLBA2-2M
Beryllium (Be)	2% HNO_3	1,000	CLBE2-2M
Bismuth (Bi)	2% HNO_3	10	CLBI2-1AM
Cadmium (Cd)	2% HNO_3	1,000	CLCD2-2M
Calcium (Ca)	2% HNO_3	1,000	CLCA2-2M
Chromium (Cr)	2% HNO_3	1,000	CLCR2-2M
Cobalt (Co)	2% HNO_3	1,000	CLCO2-2M
Copper (Cu)	2% HNO_3	1,000	CLCU2-2M
Germanium (Ge)	$\text{H}_2\text{O}/\text{Tr F}^-$	10	CLGE9-1AM
Gold (Au)	2% HCl	100	CLAU1-1M
Indium (In)	2% HNO_3	10	CLIN2-1AM
Iron (Fe)	2% HNO_3	1,000	CLFE2-2M
Lead (Pb)	2% HNO_3	1,000	CLPB2-2M

ICP-MS 30mL Single Element Standards

Element	Matrix	Concentration (µg/mL)	Part #
Magnesium (Mg)	2% HNO ₃	1,000	CLMG2-2M
Manganese (Mn)	2% HNO ₃	1,000	CLMN2-2M
Mercury (Hg)	10% HNO ₃	1,000	CLHG4-2M
Mercury (Hg)	5% HNO ₃	10	CLHG2-1AM
Molybdenum (Mo)	H ₂ O	1,000	CLMO9-2M
Nickel (Ni)	2% HNO ₃	1,000	CLNI2-2M
Potassium (K)	2% HNO ₃	1,000	CLK2-2M
Rhodium (Rh)	2% HCl	10	CLRH1-1AM
Scandium (Sc)	2% HNO ₃	10	CLSC2-1AM
Selenium (Se)	2% HNO ₃	1,000	CLSE2-2M
Silver (Ag)	2% HNO ₃	1,000	CLAG2-2M
Sodium (Na)	2% HNO ₃	1,000	CLNA2-2M
Terbium (Tb)	2% HNO ₃	10	CLTB2-1AM
Thallium (Tl)	2% HNO ₃	1,000	CLTL2-2M
Tin (Sn)	1% HNO ₃ / 1% HF	1,000	CLSN2-2M
Titanium (Ti)	H ₂ O/0.24% F	1,000	CLTI9-2M
Thorium (Th)	2% HNO ₃	1,000	CLTH2-2M
Uranium (U)	2% HNO ₃	1,000	CLU2-2M
Vanadium (V)	2% HNO ₃	1,000	CLV2-2M
Yttrium (Y)	2% HNO ₃	10	CLY2-1AM
Zinc (Zn)	2% HNO ₃	1,000	CLZN2-2M



Take a closer look...

Specification of Four Types of ASTM Water

ASTM Type	I	II	III	IV
Total matter (µg/mL)	<0.1	0.1	1	2
Specific Resist. (megohm/cm) (max)	18	1	4	0.2
pH	NA	NA	NA	5-8
Color retention time of KMnO ₄ (mins)	60	60	10	20
Total Silica (µg/mL) (max)	3	3	500	High
Total Organic Carbon (µg/mL) (max)	50	50	200	NA



ICP 30mL Single Element Standards

Element	Matrix	Concentration (µg/mL)	Part #
Aluminum (Al)	2% HNO ₃	1,000	PLAL2-2M
Antimony (Sb)	H ₂ O/0.6% Tartaric Acid/tr HNO ₃	1,000	PLSB7-2M
Arsenic (As)	2% HNO ₃	1,000	PLAS2-2M
Barium (Ba)	2% HNO ₃	1,000	PLBA2-2M
Beryllium (Be)	2% HNO ₃	1,000	PLBE2-2M
Bismuth (Bi)	10% HNO ₃	1,000	PLBI4-2M
Boron (B)	H ₂ O	1,000	PLB9-2M
Cadmium (Cd)	2% HNO ₃	1,000	PLCD2-2M
Calcium (Ca)	2% HNO ₃	1,000	PLCA2-2M
Carbon (C)	H ₂ O	1,000	PLC9-2M
Cerium (Ce)	2% HNO ₃	1,000	PLCE2-2M
Cesium (Cs)	2% HNO ₃	1,000	PLCS2-2M
Chromium (Cr)	2% HNO ₃	1,000	PLCR2-2M
Cobalt (Co)	2% HNO ₃	1,000	PLCO2-2M
Copper (Cu)	2% HNO ₃	1,000	PLCU2-2M
Dysprosium (Dy)	2% HNO ₃	1,000	PLDY2-2M
Erbium (Er)	2% HNO ₃	1,000	PLER2-2M
Europium (Eu)	2% HNO ₃	1,000	PLEU2-2M
Gadolinium (Gd)	2% HNO ₃	1,000	PLGD2-2M
Gallium (Ga)	2% HNO ₃	1,000	PLGA2-2M
Germanium (Ge)	H ₂ O	1,000	PLGE9-2M
Gold (Au)	10% HCl	1,000	PLAU3-2M
Hafnium (Hf)	2% HCl	1,000	PLHF1-2M
Holmium (Ho)	2% HNO ₃	1,000	PLHO2-2M
Indium (In)	2% HNO ₃	1,000	PLIN2-2M
Iridium (Ir)	10% HCl	1,000	PLIR3-2M
Iron (Fe)	2% HNO ₃	1,000	PLFE2-2M
Lanthanum (La)	2% HNO ₃	1,000	PLLA2-2M
Lead (Pb)	2% HNO ₃	1,000	PLPB2-2M
Lithium (Li)	2% HNO ₃	1,000	PLLI2-2M
Lutetium (Lu)	2% HNO ₃	1,000	PLLU2-2M
Magnesium (Mg)	2% HNO ₃	1,000	PLMG2-2M
Manganese (Mn)	2% HNO ₃	1,000	PLMN2-2M
Mercury (Hg)	10% HNO ₃	1,000	PLHG4-2M
Molybdenum (Mo)	H ₂ O	1,000	PLMO9-2M

