



Alcohol and Tobacco Market Segment Brochure

- Tobacco and Humectant Standards
- Flavor Compound Standards
- Pesticide Standards
- Alcohol Standards



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Spex CertiPrep Certified Reference Materials for Alcohol & Tobacco

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Quality and Accreditation

Spex CertiPrep has been serving the scientific community since 1954. We are 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 DQS to ISO 9001:2015 and are proud to be accredited by A2LA to ISO/IEC 17025:2017 and ISO 17034:2016. The scope of our accreditation is the most comprehensive in the industry and encompasses all of our manufactured products.



Tobacco & Humectant Standards

Tobacco is the common name for a group of plants in either the Solanaceae or nightshade family. It is also the term for products produced from the cured leaves of the tobacco plant. There are more than seventy species of tobacco plants, but the most commonly used is *N. tabacum*. There are thousands of compounds found in tobacco but the most commonly associated compound is nicotine and other alkaloids. Nicotine is the most abundant of the volatile alkaloids in tobacco. There are a myriad of effects which occur with the ingestion of nicotine which results from the compound's ability to act as both a stimulant and depressant for the central and peripheral nervous systems. Nicotine causes a discharge of epinephrine which causes increase heart rate and blood pressure. Nicotine can stimulate the brain, increase breathing and constrict peripheral blood vessels.

In addition to nicotine, there are hundreds of other compounds and elements found in tobacco and tobacco smoke of interest to human health including heavy metals, toxic elements, polycyclic aromatic hydrocarbons, aldehydes, and many others. Spex CertiPrep can help laboratories with all of their tobacco analysis needs with our comprehensive list of tobacco constituent standards from inorganic elements to persistent pollutants.

Humectants are substances which are hygroscopic in nature used to keep things moist. They are used in tobacco products including cigarettes and vapes. They control moisture, cut tobacco filler and add flavor such as menthols and citrates. There is concern that these humectants also introduce potentially dangerous compounds and elements into the tobacco products. As humectants burn they release toxic chemicals such as acrolein and formaldehyde. The humectants themselves can also be hazardous if consumed in significant quantities and must be monitored. Spex CertiPrep is able to help laboratories monitor levels of humectants in their products with our catalog of humectant standards.

Tobacco Constituents Single-Element Standards

Single-Element FDA Standards List*				
Component	Concentration	Matrix	Volume	Part #
Acetaldehyde	1,000 µg/mL	Methanol-P&T	1 mL	S-125
Acetaldehyde	1,000 µg/mL	DI Water	1 mL	S-125-W1.8
Acetone	1,000 µg/mL	Methanol-P&T	1 mL	S-140
Acrolein	1,000 µg/mL	DI Water	1 mL	S-175-W
Acrylamide	1,000 µg/mL	Methanol-P&T	1 mL	S-177
Acrylonitrile	1,000 µg/mL	Methanol-P&T	1 mL	S-180
4-Aminobiphenyl	1,000 µg/mL	Methanol-P&T	1 mL	S-225
1-Aminonaphthalene	1,000 µg/mL	Methanol-P&T	1 mL	S-230
2-Aminonaphthalene	1,000 µg/mL	Methanol-P&T	1 mL	S-235
Anabasine	1,000 µg/mL	Methyl Tertiary Butyl Ether	1 mL	S-6361
o-Anisidine	1,000 µg/mL	Methanol-P&T	1 mL	S-285
Arsenic	1,000 µg/mL	2% HNO ₃	30 mL	PLAS2-2M
Benz(a)anthracene	1,000 µg/mL	Methylene Chloride	1 mL	S-425
Benzene	1,000 µg/mL	Methanol-P&T	1 mL	S-405
Benzo(b)fluoranthene	1,000 µg/mL	Methylene Chloride	1 mL	S-435
Benzo(k)fluoranthene	1,000 µg/mL	Methylene Chloride	1 mL	S-455
Benzo(a)pyrene	1,000 µg/mL	Methylene Chloride	1 mL	S-430
Benzo(c)phenanthrene	1,000 µg/mL	Methylene Chloride	1 mL	S-439
Beryllium	1,000 µg/mL	2% HNO ₃	30 mL	PLBE2-2M
1,3-Butadiene	1,000 µg/mL	Methanol-P&T	1 mL	S-600
Cadmium	1,000 µg/mL	2% HNO ₃	30 mL	PLCD2-2M
Catechol	1,000 µg/mL	Methanol	1 mL	S-761
Chromium	1,000 µg/mL	2% HNO ₃	30 mL	PLCR2-2M
Chrysene	1,000 µg/mL	Methylene Chloride	1 mL	S-970

Tobacco Constituents Single-Element Standards (cont'd)