ICP 30mL Single Element Standards

Element	Matrix	Concentration (µg/mL)	Part #
Neodymium (Nd)	2% HNO ₃	1,000	PLND2-2M
Nickel (Ni)	2% HNO ₃	1,000	PLNI2-2M
Niobium (Nb)	H ₂ O	1,000	PLNB9-2M
Palladium (Pd)	10% HCl	1,000	PLPD3-2M
Phosphorus (P)	H ₂ O	1,000	PLP9-2M
Platinum (Pt)	10% HCl	1,000	PLPT3-2M
Potassium (K)	2% HNO ₃	1,000	PLK2-2M
Praseodymium (Pr)	2% HNO ₃	1,000	PLPR2-2M
Rhenium (Re)	H ₂ O	1,000	PLRE9-2M
Rhodium (Rh)	10% HCl	1,000	PLRH3-2M
Rubidium (Rb)	2% HNO ₃	1,000	PLRB2-2M
Ruthenium (Ru)	10% HCl	1,000	PLRU3-2M
Samarium (Sm)	2% HNO ₃	1,000	PLSM2-2M
Scandium (Sc)	2% HNO ₃	1,000	PLSC2-2M
Selenium (Se)	2% HNO ₃	1,000	PLSE2-2M
Silicon (Si)	H ₂ O	1,000	PLSI9-2M
Silver (Ag)	2% HNO ₃	1,000	PLAG2-2M
Sodium (Na)	2% HNO ₃	1,000	PLNA2-2M
Strontium (Sr)	2% HNO ₃	1,000	PLSR2-2M
Sulfur (S)	H ₂ O	1,000	PLS9-2M
Tantalum (Ta)	H ₂ O	1,000	PLTA9-2M
Tellurium (Te)	5% HNO ₃	1,000	PLTE2-2M
Terbium (Tb)	2% HNO ₃	1,000	PLTB2-2M
Thallium (Tl)	2% HNO ₃	1,000	PLTL2-2M
Thorium (Th)	2% HNO ₃	1,000	PLTH2-2M
Thulium (Tm)	2% HNO ₃	1,000	PLTM2-2M
Tin (Sn)	20% HCl	1,000	PLSN5-2M
Titanium (Ti)	H ₂ O	1,000	PLTI9-2M
Tungsten (W)	H ₂ O	1,000	PLW9-2M
Uranium (U)	2% HNO ₃	1,000	PLU2-2M
Vanadium (V)	2% HNO ₃	1,000	PLV2-2M
Ytterbium (Yb)	2% HNO ₃	1,000	PLYB2-2M
Yttrium (Y)	2% HNO ₃	1,000	PLY2-2M
Zinc (Zn)	2% HNO ₃	1,000	PLZN2-2M
Zirconium (Zr)	2% HNO ₃	1,000	PLZR2-2M



Speciation Standards for ICP-MS and LC/ICP-MS



SPEX CertiPrep has expanded the ICP-MS product line to include Speciation Standards.

What is Unique about SPEX CertiPrep Dual Speciation Standards?

- Optimized to work well with both ICP and ICP-MS (with one-step dilution)
- Percentages of the species are determined by LC/ICP-MS and reported on our Certificate of Analysis
- LC Chromatogram is featured on our Certificate of Analysis
- Trace impurities in the final solution are analyzed by ICP-MS and reported on our Certificate of Analysis



ICP-MS Single Speciation Standards

Volume: 125 mL

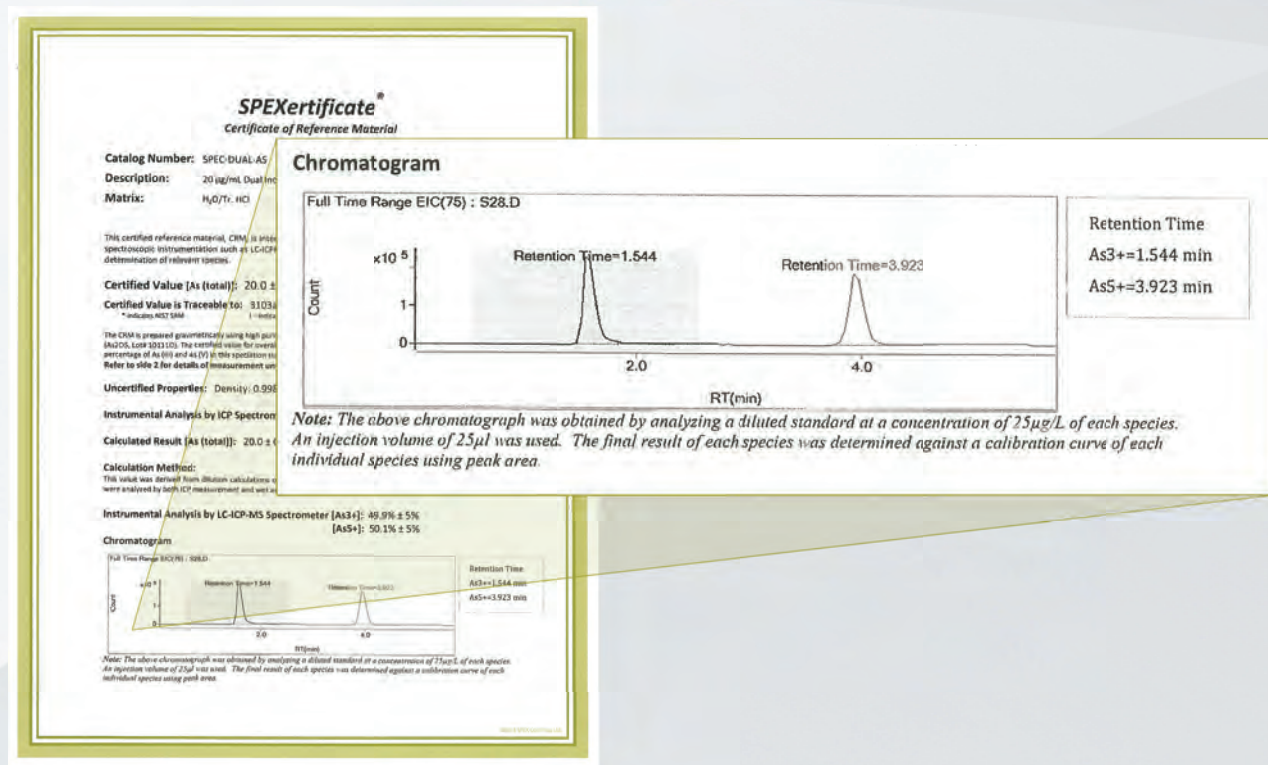
Element	Matrix	Concentration (µg/mL)	Part #
Arsenic ⁺³ (As ⁺³)	2% HCl	1,000	SPEC-AS3
Arsenic ⁺⁵ (As ⁺⁵)	H ₂ O	1,000	SPEC-AS5
Chromium ⁺³ (Cr ⁺³)	HNO ₃	1,000	SPEC-CR3
Chromium ⁺⁶ (Cr ⁺⁶)	H ₂ O	1,000	SPEC-CR6
Selenium ⁺⁴ (Se ⁺⁴)	HNO ₃	1,000	SPEC-SE4
Selenium ⁺⁶ (Se ⁺⁶)	2% H ₂ O	1,000	SPEC-SE6

LC - ICP-MS Dual Speciation Standard

Volume: 125mL

Element	Matrix	Concentration (µg/mL)	Part #
Dual Arsenic ^{+3, +5} (As ^{+3, +5})	H ₂ O/tr HCl	20	SPEC-DUAL-AS
Dual Selenium ^{+4, +6} (As ^{+4, +6})	H ₂ O/tr HNO ₃	20	SPEC-DUAL-SE
Dual Chromium ^{+3, +6} (Cr ^{+3, +6})	H ₂ O	20	SPEC-DUAL-CR

Example LC/ICP-MS Certificate



Filter Paper Standard for NIOSH Method 7300

The National Institute for Occupational Safety and Health (NIOSH) is responsible for reducing workplace injuries and illnesses, including air quality. NIOSH Method 7300 is an instrumental analytical method for the determination of airborne elemental contamination in atmospheric particulates. Air samplers with collection filters are a common tool in the determination of air particulates and air pollution.

SPEX CertiPrep is proud to offer our new MCE (mixed cellulose ester) filter standard for use with NIOSH Method 7300. The MCE filters are 37 mm in diameter with a pore size of 0.8 µm. These spiked MCE matrix standards cover a range of common air particulate elements at various concentrations. Each standard filter part is a set of five identical spiked MCE filters and two blank MCE filters, all from the same filter material lot, to provide increased traceability.

Part Number: TMFMSM-G

Features:

- Applicable for NIOSH Method 7300
- High quality MCE filters: 37 mm with 0.8 µm Pore Size
- Spiked standard filters and blanks all from the same manufacturing lot for increased traceability
- Filters spiked with SPEX CertiPrep's Assurance Standard materials
- Large range of elements: Al, As, Ag, Ba, Be, Cd, Co, Cr, Cu, Fe, Mn, Ni, Pb, Tl, U, V, Zn

USP <232> and USP <233> Elemental Impurities



USP <232> outlines new limits and USP <233> outlines procedures in pharmaceutical products for Arsenic, Cadmium, Lead and Mercury. The proposed procedures focus on the use of ICP-MS for the analysis of low level impurities. SPEX CertiPrep offers Elemental Impurity CRMs designed for use in USP <232> and USP <233>.

These CRMs can be used as a calibration or check standard to verify Oral Daily Dose PDE, Parenteral Component Limit or Parenteral Daily Dose PDE.

USP-TXM2 (125 mL)

USP Oral Elemental Impurities A

4 Component Mix in 5% HNO₃

Cadmium (Cd)	25 mg/kg
Mercury (Hg)	15 mg/kg
Lead (Pb)	5 mg/kg
Arsenic (As)	1.5 mg/kg

USP-TXM4 (125 mL)

USP Precious Metals Impurities B
(without Os)

5 Component Mix in 15% HCl

Iridium (Ir)	100 mg/kg
Palladium (Pd)	100 mg/kg
Platinum (Pt)	100 mg/kg
Rhodium (Rh)	100 mg/kg
Ruthenium (Ru)	100 mg/kg

USP-TXM3 (125 mL)

USP Precious Metal Impurities B
(with Os)

6 Component Mix in 15% HCl

Iridium (Ir)	100 mg/kg
Osmium (Os)	100 mg/kg
Palladium (Pd)	100 mg/kg
Platinum (Pt)	100 mg/kg
Rhodium (Rh)	100 mg/kg
Ruthenium (Ru)	100 mg/kg

USP-TXM5 (125 mL)

USP Oral/Parenteral
Elemental Impurities C

4 Component Mix in 5% HNO₃

Copper (Cu)	1000 mg/kg
Nickel (Ni)	500 mg/kg
Molybdenum (Mo)	100 mg/kg
Vanadium (V)	100 mg/kg

ICH/Global Compliance Standards



The International Conference for Harmonization (ICH) has produced a concept paper proposing a new guideline intended to provide a global policy for qualitatively and quantitatively limiting metal impurities in drug ingredients and finished products. The new proposed guideline (Q3D) would provide clarification of the requirements for metals, which are included in the ICH inorganic impurities classification.

SPEX CertiPrep is proud to offer a line of analytical standards for the analysis of trace metals in pharmaceutical materials. These standards can be used as a calibration or check standard to verify all component or dosage limits.

ICH-TXM2 (125 mL)

Global/ICH Oral Elemental Impurities A

4 Component Mix in 5% HNO₃

Cadmium (Cd)	25 mg/kg
Mercury (Hg)	15 mg/kg
Lead (Pb)	5 mg/kg
Arsenic (As)	1.5 mg/kg

ICH-TXM4 (125 mL)

Global/ICH Precious Metals Impurities B (without Os)

5 Component Mix in 15% HCl

Iridium (Ir)	100 mg/kg
Palladium (Pd)	100 mg/kg
Platinum (Pt)	100 mg/kg
Rhodium (Rh)	100 mg/kg
Ruthenium (Ru)	100 mg/kg

ICH-TXM3 (125 mL)

Global/ICH Precious Metal Impurities B (with Os)

6 Component Mix in 15% HCl

Iridium (Ir)	100 mg/kg
Osmium (Os)	100 mg/kg
Palladium (Pd)	100 mg/kg
Platinum (Pt)	100 mg/kg
Rhodium (Rh)	100 mg/kg
Ruthenium (Ru)	100 mg/kg

ICH-TXM7 (125 mL)

Global/ICH Elemental Impurities E

7 Component Mix in 5% HNO₃

Manganese (Mn)	2500 mg/kg
Copper (Cu)	1000 mg/kg
Chromium (Cr)	250 mg/kg
Nickel (Ni)	250 mg/kg
Cobalt (Co)	100 mg/kg
Molybdenum (Mo)	100 mg/kg
Vanadium (V)	100 mg/kg

ICH-TXM8 (125 mL)

Global/ICH Elemental Impurities F

2 Component Mix in 5% HNO₃

Iron (Fe)	13,000 mg/kg
Zinc (Zn)	13,000 mg/kg

Custom Standards Program

SPEX CertiPrep offers custom Certified Reference Materials because we realize that no two laboratories face exactly the same samples, or have precisely the same requirements. In the real world trace element determinations are performed in the presence of one or several major constituents, varying interelement effects, matrix effects... the list goes on and on. These issues become increasingly important as you strive for greater reproducibility and push your technique to the limit and thereby require standards made especially for your application.

With SPEX CertiPrep's custom Certified Reference Materials program, you can remove some of these variables. Select custom standards in connection with all product lines, from Single-Element and Multi-Element aqueous blends to Organometallic Oil standards. Our specialists will be happy to discuss your concerns, combination of elements, their concentrations, and your preferred matrix. We will then design the most compatible, stable mixture using our comprehensive supply of starting materials and certified solutions. Simply tell us what standards you need and let our highly skilled chemists determine the optimum combinations for you. With over 150 years of combined experience, we are truly the experts at manufacturing custom standards.

Aqueous standards are available in 100 mL, 250 mL, 500 mL and 1 L quantities. Oils are sold in 50 or 100 gram quantities. Sizes of custom standards in other matrices will be quoted in the appropriate units.

Benefits:

- Customized For Your Application
- Certified by ICP, ICP-MS, LC-ICP/MS or IC Analysis
- High Quality Starting Materials Tested for Impurities Prior to Use
- 60 Years of Experience in Manufacturing Custom CRM's
- Manufactured and Shipped within 5 Business Days
- Dedicated technical support to answer your CRM and lab questions.