Single-Element FDA Standards List* (cont'd)				
Component	Concentration	Matrix	Volume	Part #
Cobalt	1,000 µg/mL	2% HNO ₃	30 mL	PLCO2-2M
Coumarin	1,000 µg/mL	Methanol	1 mL	S-5061
Crotonaldehyde	1,000 µg/mL	DI Water	1 mL	S-990
Cyclopenta(c,d)pyrene	1,000 µg/mL	Methylene Chloride	1 mL	S-4875
Dibenz(a,h)anthracene	1,000 µg/mL	Methylene Chloride	1 mL	S-1205
Dibenzo(a,e)pyrene	1,000 µg/mL	Methylene Chloride:Benzene (50:50)	1 mL	S-1200
Dibenzo(a,h)pyrene	1,000 µg/mL	Methylene Chloride:Benzene	1 mL	S-1190
Dibenzo(a,i)pyrene	1,000 µg/mL	Methylene Chloride:Benzene (50:50)	1 mL	S-1195
Dibenzo(a,l)pyrene	1,000 µg/mL	Methylene Chloride	1 mL	S-1196
2,6-Dimethylaniline	1,000 µg/mL	Methanol	1 mL	S-4510
Ethyl carbamate (urethane)	1,000 µg/mL	Methanol-P&T	1 mL	S-3785
Ethylbenzene	1,000 µg/mL	Methanol-P&T	1 mL	S-1940
Ethylene oxide	1,000 µg/mL	Isopropanol	1 mL	S-1960-IPA
Formaldehyde	1,000 µg/mL	DI Water	1 mL	S-2060
Furan	1,000 µg/mL	Methanol-P&T	1 mL	S-2080
Hydrazine	1,000 µg/mL	DI Water	1 mL	S-2231
Indeno(1,2,3-cd)pyrene	1,000 µg/mL	Methylene Chloride:Benzene (50:50)	1 mL	S-2255
Isoprene	1,000 µg/mL	Methanol-P&T	1 mL	S-2300
Lead	1,000 µg/mL	2% HNO ₃	30 mL	PLPB2-2M
Mercury	10 µg/mL	5% HNO ₃	125 mL	PLHG2-1AY
Methyl ethyl ketone	1,000 µg/mL	Methanol-P&T	1 mL	S-4343
5-Methylchrysene	1,000 µg/mL	Methylene Chloride	1 mL	S-4811
Naphthalene	1,000 µg/mL	Methanol	1 mL	S-2655
Nickel	1,000 µg/mL	2% HNO ₃	30 mL	PLNI2-2M

Tobacco Constituents Single-Element Standards (cont'd)

Single-Element FDA Standards List* (cont'd)				
Component	Concentration	Matrix	Volume	Part #
Nicotine	1,000 µg/mL	Methanol	1 mL	S-2680
Nitrobenzene	1,000 µg/mL	Methanol-P&T	1 mL	S-2705
Nitromethane	1,000 µg/mL	Methanol-P&T	1 mL	S-2722
2-Nitropropane	1,000 µg/mL	Methanol-P&T	1 mL	S-2732
N-Nitrosodiethanolamine (NDELA)	1,000 µg/mL	Methanol-P&T	1 mL	S-2811
N-Nitrosodiethylamine	1,000 µg/mL	Methanol-P&T	1 mL	S-2810
N-Nitrosodimethylamine (NDMA)	1,000 µg/mL	Methanol-P&T	1 mL	S-2815
N-Nitrosomethylethylamine	1,000 µg/mL	Methanol-P&T	1 mL	S-2830
N-Nitrosomorpholine (NMOR)	1,000 µg/mL	Methanol-P&T	1 mL	S-2749
N-Nitrosonornicotine (NNN)	1,000 µg/mL	Methanol	1 mL	S-5726
N-Nitrosopiperidine (NPIP)	1,000 µg/mL	Methanol-P&T	1 mL	S-2750
Phenol	1,000 µg/mL	DI Water	1 mL	S-3030-W
Propionaldehyde	1,000 µg/mL	Methanol-P&T	1 mL	S-3190
Propylene oxide	1,000 µg/mL	Methanol-P&T	1 mL	S-3214
Quinoline	1,000 µg/mL	Methanol-P&T	1 mL	S-3245
Selenium	1,000 µg/mL	2% HNO ₃	30 mL	PLSE2-2M
Styrene	1,000 µg/mL	Methanol-P&T	1 mL	S-3300
o-Toluidine	1,000 µg/mL	Methanol-P&T	1 mL	S-3520
Toluene	1,000 µg/mL	Methanol-P&T	1 mL	S-3505
Vinyl acetate	1,000 µg/mL	Methanol-P&T	1 mL	S-3800
Vinyl chloride	1,000 µg/mL	Methanol-P&T	1 mL	S-3805

Tobacco Constituents Single-Element Standards (cont'd)

Single-Element Ion Standards				
Component	Concentration	Matrix	Volume	Part #
Chloride (Cl) ⁻	1,000 µg/mL	H ₂ O	125 mL	AS-CL9-2Y
Nitrate (NO ₃) ⁻	1,000 µg/mL	H ₂ O	125 mL	AS-NO39-2Y
Nitrate-Nitrogen	1,000 µg/mL	H ₂ O	125 mL	AS-NO3N9-2Y

Additional sizes and concentrations are available at spexcertprep.com.

Nicotine Constituents

Organic Singles					
Component	Concentration	CAS #	Matrix	Volume	Part #
Anabasine	1,000 µg/mL	13078-04-1	Methyl Tertiary-Butyl Ether	1 mL	S-6361
Nicotine	1,000 µg/mL	54-11-5	Methanol	1 mL	S-2680
n'-Nitrosornicotine (NNN)	1,000 µg/mL	80508-23-2	Methanol	1 mL	s-5726

Humectant Standards

Organic Singles					
Component	Concentration	CAS #	Matrix	Volume	Part #
Menthol	1,000 µg/mL	2216-51-5	Methanol-P&T	1 mL	S-4669
Propylene glycol	1,000 µg/mL	57-55-6	Methanol-P&T	1 mL	S-3212
Triethyl citrate	1,000 µg/mL	77-93-0	Methanol	1 mL	S-4675

Flavor Compound Standards

Flavor is the sensory impression of substances like food or beverages. It is a combination of the sensory input of smell and taste with some input from pressure and temperature. The flavor of products can be changed with the addition of flavorants. A “flavorant” is a substance that gives another substance flavor, altering the characteristics of the original substance.

Flavorants can either be natural or artificial. Many natural flavors are very costly so replacement artificial flavorants have been developed. Most commercial flavorants are chemically similar or equivalent to natural flavors which have been synthesized rather than extracted. Different classes of compounds are distinct for their flavor characteristics.

Group	Subgroup	Example	Scent/Flavor
Carbohydrates	Sugar	Glucose	Glucose
	Sugar Alcohol	Ethyl maltol	Ethyl maltol
Carbonyls	Ketone	Frambinone	Frambinone
	Aldehydes	Benzaldehyde	Benzaldehyde
	Esters	Methyl salicylate	Methyl salicylate
	Carboxylic Acids	Malic acid	Malic acid
Organic Acids & Organic Acid Salts	Fatty Acids	Ethyl decanoate	Ethyl decanoate
Ionic Salts	Inorganic Salt	Sodium chloride	Sodium chloride
Proteins & Amino Acids	Amino Acid Salt	Monosodium glutamate	Monosodium glutamate
Terpenes	Monoterpene	Myrcene	Myrcene

Flavorants for food, beverage and tobacco products are often regulated by government agencies which produce lists of acceptable flavorants. In cases of new products, time can pass between introduction of flavorants before a final decision is made as to their status and safety. Many flavorants for new products in the tobacco and vaping industry can fall under this limbo between legal status and common use.

Spex CertiPrep offers an extensive catalog of flavorant standards for use in the alcohol, tobacco and vaping industries.

Flavor Compound Standards (cont'd)

Organic Singles					
Component	Concentration	CAS #	Matrix	Volume	Part #
Acetic acid	1,000 µg/mL	64-19-7	Methanol-P&T	1 mL	S-133
Vanillin	1,000 µg/mL	121-33-5	Methanol-P&T	1 mL	S-3884
Octanoic acid	1,000 µg/mL	124-07-2	Methyl Tertiary-Butyl Ether	1 mL	S-4114
Acetic acid, sodium salt	1,000 µg/mL	127-09-3	DI Water	1 mL	S-134
Propionic acid	1,000 µg/mL	79-09-4	DI Water	1 mL	S-3192
Ethyl Octanoate	1,000 µg/mL	106-32-1	Methanol-P&T	1 mL	S-5479

USP Multi-Component Standard	
Component	Part #
2 Organic Volatile Impurities, Class 3 Solvents, USP 467 Pharmaceutical Residual Solvent Standards in Dimethyl Sulfoxide, 1 mL Contains: Acetic acid, Formic acid	USP-RS-C3B

Top Flavor Chemicals for Vaping					
Component	Concentration	CAS #	Matrix	Volume	Part #
Benzaldehyde	1,000 µg/mL	100-52-7	Methanol-P&T	1 mL	S-402
Benzyl Alcohol	1,000 µg/mL	100-51-6	Methanol-P&T	1 mL	S-460
Cinnamaldehyde	1,000 µg/mL	14371-10-9	Methanol-P&T	1 mL	S-979
Menthol	1,000 µg/mL	2216-51-5	Methanol-P&T	1 mL	S-4669
Propylene Glycol	1,000 µg/mL	57-55-6	Methanol-P&T	1 mL	S-3212
Vanillin	1,000 µg/mL	121-33-5	Methanol-P&T	1 mL	S-3884

Additional sizes and concentrations are available at spexcertiprep.com.

Flavor Compound Standards (cont'd)

Terpene Mixes	
Component	Part #
<p>Cannabis Terpene Mix 1 (High Level) containing 21 compounds, 1,000 µg/mL (1,000 ppm) in Methanol, 1 mL</p> <p>Contains: (-)-alpha-Bisabolol, Camphene, Camphor, (1S)-(+)-3-Carene, (-)-Caryophyllene oxide, trans-Caryophyllene, (+)-Cedrol, Eucalyptol, Farnesene (mix of Isomers), (+)-Fenchone, Geranyl acetate, Hexahydrothymol, Isoborneol, (-)-Isopulegol, Linalool, p-Mentha-1,5-diene, beta-Myrcene, Nerol, cis-Nerolidol, Ocimene (mix of isomers), Valencene</p>	CAN-TERP-MIX1H
<p>Cannabis Terpene Mix 2 (High Level) containing 21 compounds, 100 µg/mL (100 ppm) in Methanol, 1 mL</p> <p>Contains: (+)-Borneol, (-)-Borneol, (1R)-(+)-Camphor, (1S)-(-)-Camphor, alpha-Cedrene, L(-)-Fenchone, (1R)-endo-(+)-Fenchyl alcohol, Geraniol, Guaiol, alpha-Humulene, (R)-(+)-Limonene, trans-Nerolidol, alpha-Pinene, beta-Pinene, (+)-Pulegone, alpha-Terpinene, gamma-Terpinene, Terpinolene, Terpeneol (mix of isomers), Sabinene, Sabinene hydrate</p>	CAN-TERP-MIX2H

Additional sizes and concentrations are available at spexcertiprep.com.