Customs Available For:

- Assurance® Grade Standards for ICP and AA
- Claritas PPT® Grade Standards for ICP-MS
- Speciation Standards for LC-ICP/MS
- Ion Chromatography/Ion Selective Electrode Standards
- Organometallic Oil Standards
- Fusion Flux
- Consumer Safety Standards

As with most of our products, we will guarantee your custom standards for one year from the date of shipment and supply your standard with certified concentration and impurity analysis.

To get started contact our technical support team or visit:

www.spexcertiprep.com/custominorganics with the following information:

- Your specific application/instrumentation
- The elements or complexes you desire
- The concentration(s) at which you require each component
- The matrix which you prefer (e.g., water, dilute acid, oil, etc.)

Periodic Table of the Elements

Key to Chart

Atomic Number — **24**

Symbol — **Cr**

Atomic Weight — **51.9961**

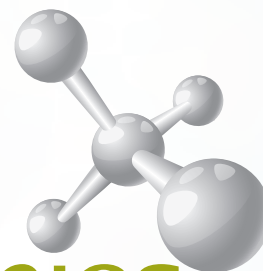
Chromium

1 H Hydrogen 1.0079																	2 He Helium 4.0026
3 Li Lithium 6.941	4 Be Beryllium 9.0122	Transition Elements										5 B Boron 10.881	6 C Carbon 12.0107	7 N Nitrogen 14.0067	8 O Oxygen 15.9994	9 F Fluorine 18.9984	10 Ne Neon 20.1797
11 Na Sodium 22.9897	12 Mg Magnesium 24.305	Group 8										13 Al Aluminum 26.9815	14 Si Silicon 28.0855	15 P Phosphorus 30.9738	16 S Sulfur 32.065	17 Cl Chlorine 35.453	18 Ar Argon 39.948
19 K Potassium 39.098	20 Ca Calcium 40.078	21 Sc Scandium 44.9559	22 Ti Titanium 47.867	23 V Vanadium 50.9415	24 Cr Chromium 51.9961	25 Mn Manganese 54.938	26 Fe Iron 55.845	27 Co Cobalt 58.9332	28 Ni Nickel 58.6934	29 Cu Copper 63.546	30 Zn Zinc 65.409	31 Ga Gallium 69.723	32 Ge Germanium 72.64	33 As Arsenic 74.9216	34 Se Selenium 78.96	35 Br Bromine 79.904	36 Kr Krypton 83.798
37 Rb Rubidium 85.4678	38 Sr Strontium 87.62	39 Y Yttrium 88.9059	40 Zr Zirconium 91.224	41 Nb Niobium 92.9064	42 Mo Molybdenum 95.94	43 Tc Technetium (98)	44 Ru Ruthenium 101.07	45 Rh Rhodium 102.9055	46 Pd Palladium 106.42	47 Ag Silver 107.8682	48 Cd Cadmium 112.411	49 In Indium 114.818	50 Sn Tin 118.71	51 Sb Antimony 121.76	52 Te Tellurium 127.6	53 I Iodine 126.9045	54 Xe Xenon 131.293
55 Cs Cesium 132.9055	56 Ba Barium 137.327																
		72 Hf Hafnium 178.49	73 Ta Tantalum 180.9479	74 W Tungsten 183.84	75 Re Rhenium 186.207	76 Os Osmium 190.23	77 Ir Iridium 192.217	78 Pt Platinum 195.078	79 Au Gold 196.9665	80 Hg Mercury 200.59	81 Tl Thallium 204.3833	82 Pb Lead 207.2	83 Bi Bismuth 208.9804	84 Po Polonium (209)	85 At Astatine (210)	86 Rn Radon (222)	
87 Fr Francium (223)	88 Ra Radium (226)																
		104 Rf Rutherfordium (261)	105 Db Dubnium (262)	106 Sg Seaborgium (266)	107 Bh Bohrium (264)	108 Hs Hassium (277)	109 Mt Meitnerium (268)	110 Ds Darmstadtium (271)	111 Rg Roentgenium (272)	112 Uub Ununbium (277)							
57 La Lanthanum 138.9055	58 Ce Cerium 140.116	59 Pr Praseodymium 140.9077	60 Nd Neodymium 144.24	61 Pm Promethium (145)	62 Sm Samarium 150.36	63 Eu Europium 151.964	64 Gd Gadolinium 157.25	65 Tb Terbium 158.9253	66 Dy Dysprosium 162.5	67 Ho Holmium 164.9303	68 Er Erbium 167.259	69 Tm Thulium 168.9342	70 Yb Ytterbium 173.04	71 Lu Lutetium 174.967			
89 Ac Actinium 227.03	90 Th Thorium 232.0381	91 Pa Protactinium 231.0359	92 U Uranium 238.0289	93 Np Neptunium (237)	94 Pu Plutonium (244)	95 Am Americium (243)	96 Cm Curium (247)	97 Bk Berkelium (247)	98 Cf Californium (251)	99 Es Einsteinium (252)	100 Fm Fermium (257)	101 Md Mendelevium (258)	102 No Nobelium (259)	103 Lr Lawrencium (262)			

Conversion Table

1 microgram (μg) = 1×10^{-6} grams (g)
 1 milligram (mg) = 0.001 grams (g)
 1 kilogram (kg) = 1000 grams (g) = 2.205 lbs.
 1 pound (lb) = 453.59237 grams (g)
 1 milliliter (mL) = 0.001 Liters (L)
 1 Liter (L) = 1000 milliliters (mL)
 1 Liter (L) = 0.26417205 gallons (gal)
 1 gallon (gal) = 3.7854118 Liters (L)
 1 mg/L = 1 part per million (ppm) = $1 \mu\text{g/g}^*$
 1 $\mu\text{g/L}$ = 1 part per billion (ppb)

1 mg/L = 1000 ppm = 1 mg/g^*
 1mg/L = 1 ppm = 1000 ppb
 1 ppb = 0.001 ppm = 1000 ppt
 1 ppt = 0.001 ppb = 1×10^6 ppm
 10,000 ppm pf metal = 10 g of metal/L = 1% of metal
 1000 ppm of metal = 1 g of metal/L = 0.1% of metal
 100 ppm of metal = 0.1 g of metal/L = 0.01% of metal
 *By weight



SPEXOrganics

Serving the Chromatography Community, One Peak at a Time.™

Our Organic Standards are manufactured for GC, GC/MS, HPLC, LC/MS, and other analytical instrumentation. We offer our organic standards in 2mL amber pre-scored glass ampules up to 1 L bottles. Over 2,500 different single components CRM are available with concentrations of 1,000 µg/mL.

Product Applications Include

- Volatile
- Semivolatile
- Consumer safety compliance
- US EPA Methods for drinking water, wastewater and solid waste
- Pesticides and herbicides
- Petrochemical
- Biodiesel
- Pharmaceutical residual solvents
- Wine reference material
- Cannabis testing

Certified by UL-DQS for ISO 9001
Accredited by A2LA for ISO/IEC 17025
Accredited by A2LA for ISO/IEC Guide 34

Why SPEX CertiPrep Organic Standards?