Pesticide Standards

Build Your Pesticide Library with Spex CertiPrep Pesticide Mixes!

Pesticide residue analysis is a critical step in protecting agricultural products and foodstuff from both the onslaught of damaging pests as well as protecting the environment and the population from potentially dangerous chemical residues.

Many new pesticides are now being tested using GC/MS and LC/MS and GC techniques to determine even minute amounts of pesticide residue in environmental samples and food products. Spex CertiPrep is the leader in offering HPLC, GC, GC/MS, and LC/MS pesticide CRMs designed to work within the EPA, AOAC, FDA, and international analytical testing methods.

Your analysis just got faster and easier. Calibration time will be shorter, requiring fewer injections. You will save money too. Our mixes will be less expensive than buying individual CRMs.

Want all 144 top pesticides? We have the kit containing all of the compounds.

Pesticide Standards (cont'd)

Action	Group #	Type	Pesticides/Classes
Nerve & Muscle	1	Acetylcholinesterase (AChE) Inhibitors	Carbamates, Organophosphates, Malathion
	2	GABA - Gata Chlorine Channel Blockers	Cyclodiene Organochlorines, Fiproles
	3	Sodium Channel Modulators	Pyrethroids, Pyrethrins, DDT, Methoxychlor
	4	Nicotinic Acetylcholine Receptor (nAChR) Competitive Modulators	Neonicotinoids, Nicotine, Sulfoximines, Imidacloprid
	5	Nicotinic Acetylcholine Receptor (nAChR) Allosteric Modulators	Spinosyns
	6	Glutamate-Gated Chloride Channel (GluCl) Allosteric Modulators	Avermectins, Milbemycins
	9	Chordotonal Organ TRPV Channel Modulators	Pyridine Azomethine Derivatives
	14	Nicotinic Acetylcholine Receptor (nAChR) Channel Blockers	Nereistoxin Analogues
	19	Octopamine Receptor Agonists	Amitraz
	22	Voltage-Dependent Sodium Channel Blockers	Oxadiazines, Semicarbazones
	28	Ryanodine Receptor Modulators	Diamides
29	Chordotonal Organ Modulators - Undefined Target Site	Fonicamid	
Growth	7	Juvenile Hormone Mimics	Juvenile Hormone Analogues, Fenoxycarb, Pyriproxyfen
	10	Mite Growth Inhibitors	Clofentezine, Diflovidazin, Hexythiazox, Etoxazole
	15	Inhibitors of Chitin Biosynthesis, Type O	Benzoylureas, Diflubenzuron
	16	Inhibitors of Chitin Biosynthesis, Type 1	Buprofezin
	17	Moulting Disruptor, Diptera	Cyromazine
	18	Ecdysone Receptor Agonists	Diacyl Hydrazines
	23	Inhibitors of Acetyl CoA Carboxylase	Tetronic and Tetramix Acid Derivatives, Spirotetramat, Spiromesifen
Respiration	12	Inhibitors of Mitochondrial ATP Synthase	Diafenthuron, Organotin, Propargite, Tetradifon
	13	Uncouplers of Oxidative Phosphorylation via Disruption of the Proton Gradient	Chlorfenapyr, DNOC, Sulfluramid
	20	Mitochondrial Complex III Electron Transport Inhibitors	Hydramethylnon, Acequinocyl, Bifenazate
	21	Mitochondrial Complex I Electron Transport Inhibitors	AMETI Acaricides and insecticides, Rotenone
	24	Mitochondrial Complex IV Electron Transport Inhibitors	Phosphides, Cyanides
	25	Mitochondrial Complex II Electron Transport Inhibitors	Beta-Keto Nitrile Derivatives, Carboxanilides
Midgut	11	Microbial Disruptors of insect Midgut Membranes	Bacteria
Non-specific	8	Miscellaneous Non-Specific (Multi-Site) Inhibitors	Alkyl Halides, Fluorides, Borates
	UN	Compounds of Unknown or Uncertain MOA	Lime Sulfur, Sulfur

Pesticide Standards (cont'd)

Premixed Pesticide Multi-Compound CRMs

Pesticide Standards	
Component	Part #
<p>Pesticide Mix 1 containing 16 compounds, 100 µg/mL (100 ppm) in LC/MS Acetonitrile, 1 mL</p> <p>Contains: Acetamiprid, Aldicarb, Aldicarb sulfone, Aldicarb sulfoxide, Azoxystrobin, Boscalid, Chlorantraniliprole, Fenoxycarb, Imazalil, Imidacloprid, Iprodione, Piperonyl butoxide, Pirimicarb, Tebufenpyrad, Thiacloprid, Trifloxystrobin</p>	SPXPR-1
<p>Pesticide Mix 2 containing 15 compounds, 100 µg/mL (100 ppm) in LC/MS Acetonitrile, 1 mL</p> <p>Contains: Azinphos-methyl, Carbophenothion, Coumaphos, Dicrotophos, Dimethoate, Dyfonate (Fonofos), Ethoprophos (Prophos), Hexythiazox, Malathion, Methidathion, Phosalone, Phosmet (Imidan), Quinalphos, Terbufos, Triazophos</p>	SPXPR-2
<p>Pesticide Mix 3 containing 15 compounds, 100 µg/mL (100 ppm) in LC/MS Acetonitrile, 1 mL</p> <p>Contains: Carbaryl, Dimethomorph, Etofenprox, Etoazole, Flonicamid, Methamidophos, Monocrotophos, Myclobutanil (Systhane), Phenthoate, Phorate, Pirimiphos-methyl, Profenofos, Propargite (Omite), Spirodiclofen, Thiamethoxam</p>	SPXPR-3
<p>Pesticide Mix 4 containing 15 compounds, 100 µg/mL (100 ppm) in LC/MS Acetonitrile, 1 mL</p> <p>Contains: Acephate, Chlorothalonil, Chlorpyrifos, Diazinon, Dichlorvos, Disulfoton, EPN, Edifenphos, Ethion, Ethyl parathion, Fenitrothion, Fenthion, Fipronil, Fludioxonil, Methyl parathion</p>	SPXPR-4
<p>Pesticide Mix 5 containing 14 compounds, 100 µg/mL (100 ppm) in LC/MS Acetonitrile, 1 mL</p> <p>Contains: Baygon (Propoxur), Clofentezine, Diuron, Isoproturon, Linuron, Metalaxyl, Methomyl, Oxamyl, Oxydemeton-methyl, Paclobutrazol, Pencycuron, Prochloraz, Pymetrozine, Pyraclostrobin</p>	SPXPR-5
<p>Pesticide Mix 6 containing 15 compounds, 100 µg/mL (100 ppm) in LC/MS Acetonitrile, 1 mL</p> <p>Contains: Alachlor, Bentazon, Captan, Chlorpropham, Epoxiconazole, Fenoprop (2,4,5-TP) (Silvex), Fenpropathrin, Fenvalerate (Sanmarton), tau-Fluvalinate, Kresoxim-methyl, Metolachlor, Prowl (Pendimethalin), Pyridaben, Quinoxifen, Quintozene (pentachloronitrobenzene)</p>	SPXPR-6

Pesticide Standards (cont'd)

Premixed Pesticide Multi-Compound CRMs

Pesticide Standards	
Component	Part #
<p>Pesticide Mix 7 containing 8 compounds, 100 µg/mL (100 ppm) in LC/MS Acetonitrile, 1 mL</p> <p>Contains: Bifenthrin, Cypermethrin, Cyfluthrin (Baythroid), Permethrin (mix of cis & trans), Prallethrin (mix of isomers), Pyrethrins (mix of isomers), Resmethrin, Tetramethrin</p>	SPXPR-7
<p>Pesticide Mix 8 containing 15 compounds, 100 µg/mL (100 ppm) in LC/MS Acetonitrile, 1 mL</p> <p>Contains: Abamectin (mix of isomers), Bifenazate, Bromacil, Fenobucarb (BPMC), Fenpyroximate, Hexaconazole, Isoprocarb, Methiocarb, Propazine, Propiconazole (Tilt), Spinetoram (J), Spinosad (as Spinosyn A), Spiromesifen, Spirotetramat, Tebuconazole (Folicur)</p>	SPXPR-8
<p>Pesticide Mix 9 containing 16 compounds, 100 µg/mL (100 ppm) in Acetonitrile:Acetone (9:1), 1 mL</p> <p>Contains: Acequinocyl, Atrazine, Atrazine-desethyl, Carbofuran, Cyanazine (Bladex), 2,4-DB, Fenamiphos sulfone, Fenamiphos sulfoxide, Fenhexamid, Fenoxaprop, Fluometuron, 3-Hydroxycarbofuran, Molinate, Simazine, Thiophanate-methyl, Trichlorfon (Dylox)</p>	SPXPR-9
<p>Pesticide Mix 10 containing 15 compounds, 100 µg/mL (100 ppm) in LC/MS Acetonitrile, 1 mL</p> <p>Contains: Aldrin, Chlordecone (Kepone), o-p'-DDD, p-p'-DDD, o-p'-DDE, p-p'-DDE, o-p'-DDT, p-p'-DDT, Dieldrin, Endrin, Endrin aldehyde, Endrin ketone, Isodrin, Metribuzin, Mirex</p>	SPXPR-10

Metals Single-Component Standards

Claritas PPT® Single-Element Standards				
Component	Concentration	Matrix	Volume	Part #
Copper	1,000 µg/mL	2% HNO ₃	30 mL	CLCU2-2M
Vanadium	1,000 µg/mL	2% HNO ₃	30 mL	CLV2-2M

Alcohol Standards

Alcoholic beverages are drinks that contain ethanol produced from the fermentation of grains or fruits. Alcoholic beverages include beers, meads, ciders, wines, and distilled spirits. All of these beverages contain thousands of compounds of interest from the common flavorants (see Flavor Standards on page 6), antioxidants, humectants (see Humectant Standards on page 5), to toxic elements and heavy metals. Alcoholic beverages do have some unique compounds which are often measured or monitored, including alcohol impurities, aldehydes, sulfur compounds, cork taint compounds, and other alcohol related targets.