SPEX CertiPrep was founded in 1954 to provide superior Certified Reference Materials (CRMs) for chromatography. Since that time, we have made it our business to supply CRMs for many different types of instrumentation. We have a full line of GC/MS, LC, LC/MS, HPLC, and many other products that can be used in laboratories around the world. Based in Metuchen, NJ our products have sold across the US and around the world. For over sixty years, we have built our reputation by providing chemists and environmental scientists with products that exhibit Quality, Reliability, and Convenience. Your Science is Our Passion.®

UL and A2LA Stamp of Approval:

- Quality System complies with ISO 9001:2008 - Certified by UL-DQS
- Standards Manufactured to meet the requirements of ISO 17025:2005 and ISO Guide 34:2000 - Accredited by A2LA

Instrumentation used with our SPEXOrganics:

- GC, Gas Chromatography (FID, ECD, PID, TCD)
- GC/MS, Gas Chromatography-Mass Spectrometry (IE, CI)
- HPLC, High Performance Liquid Chromatography
- HPLC/MS, High Performance Liquid Chromatography-Mass Spectrometry



Features of SPEXOrganics:

- Over 2,500 different single-component standards available in concentrations of 1,000µg/mL
- Custom standards at higher or lower concentrations are also available
- Standards packaged in 1 mL ampules up to 1L bottles
- Wide selection of stock multi-component standards available; visit our web site for further details
- Concentration of components guaranteed
- Stability of each standard guaranteed
- Isotopically labeled standards available for Internal Standards, Surrogate and Isotope Dilution analysis
- Custom Packaging readily available
- Custom blends manufactured upon request based on your individual needs
- Every CRM packaged with screw-cap pour-off vial

Value of SPEXOrganics:

- SPEX CertiPrep uses the highest quality raw material available
- Uncertainty of standard is reported on the Certificate of Analysis
- Weights used are traceable to NIST
- Manufactured by chemists having an average of 20 years experience to ensure highest quality
- All Standards have final QC check on instrument of intended use
- All compounds/products covered under Guide34 scope



CannStandards®



Medicinal and Recreational Cannabis Testing

To date, regulations governing the testing and quality control of medicinal and recreational Cannabis sources are few and far between. To ease patient and consumer safety concerns, the Cannabis sources must undergo strict quality checks to validate they are free of any unwanted contaminants left over from the cultivation and/or extraction process.

SPEX CertiPrep offers standards for all of the common contaminants found in medicinal and recreational Cannabis, including pesticide residues, residual solvents, terpenes, DEA regulated compounds, and many others.

Pesticide Residues

For methods

OAR-333-008-1190, HB3460
and 49 CFR 180

Description	Part #
18 compounds each at 200 µg/mL in Acetone	5252-PA
15 compounds each at 200 µg/mL in Acetone	5252-PB
33 compounds each at 200 µg/mL in Methylene Chloride	5252-PC
9 compounds each at 200 µg/mL in Acetone	5252-PD
3 compounds each at 200 µg/mL in Acetone	5252-E

Residual Solvents

Description	Part #
Residual Solvent Mix	USP-RS-C3A
Acetone	S-140
n-Butane	S-605
Ethane	S-1880
Ethanol	S-1885
n-Hexane	S-2190
Methane	S-2379
2-Methylbutane	S-2462
2-Methylpropane	S-2555
n-Pentane	S-2975
Propane	S-3145
2-Propanol	S-3165

Carbamates

For methods

OAR 333-008-1190 and HB 3460

Description	Part #
10 compounds each at 100 µg/mL in HPLC grade Acetonitrile	5311-A10

All volumes 1 mL
For complete list of compounds,
visit spexcertiprep.com/cannabis

Heavy Metals

For methods

OAR-333-008-1190, HB 3460,
AOAC Method 2007.01 and EN 15662

Description	Part #
Heavy Metals Mix	USP-TXM2
Chromium (Cr)	PLCR2-2Y
Nickel (Ni)	PLNI2-2Y
Arsenic (As)	PLAS2-2Y
Silver (Ag)	PLAG2-2Y
Cadmium (Cd)	PLCD2-2Y
Mercury (Hg)	PLHG4-2Y
Lead (Pb)	PLPB2-2Y
Thallium (Tl)	PLTL2-2Y

All volumes 125 mL

Organophosphates

For methods

OAR-333-008-1190, HB 3460,

Description	Part #
9 compounds each at 2000 µg/mL in Methylene Chloride	8270-AF-I
24 compounds each at 2000 µg/mL in Acetone	8270-IXJ

QuEChERS Kits

For methods

AOAC Method 2007.01 and EN 15662

Description	Part #
15 mL tubes designed for EN 15662	EN-CIT- 50ML
15 mL tubes designed for AOAC 2007.01	AOAC-ACE- 50ML

Pyrethroids

For methods

OAR 333-008-1190 and HB 3460

Description	Part #
Allethrin	S-4240
Deltamethrin	S-3977
Fenpropathrin	S-5781
Prallethrin	LCS-5783
Tau-Fluvalinate	S-4161
Resmethrin	S-3252
Bifenthrin	S-494

Terpenes

Description	Part #
Linalool	S-5133
Borneol	S-4570
Eucalyptol	S-4352
(R)-(+)-Limonene	S-4021
alpha-Pinene	S-4172
beta-Pinene	S-3142

**Chlorinated
Hydrocarbons**

For methods

OAR 333-008-1190 and HB 3460

Description	Part #
13 compounds each at 2000 µg/mL in Methylene Chloride	8270-AF-B
9 compounds each at 2000 µg/mL in Isooctane	612-X

All volumes 1 mL unless otherwise noted.

Visit spexcertiprep.com/cannabis for complete component listings.

CAN-TERP-MIX1

Conc.: 100 ug/mL Matrix: Methanol

21 Compounds	CAS#
Camphor	76-22-2
beta-Myrcene	123-35-3
Farnesene (mix of isomers)	502-61-4
p-Mentha-1,5-diene	99-83-2
Eucalyptol	470-82-6
Isoborneol	124-76-5
Linalool	78-70-6
trans-Caryophyllene	87-44-5
Ocimene (Mixture of Isomers)	13877-91-3
(-)-Caryophyllene Oxide	1139-30-6
(+)-Fenchone	4695-62-9
Hexahydrothymol	89-78-1
(-)-Alpha-Bisabolol	23089-26-1
Camphene	79-92-5
(1S)-(+)-3-Carene	498-15-7
(+)-Cedrol	77-53-2
Geranyl Acetate	105-87-3
(-)-Isopulegol	89-79-2
Nerol	106-25-2
cis-Nerolidol	3790-78-1
Valencene	4630-07-3

CAN-TERP-MIX2

Conc.: 100 ug/mL Matrix: Methanol

21 Compounds	CAS#
beta-Pinene	127-91-3
(R)-(+)-Limonene	5989-27-5
a-Pinene	80-56-8
L(-)-fenchone	7787-20-4
(+)-Borneol	464-43-7
Geraniol	106-24-1
(+)-Pulegone	89-82-7
alpha-Humulene	6753-98-6
alpha-Cedrene	469-61-4
Terpinolene	586-62-9
gamma-Terpinene	99-85-4
alpha-Terpinene	99-86-5
Guaiol	489-86-1
Sabinene	3387-41-5
(-)-Borneol	464-45-9
(1R)-(+)-Camphor	464-49-3
(1S)-(-)-Camphor	464-48-2
(1R)-Endo-(+)-Fenchyl Alcohol	2217-02-9
trans-Nerolidol	40716-66-3
Sabinene Hydrate	546-79-2
Terpineol (mixture of Isomers)	8000-41-7

Purchase CAN-TERP-KIT and SAVE !