Spex CertiPrep has all of the standards the laboratory needs to detect and measure common alcohol compounds and elements.

“

In wine there is wisdom,
in beer there is freedom,
in water there is bacteria.

Unknown

”

Alcohol Standards (cont'd)

Alcohol Standard Singles

Organic Singles					
Component	Concentration	CAS #	Matrix	Volume	Part #
2-Butanol	1,000 µg/mL	78-92-2	Methanol-P&T	1 mL	S-615
Ethyl acetate	1,000 µg/mL	141-78-6	Methanol-P&T	1 mL	S-1920
Ethyl acetate-1,2-13C2	1,000 µg/mL	84508-45-2	Methanol-P&T	1 mL	S-1921
Ethyl formate	1,000 µg/mL	109-94-4	Methanol-P&T	1 mL	S-4279
Methanol	1,000 µg/mL	67-56-1	DI Water	1 mL	S-2380
3-Octanone	1,000 µg/mL	106-68-3	Methanol-P&T	1 mL	S-2885
1-Pentanol	1,000 µg/mL	71-41-0	Methanol-P&T	1 mL	S-2980
1-Propanol	1,000 µg/mL	71-23-8	Methanol-P&T	1 mL	S-3160

Chemistry in a Glass

- 70-90% Water →
- 6-23% Ethanol by Variety →
- 1-3% Pectins, Proteins, Acids →
- 1% Vitamins & Minerals →
- 1% Polyphenols, Flavonoids, Tannins, and Flavor Compounds →



Alcohol Standards (cont'd)

Sulfur Compound Standards

Organic Singles					
Component	Concentration	CAS #	Matrix	Volume	Part #
Methyl sulfide	1,000 µg/mL	75-18-3	Methanol-P&T	1 mL	S-2454
2-Methyl-2-propanethiol	1,000 µg/mL	75-66-1	Methanol-P&T	1 mL	S-2586
2-Methyl-1-propanethiol	1,000 µg/mL	513-44-0	Methanol-P&T	1 mL	S-2587
Methyl disulfide	1,000 µg/mL	624-92-0	Methanol-P&T	1 mL	S-2599
1-Propanethiol	1,000 µg/mL	107-03-9	Methanol-P&T	1 mL	S-3152
Hydrogen sulfide	1,000 µg/mL	7783-06-4	Methanol	1 mL	S-3987
Carbon disulfide	1,000 µg/mL	75-15-0	Methanol-P&T	1 mL	S-745
Ethanethiol	1,000 µg/mL	75-08-1	Methanol-P&T	1 mL	S-1881
Ethyl methyl sulfide	1,000 µg/mL	624-89-5	Methanol-P&T	1 mL	S-1976
Methanethiol	1,000 µg/mL	74-93-1	DI Water	1 mL	S-2433-W
1-Butanethiol	1,000 µg/mL	109-79-5	Methanol-P&T	1 mL	S-608

Alcohol Standards (cont'd)

Sulfur Compound Standards (cont'd)

Sulfur Compound Multi-Element Standards	
Component	Part #
<p>Method 524.2 Revision 4 Mix for US EPA Method 524.3 with 24 Components, 2,000 µg/mL (2,000 ppm) in Methanol-P&T, 1mL</p> <p>Contains: Acetone, Acrylonitrile, Allyl chloride, 2-Butanone, Carbon disulfide, Chloroacetonitrile, 1-Chlorobutane, trans-1,4-Dichloro-2-butene, 1,1-Dichloropropanone, Ether, Ethyl methacrylate, Hexachloroethane, 2-Hexanone, Iodomethane, Methacrylonitrile, 4-Methyl-2-pentanone, Methyl acrylate, Methyl methacrylate, Methyl tertiary-butyl ether, Nitrobenzene, 2-Nitropropane, Pentachloroethane, Propionitrile, Tetrahydrofuran</p>	5242-R4
<p>Method 524.2 Revision 4 Mix for US EPA Method 524.3 with 24 Components, 200 µg/mL (200 ppm) in Methanol-P&T, 1mL</p> <p>Contains: Acetone, Acrylonitrile, Allyl chloride, 2-Butanone, Carbon disulfide, Chloroacetonitrile, 1-Chlorobutane, trans-1,4-Dichloro-2-butene, 1,1-Dichloropropanone, Ether, Ethyl methacrylate, Hexachloroethane, 2-Hexanone, Iodomethane, Methacrylonitrile, 4-Methyl-2-pentanone, Methyl acrylate, Methyl methacrylate, Methyl tertiary-butyl ether, Nitrobenzene, 2-Nitropropane, Pentachloroethane, Propionitrile, Tetrahydrofuran</p>	5242-R4200
<p>Long List Appendix IX Compound Mix E for US EPA Method 8260B and CLP Series Methods with 7 Components, 200 µg/mL (200 ppm) in Methanol-P&T, 1mL</p> <p>Contains: Acetone, 2-Butanone, Carbon disulfide, -Chloroethyl vinyl ether, 2-Hexanone, 4-Methyl-2-pentanone, Vinyl acetate</p>	8260-E
<p>Long List Appendix IX Compound Mix E (High Level) for US EPA Method 8260B and CLP Series Methods with 7 Components, 2,000 µg/mL (2,000 ppm) in Methanol-P&T, 1mL</p> <p>Contains: Acetone, 2-Butanone, Carbon disulfide, -Chloroethyl vinyl ether, 2-Hexanone, 4-Methyl-2-pentanone, Vinyl acetate</p>	8260-EH
<p>Volatiles Mix D (High Level) for CLP Series Methods with 8 Components, 2,000 µg/mL (2,000 ppm) in Methanol-P&T, 1mL</p> <p>Contains: Acetone, 2-Butanone, Carbon disulfide, cis-1,2-Dichloroethene, 2-Hexanone, 4-Methyl-2-pentanone, Styrene, p-Xylene</p>	CLPV-D90H
<p>Volatiles Mix D for CLP SOW 2/88 & 3/90 (High Level) for CLP Series Methods with 9 Components, 2,000 µg/mL (2,000 ppm) in Methanol-P&T, 1mL</p> <p>Contains: Acetone, 2-Butanone, Carbon disulfide, cis-1,2-Dichloroethene, 2-Hexanone, 4-Methyl-2-pentanone, Styrene, Vinyl acetate, p-Xylene</p>	CLPV-DH

Alcohol Standards (cont'd)

Sulfur Compound Standards (cont'd)

Sulfur Compound Multi-Element Standards (cont'd)				
Component				Part #
Volatiles Organics Combination Standard for CLP Series Methods with 32 Components, 2,000 µg/mL (2,000 ppm) in Methanol-P&T, 1mL Contains:				CLPV-32CH
Acetone	Chloroform	cis-1,3-Dichloropropene	Tetrachloroethene	
Benzene	Dibromochloromethane	trans-1,3-Dichloropropene	Toluene	
Bromodichloromethane	1,1-Dichloroethane	Ethylbenzene	1,1,1-Trichloroethane	
Bromoform	1,2-Dichloroethane	2-Hexanone	1,1,2-Trichloroethane	
2-Butanone	1,1-Dichloroethene	4-Methyl-2-pentanone	Trichloroethene	
Carbon disulfide	cis-1,2-Dichloroethene	Methylene chloride	m-Xylene	
Carbon tetrachloride	trans-1,2-Dichloroethene	Styrene	o-Xylene	
Chlorobenzene	1,2-Dichloropropane	1,1,2,2-Tetrachloroethane	p-Xylene	
Volatiles Mix for CLM 04.1 for CLP Series Methods with 44 Components, 2,000 µg/mL (2,000 ppm) in Methanol-P&T, 1mL Contains:				CLPV-43CH
Acetone	1,2-Dibromo-3-chloropropane	1,2-Dichloropropane	1,1,2,2-Tetrachloroethane	
Benzene	Dibromochloromethane	cis-1,3-Dichloropropene	Tetrachloroethene	
Bromodichloromethane	1,2-Dibromoethane	trans-1,3-Dichloropropene	Toluene	
Bromoform	1,2-Dichlorobenzene	Ethylbenzene	1,2,4-Trichlorobenzene	
2-Butanone	1,3-Dichlorobenzene	2-Hexanone	1,1,1-Trichloroethane	
Methyl tertiary-butyl ether	1,4-Dichlorobenzene	Isopropylbenzene	1,1,2-Trichloroethane	
Carbon disulfide	1,1-Dichloroethane	Methyl acetate	Trichloroethene	
Carbon tetrachloride	1,2-Dichloroethane	Methylcyclohexane	1,1,2-Trichlorotrifluoroethane	
Chlorobenzene	1,1-Dichloroethene	Methylene Chloride	m-Xylene	
Chloroform	cis-1,2-Dichloroethene	4-Methyl-2-pentanone	o-Xylene	
Cyclohexane	trans-1,2-Dichloroethene	Styrene	p-Xylene	

Alcohol Standards (cont'd)

Sulfur Compound Standards (cont'd)