(Kit includes CAN-TERP-MIX1 & CAN-TERP-MIX2)

DEA-Regulated Cannabis CRMs

DEA

The testing of Cannabis, for both medicinal and recreational purposes, continues to grow as the legality of the medicine becomes more widespread. As the industry matures SPEX CertiPrep continues to add to our already robust offering with Certified Reference Materials for DEA-regulated compounds. SPEX CertiPrep has provided quality CRMs to the Cannabis industry since its infancy and will continue to adapt and add products that aid Chemists in the reliable analysis of Cannabis. Our company is committed to service; we will freely aid in all troubleshooting and technical questions that arise during initial lab startup through method development. The compounds listed below can be combined together in multi-compound custom standards and will be fully covered under our ISO: Guide 34 scope of accreditations.



DEA-Regulated Cannabis Standards

Part Number	Description	Size
S-10241	Cannabidiol, 1,000 µg/mL in methanol	2 mL ampule
S-10242	Cannabinol, 1,000 µg/mL in methanol	2 mL ampule
S-10243-100	Cannabidiol-D3, 100 µg/mL in methanol	2 mL ampule
S-10244-100	Cannabinol-D3, 100 µg/mL in methanol	2 mL ampule
S-10245	Cannabidivarin (CBDV), 1,000 µg/mL in methanol	2 mL ampule
S-10246	Cannabigerol (CBG), 1,000 µg/mL in methanol	2 mL ampule
S-10247	Cannabigerolic acid (CBGA), 1,000 µg/mL in acetonitrile	2 mL ampule
S-10248	Cannabichromene (CBC), 1,000 µg/mL in methanol	2 mL ampule
S-10249	Cannabidolic acid (CBDA), 1,000 µg/mL in acetonitrile	2 mL ampule
S-10250-100	(±)-11-Hydroxy-Δ9-THC, 100 µg/ml in methanol	2 mL ampule
S-10251-100	(±)-11-nor-9-Carboxy-Δ9-THC-D3, 100 µg/ml in methanol	2 mL ampule
S-10252-100	(±)-11-nor-9-Carboxy-Δ9-THC-D9, 100 µg/ml in methanol	2 mL ampule
S-10251	(±)-11-nor-9-Carboxy-Δ9-THC-D3, 1,000 µg/ml in methanol	2 mL ampule
S-10252	(±)-11-nor-9-Carboxy-Δ9-THC-D9, 1,000 µg/ml in methanol	2 mL ampule
S-10253	(±)-11-nor-9-Carboxy-Δ9-THC (Racemic mixture-not to be used for immunoassay), 1,000 µg/ml in methanol	2 mL ampule
S-10253-100	(±)-11-nor-9-Carboxy-Δ9-THC (Racemic mixture-not to be used for immunoassay), 100 µg/ml in methanol	2 mL ampule
S-10254-100	(±)-11-nor-Δ9-THC-carboxylic acid glucuronide (Not to be used for immunoassay), 100 µg/ml in methanol	2 mL ampule
S-10255-100	(±)-cis-11-nor-9-carboxy-Δ9-THC-D3 glucuronide, 100 µg/ml in methanol	2 mL ampule
S-10256-100	(±)-Δ9-THC (For Qualitative Use Only), 100 µg/mL in Heptane	2 mL ampule
S-10257-100	(±)-Δ8-THC (For Qualitative Use Only), 100 µg/mL in Heptane	2 mL ampule
S-10258-100	XLR-11 4-Hydroxypentyl metabolite, 100 µg/mL in methanol	2 mL ampule
S-10259-100	(-)-Δ9-THC-D3, 100 µg/mL in methanol	2 mL ampule
S-10260	(-)-Δ9-THC, 1,000 µg/mL in methanol	2 mL ampule
S-10259	(-)-Δ9-THC-D3, 1,000 µg/mL in methanol	2 mL ampule
S-10261	(-)-Δ8-THC, 1,000 µg/mL in methanol	2 mL ampule
S-10262-100	(-)-11-nor-9-Carboxy-Δ9-THC (Suitable for use with immunoassay), 100 µg/mL in methanol	2 mL ampule
S-10262	(-)-11-nor-9-Carboxy-Δ9-THC (Suitable for use with immunoassay), 1,000 µg/mL in methanol	2 mL ampule
S-10263	exo-THC, 1,000 µg/mL in methanol	2 mL ampule

Residual Solvents



The USP general chapter <467> Residual Solvents is a method widely used for identifying and quantifying residual solvents when there is no information available on what solvents are likely to be present.

As required by the analytical procedure given in USP <467> for identifying and quantifying residual solvents in drug substances, drug products and excipients, SPEX CertiPrep now offers 35 analytes in Dimethyl Sulfoxide for Class 1, Class 2 and Class 3 solvents. Our products are manufactured and verified by our QC department to validate the Certificate of Analysis which accompanies each product.

USP-RS-C1

5 Component Mix in Dimethyl Sulfoxide

1,1,1-Trichloroethane	50,000 µg/mL
1,1-Dichloroethene	40,000 µg/mL
1,2-Dichloroethane	25,000 µg/mL
Carbon tetrachloride	20,000 µg/mL
Benzene	10,000 µg/mL

USP-RS-C2B

8 Component Mix in Dimethyl Sulfoxide

n-Hexane	290 µg/mL
Pyridine	200 µg/mL
1,2,3,4-Tetrahydronaphthalene	100 µg/mL
1,2-Dimethoxyethane	100 µg/mL
Trichloroethene	80 µg/mL
Chloroform	60 µg/mL
2-Hexanone	50 µg/mL
Nitromethane	50 µg/mL

USP-RS-C2A

15 Component Mix in Dimethyl Sulfoxide

Cyclohexane	19,400 µg/mL
Methanol	15,000 µg/mL
m-Xylene	6,510 µg/mL
Methylcyclohexane	5,900 µg/mL
cis-1,2-Dichloroethene	4,700 µg/mL
trans-1,2-Dichloroethene	4,700 µg/mL
Toluene	4,450 µg/mL
Tetrahydrofuran	3,450 µg/mL
Methylene chloride	3,000 µg/mL
Acetonitrile	2,050 µg/mL
1,4-Dioxane	1,900 µg/mL
Ethylbenzene	1,840 µg/mL
Chlorobenzene	1,800 µg/mL
p-Xylene	1,520 µg/mL
o-Xylene	980 µg/mL