Sulfur Compound Multi-Element Standards (cont'd)				Part #
Component				
Volatile Organics Mix with 76 Certified Components for US EPA Method 8260 and CLP Series Methods with 76 Components, 2,000 µg/mL (2,000 ppm) in Methanol-P&T, 1mL				
Contains:				
Acetonitrile	1,2-Dibromo-3-chloropropane	trans-1,3-Dichloropropene	n-Propylbenzene	8260-BIG-MIX
Acrylonitrile	Dibromochloromethane	1,4-Dioxane	Styrene	
Allyl chloride	1,2-Dibromoethane	Ether	1,1,1,2-Tetrachloroethane	
Benzene	Dibromomethane	Ethyl methacrylate	1,1,2,2-Tetrachloroethane	
Bromobenzene	1,2-Dichlorobenzene	Ethylbenzene	Tetrachloroethene	
Bromochloromethane	1,3-Dichlorobenzene	Hexachlorobutadiene	Tetrahydrofuran	
Bromodichloromethane	1,4-Dichlorobenzene	Iodomethane	Toluene	
Bromoform	cis-1,4-Dichloro-2-butene	Isopropylbenzene	1,2,3-Trichlorobenzene	
n-Butylbenzene	trans-1,4-Dichloro-2-butene	p-Isopropyltoluene	1,2,4-Trichlorobenzene	
sec-Butylbenzene	1,1-Dichloroethane	Methacrylonitrile	1,1,1,-Trichloroethane	
tert-Butylbenzene	1,2-Dichloroethane	Methyl acrylate	1,1,2-Trichloroethane	
Carbon disulfide	1,1-Dichloroethene	Methyl methacrylate	Trichloroethene	
Carbon tetrachloride	cis-1,2-Dichloroethene	Methylene chloride	1,2,3-Trichloropropane	
Chloro-1,3-butadiene	trans-1,2-Dichloroethene	2-Methyl-1-propanol	1,1,2-Trichlorotrifluoroethane	
Chlorobenzene	1,2-Dichloropropane	Naphthalene	1,2,4-Trimethylbenzene	
2-Chloroethanol	1,3-Dichloropropane	Nitrobenzene	1,3,5-Trimethylbenzene	
Chloroform	2,2-Dichloropropane	2-Nitropropane	m-Xylene	
2-Chlorotoluene	1,1-Dichloropropene	Pentachloroethane	o-Xylene	
4-Chlorotoluene	cis-1,3-Dichloropropene	Propionitrile	p-Xylene	

Alcohol Standards (cont'd)

Analytical Standards for Wine

Analytical Single-Element Standards for Wine				
Component	Concentration	Matrix	Volume	Part #
Acetic acid	1,000 µg/mL	Methanol P&T	1 mL	S-133
2,3-Butanedione	1,000 µg/mL	Methanol P&T	1 mL	S-609
2-Chlorophenol-3,4,5,6-d ₄	1,000 µg/mL	Methanol P&T	1 mL	S-905
Dextrose anhydrous	1,000 µg/mL	Methanol P&T	1 mL	S-5005
Ethanol	1,000 µg/mL	Methanol P&T	1 mL	S-1885
4-Ethyl-2-methoxyphenol	1,000 µg/mL	Methanol P&T	1 mL	S-4183
2-Ethylphenol	1,000 µg/mL	Methanol P&T	1 mL	S-1983
4-Ethylphenol	1,000 µg/mL	Methanol P&T	1 mL	S-1985
2-Fluorophenol	1,000 µg/mL	Methanol	1 mL	S-2050
Malic acid	1,000 µg/mL	Methanol P&T	1 mL	S-4168
2,3,4,5,6-Pentachloroanisole	1,000 µg/mL	Methanol	1 mL	S-2930
Pentachloroanisole	1,000 µg/mL	Methanol	1 mL	S-2950
Phenol-d ₆	1,000 µg/mL	Methanol P&T	1 mL	S-3035
2,3,4,6-Tetrachlorophenol	1,000 µg/mL	Methanol	1 mL	S-3405B
2,4,6-Tribromoanisole	1,000 µg/mL	Methanol	1 mL	S-4309
2,4,6-Tribromophenol	1,000 µg/mL	Methanol P&T	1 mL	S-3555
2,4,6-Tribromophenol-d ₅	1,000 µg/mL	Methanol P&T	1 mL	S-4335
2,4,6-Trichloroanisole	1,000 µg/mL	Methanol	1 mL	S-3586
2,4,6-Trichlorophenol	1,000 µg/mL	Methanol P&T	1 mL	S-3645

Alcohol Standards (cont'd)

Analytical Standards for Wine (cont'd)

Analytical Multi-Element Standards for Wine	
Component	Part #
Wine Mix 1, in Methanol Contains: 100 µg/mL each of Pentachloroanisole-d ₃ , 2,4,6-Tribromoanisole-d ₅ and 2,4,6-Trichloroanisole-d ₅	WINE-1
Wine Mix 2, in Methanol-P&T Contains: 100 µg/mL each of 2,3,4,5,6-Pentachloroanisole, 2,3,4,6-Tetrachloroanisole and 2,4,6-Trichloroanisole	WINE-2
Wine Mix 3, in Methanol-P&T Contains: 10,000 µg/mL each of Carbon disulfide, Ethyl sulfide, Ethanethiol, Ethyl disulfide, Ethyl methyl sulfide, 2-Ethylthiopene, Methanethiol, Methyl disulfide, Methyl sulfide, 2-Methyl-2-propanethiol, 2-Methylthiophene, 1-Pentanethiol, 2-Propanethiol, and Thiophene	WINE-3

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