USP-RS-C2C**8 Component Mix in Dimethyl Sulfoxide**

N,N-Dimethylacetamide	5,450 µg/mL
N,N-Dimethylformamide	4,400 µg/mL
Ethylene glycol	3,100 µg/mL
1-Methyl-2-pyrrolidinone	2,650 µg/mL
Formamide	1,100 µg/mL
2-Ethoxyethanol	800 µg/mL
Tetramethylene sulfone	800 µg/mL
2-Methoxyethanol	250 µg/mL

USP-RS-C3B**2 Component Mix in Dimethyl Sulfoxide**

Acetic Acid	1,000 µg/mL
Formic acid	1,000 µg/mL

USP-RS-C3A**24 Component Mix in Dimethyl Sulfoxide**

1-Butanol	1,000 µg/mL
1-Pentanol	1,000 µg/mL
1-Propanol	1,000 µg/mL
2-Butanol	1,000 µg/mL
2-Butanone	1,000 µg/mL
2-Methyl-1-propanol	1,000 µg/mL
2-Propanol (Isopropanol, Isopropyl alcohol)	1,000 µg/mL
3-Methyl-1-butanol	1,000 µg/mL
4-Methyl-2-pentanone	1,000 µg/mL
Acetone	1,000 µg/mL
Anisole	1,000 µg/mL
Butyl acetate	1,000 µg/mL
Ethanol	1,000 µg/mL
Ether	1,000 µg/mL
Ethyl acetate	1,000 µg/mL
Ethyl formate	1,000 µg/mL
Isobutyl acetate	1,000 µg/mL
Isopropyl acetate	1,000 µg/mL
Isopropylbenzene	1,000 µg/mL
Methyl acetate	1,000 µg/mL
n-Heptane	1,000 µg/mL
n-Pentane	1,000 µg/mL
Propyl acetate	1,000 µg/mL
tert-Butyl methyl ether	1,000 µg/mL

Residual solvents in pharmaceuticals are trace level impurities of volatile organic compounds in final products or excipients. In general, residual solvents originate from manufacturing processes related to the preparation of drug products. They can also form during product packaging and storage.



SPEX CertiPrep welcomes ECS, the newest part of the SPEX Organics Team

ECS specializes in single and multi-component Certified Reference Materials, designed for GC/MS, for the analysis of Volatile and Semi-Volatile Organics. These mixes are designed to be utilized with today's EPA Methods for 624/8240, 8260, 524.2 and 625/8270.

ECS GC/MS CRMs

Part Number	Description	Volume
ECS-A-001	Semivolatile ISTD Mix (4,000µg/mL)	1.8mL
ECS-A-006	Phenols Mix (2,000µg/mL)	1.8mL
ECS-A-007	Benzidines Mix (2,000µg/mL)	1.8mL
ECS-A-010	Volatile ISTD Mix (2,000µg/mL)	1.5 mL
ECS-A-011	Volatile Surrogates Mix (2,000µg/mL)	1.5 mL
ECS-A-015	Volatile EPA Method 624 Mix 1 (2,000µg/mL)	1.5 mL
ECS-A-017	BFB Tune Check (50µg/mL)	1.5 mL
ECS-A-018	Semivolatile TCLP Mix (2,000µg/mL)	1.8mL
ECS-A-030	EPA Method 625 Base/Neutral Mix 1 (2,000µg/mL)	1.8mL
ECS-A-031	EPA Method 8270 Add-ons (2,000µg/mL)	1.8mL
ECS-A-032	PAH Mix (2,000µg/mL)	1.8mL
ECS-A-033	EPA Method 8260/524.2 Volatiles Mix (54) (2,000µg/mL)	1.5 mL
ECS-A-034	EPA Method 524.2 ISTD/Surrogate Mix (2,000µg/mL)	1.5 mL
ECS-A-038	Acrolein/Acrylonitrile Mixture (10,000µg/mL)	1.5 mL
ECS-A-039	Underground Storage Tank Volatile Add-ons (2,000/20,000µg/mL)	1.5 mL
ECS-A-040	2-Chloroethyl vinyl ether (2,000µg/mL)	1.5 mL
ECS-A-041	8260 Volatile ISTD Mix (2,000µg/mL)	1.5 mL
ECS-A-043	EPA Method 8260 Ketones Mixture (2,000µg/mL)	1.5 mL
ECS-A-043H	High Conc. Ketones Mixture (10,000 µg/mL)	1.5 mL
ECS-A-044	EPA Method 8260 Add-ons #1	1.5 mL
ECS-A-045XP	EPA Method 8260 Add-ons Mix 2 (w/o PCE)	1.5 mL

ECS GC/MS CRMs

Part Number	Description	Volume
ECS-A-046XP	EPA Method 524.2 Rev.4 Add-Ons (without PCE)	1.5 mL
ECS-A-049	EPA Method 8260 Add-ons #3	1.5 mL
ECS-A-051	EPA Method 8260 B Volatile ISTD Mix-2,000 µg/mL	1.5 mL
ECS-A-053	EPA Method 624/8240 - Volatile Gases Mix(2,000 µg/mL)	1.1 mL
ECS-A-061	EPA Method 8270 Add-ons 2 (2,000µg/mL)	1.8mL
ECS-A-201	Semivolatile ISTD Mix (2,000µg/mL)	1.8mL
ECS-A-ACN	Acrolein in P&T Methanol	1.5 mL
ECS-A-DIOX	1,4-Dioxane at 10,000 ppm in Methanol	1.5 mL
ECS-A-NHOX	Oxygenates Mix	1.5 mL
ECS-A-PCE	Pentachloroethane Solution-2,000 µg/mL	1.5 mL
ECS-B-001	Semivolatile ISTD Mix (4,000µg/mL) - 3 Pack	1.8mL
ECS-B-006	Phenols Mix (2,000µg/mL) - 3 pack	1.8mL
ECS-B-007	Benzidines Mix (2,000µg/mL) - 3 pack	1.8mL
ECS-B-010	Volatile ISTD Mix (2,000µg/mL) - 3 pack	1.5 mL
ECS-B-011	Volatile Surrogates Mix (2,000µg/mL) - 3 pack	1.5 mL
ECS-B-015	Volatile EPA Method 624 Mix 1 (2,000µg/mL)- 3 pack	1.5 mL
ECS-B-017	BFB Tune Check - 3 Pack	1.5 mL
ECS-B-018	Semivolatile TCLP Mix (2,000µg/mL) - 3 Pack	1.8mL
ECS-B-030	EPA Method 625 Base/Neutral Mix 1 (2,000µg/mL)- 3 pack	1.8mL
ECS-B-031	EPA Method 8270 Add-ons (2,000µg/mL) - 3 pack	1.8mL
ECS-B-032	PAH Mix (2,000µg/mL) - 3 pack	1.8mL
ECS-B-033	EPA Method 8260/524.2 Volatiles Mix (54) (2,000µg/mL) -3 pack	1.5 mL
ECS-B-034	EPA Method 524.2 ISTD/Surrogate Mix (2,000µg/mL)- 3 pack	1.5 mL
ECS-B-038	Acrolein/Acrylonitrile Mixture (10,000µg/mL) -- 3 pack	1.5 mL
ECS-B-039	Underground Storage Tank Volatile Add-ons (2,000/20,000µg/mL) - 3 pack	1.5 mL
ECS-B-040	2-Chloroethyl vinyl ether (2,000µg/mL) - 3 pack	1.5 mL
ECS-B-041	EPA Method 8260 Volatile ISTD Mix (2,000µg/mL)-3 pack	1.5 mL
ECS-B-043	EPA Method 8260 Ketones Mixture (2,000µg/mL)- 3 pack	1.5 mL
ECS-B-043H	High Conc. Ketones Mixture (10,000 µg/mL) - 3 pack	1.5 mL
ECS-B-044	EPA Method 8260 Add-ons 1 (2,000µg/mL) - 3 pack	1.5 mL
ECS-B-045XP	EPA Method 8260 Add-ons Mix 2 (w/o PCE) -3 pack	1.5 mL
ECS-B-046XP	EPA Method 524.2 Rev.4 Add-Ons (without PCE) -3 pack	1.5 mL
ECS-B-047	Tetrahydrofuran Mix (THF) - 3 pack	1.5 mL
ECS-B-049	EPA Method 8260 Add-ons #3 - 3 pack	1.5 mL
ECS-B-051	EPA Method 8260 B Volatile ISTD Mix - 3 pack	1.5 mL
ECS-B-053	EPA Method 624/8240 - Volatile Gases Mix (2,000 µg/mL) - 3 Pack	1.1 mL
ECS-B-061	EPA Method 8270 Add-ons 2 (2,000µg/mL) - 3 pack	1.8mL
ECS-B-201	Semivolatile ISTD Mix (2,000µg/mL) - 3 pack	1.8mL
ECS-B-ACN	Acrolein Mix 10,000 PPM -- 3 pack	1.5 mL

ECS GC/MS CRMs

Part Number	Description	Volume
ECS-B-DIOX	1,4-Dioxane at 10,000 ppm in Methanol- 3 pack	1.5 mL
ECS-B-NHOX	Oxygenates Mix - 3 pack	1.5 mL
ECS-B-PCE	Pentachloroethane Mix - 3 pack	1.5 mL
ECS-K-050	Semivolatile Calibration Kit - 5 Pack	1.8mL
ECS-K-TUNE	Semivolatiles Tuning Kit for EPA Methods 625/8270	
ECS-KN-050	Semivolatile Calibration Kit - 5 Pack	5.5 mL
ECS-N-001	Semivolatile ISTD Mix (4,000µg/mL)	5.5 mL
ECS-N-002	Base/Neutral Surrogate Mix (3) (1,000µg/mL)	5.5 mL
ECS-N-003	Acid Extractables Surrogate Mix (3) (2,000µg/mL)	5.5 mL
ECS-N-004	Acid Spiking Mix (2,000µg/mL)	5.5 mL
ECS-N-005	Base/Neutral Spiking Mix (1,000µg/mL)	5.5 mL
ECS-N-006	Phenols Mix (2,000µg/mL)	5.5 mL
ECS-N-007	Benzidines Mix (2,000µg/mL)	5.5 mL
ECS-N-008	DFTPP Tune Check (50µg/mL)	5.5 mL
ECS-N-018	Semivolatile TCLP Mix (2,000µg/mL)	5.5 mL
ECS-N-022	Base/Neutral Surrogate Mix (4) (1,000µg/mL)	5.5 mL
ECS-N-023	Acid Extractables Surrogate Mix (4) (2,000µg/mL)	5.5 mL
ECS-N-027	Semivolatile Surrogate Mix (6) (1,000/2,000µg/mL)	5.5 mL
ECS-N-030	EPA Method 625 Base/Neutral Mix 1 (2,000µg/mL)	5.5 mL
ECS-N-031	EPA Method 8270 Add-ons (2,000µg/mL)	5.5 mL
ECS-N-032	PAH Mix (2,000µg/mL)	5.5 mL
ECS-N-062	EPA Method 8270 Add-ons 3 (1,000µg/mL)	5.5 mL
ECS-N-201	Semivolatile ISTD Mix (6) (2,000µg/mL)	5.5 mL
ECS-Z-002	Base/Neutral Surrogate Mix (3) (1,000µg/mL)	11.5 mL
ECS-Z-003	Acid Extractables Surrogate Mix (3) (2,000µg/mL)	11.5 mL
ECS-Z-011	Volatile 624/8260 Surrogates	15 mL
ECS-Z-022	Base/Neutral Surrogate Mix, 4 component	10.5 mL
ECS-Z-023	Acid Extractables Surrogate Mix, 4 component	10.5 mL
ECS-Z-041	8260 ISTD Mix	15 mL

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- All standards come with a comprehensive Certificate of Analysis and MSDS

We manufacture and/or package your standards in our ISO 9001 facility. SPEX CertiPrep is accredited by A2LA as complying with the requirements of ISO/IEC 17025 and ISO/IEC Guide 34. We can help you achieve and sustain your quality and production goals by guaranteeing homogeneity and ensuring lot-to-lot consistency.

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- Complete 1-year supply of standards with SAME LOT #
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- Filling process tracked for guaranteed homogeneity
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HCS PICTOGRAMS & HAZARDS

As of June 1, 2015, OSHA's Hazard Communication Standard (HCS) will require pictograms on labels to alert users of the chemical hazards to which they may be exposed. The HCS is designed to meet the requirements of the Global Harmonized System (GHS).

Health Hazard



- Carcinogen
- Mutagenicity
- Reproductive Toxicity
- Respiratory Sensitizer
- Target Organ Toxicity
- Aspiration Toxicity

Flame



- Flammables
- Pyrophorics
- Self-Heating
- Emits Flammable Gas
- Self-Reactives
- Organic Peroxides

Exclamation Mark



- Irritant (skin and eye)
- Skin Sensitizer
- Acute Toxicity
- Narcotic Effects
- Respiratory Tract Irritant
- Hazardous to Ozone Layer (Non-Mandatory)

Gas Cylinder



- Gases Under Pressure

Corrosion



- Skin Corrosion / Burns
- Eye Damage
- Corrosive to Metals

Exploding Bomb



- Explosives
- Self-Reactives
- Organic Peroxides

Flame Over Circle



- Oxidizers

Environment (Non-Mandatory)



- Aquatic Toxicity

Skull and Crossbones



- Acute Toxicity (fatal or toxic)



For more information:

U.S. Department of Labor | www.osha.gov | 1-800-321-OSHA

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