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- Terpenes & Flavonoids
- Microbiology
- Pesticides & Mycotoxins
- Residual solvents
- Inorganics Physical Chemistry
- Organic Blanks
- Proficiency Testing



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# UNITS OF MEASURES

## Common Unit Prefixes

Prefix	kilo	centi	milli	micro	nano	pico	femto	atto
Symbol	k	c	m	μ	n	p	f	a
Factor	10 <sup>3</sup>	10 <sup>-2</sup>	10 <sup>-3</sup>	10 <sup>-6</sup>	10 <sup>-9</sup>	10 <sup>-12</sup>	10 <sup>-15</sup>	10 <sup>-18</sup>
Equivalence	thousand	hundredth	thousandth	millionth	billionth	trillionth	quadrillionth	quintillionth

## Weight to Weight Concentrations

Name	Symbol	Equivalence			
Parts per thousand*	ppt*	g/kg	mg/g	μg/mg	ng/μg
Parts per million	ppm	mg/kg	μg/g	ng/mg	pg/μg
Parts per billion	ppb	μg/kg	ng/g	pg/mg	fg/μg
Parts per trillion†	ppt†	ng/kg	pg/g	fg/mg	ag/μg

## Weight to Volume Concentrations

Name	Symbol	Equivalence			
Parts per thousand*	ppt*	g/L	mg/mL	μg/μL	ng/nL
Parts per million	ppm	mg/L	μg/mL	ng/μL	pg/nL
Parts per billion	ppb	μg/L	ng/mL	pg/μL	fg/nL
Parts per trillion†	ppt†	ng/L	pg/mL	fg/μL	ag/nL

## Concentration Conversions

Units	Symbol	ppt*	ppm	ppb	ppt†
1 part per thousand*	ppt*	-	1x10 <sup>3</sup>	1x10 <sup>6</sup>	1x10 <sup>9</sup>
1 part per million	ppm	1x10 <sup>-3</sup>	-	1x10 <sup>3</sup>	1x10 <sup>6</sup>
1 part per billion	ppb	1x10 <sup>-6</sup>	1x10 <sup>-3</sup>	-	1x10 <sup>3</sup>
1 parts per trillion†	ppt†	1x10 <sup>-9</sup>	1x10 <sup>-6</sup>	1x10 <sup>-3</sup>	-

## Temperature

Scale	Symbol	Convert to	Formula
Celsius	°C	Fahrenheit	°F = °C x 1.8 + 32
Celsius	°C	Kelvin	°K = °C + 273
Fahrenheit	°F	Celsius	°C = (°F - 32) / 1.8
Fahrenheit	°F	Kelvin	°K = (°F - 32) / 1.8 + 273
Kelvin	°K	Celsius	°C = °K - 273
Kelvin	°K	Fahrenheit	°F = 1.8 (°K - 273) + 32



# CANNABINOIDS POTENCY TESTING

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The cannabis industry depends upon accurate potency and cannabinoid analysis to guarantee the claims made by cannabis products.

Spex + NSI offer the most comprehensive choices for cannabinoid and potency analysis that are designed to provide accuracy, reliability and ease of use. Whether your laboratory needs THC potency or is investigating unique cannabinoids, we are your source for cannabinoid standards and Proficiency Tests.



## 2 Component Potency Mixes in Acetonitrile

Component	CAS number	Concentration	Matrix	Package Size	Part #
Dronabinol (D9-THC)	1972-08-03	1000 µg/mL	Acetonitrile	1 mL	C-954
delta-8-Tetrahydrocannabinol (D8-THC)	5957-75-5				
(6aR,9R) delta10- THC	95543-62-7	1000 µg/mL	Acetonitrile	1 mL	C-953
Dronabinol (D9-THC)	1972-08-03				

## 3 Component Potency Mixes in Acetonitrile

Component	CAS number	Concentration	Matrix	Package Size	Part #
Tetrahydrocannabinolic Acid (THCA)	23978-85-0	500 µg/mL	Acetonitrile	1.1 mL ampule	C-935
Dronabinol (D9-THC)	1972-08-03				
delta-8-Tetrahydrocannabinol in Meoh(D8-THC)	5957-75-5				

## 4 Component Potency Mixes in Acetonitrile

Component	CAS number	Concentration	Matrix	Package Size	Part #
(6aR,9R)-Δ10-THC	95543-62-7	1000 µg/mL	Acetonitrile	1.1 mL ampule	C-936
Cannabicyclic Acid (CBLA)	40524-99-0				
Cannabiquinone (CBQ)	137252-25-6				
Exo-Tetrahydrocannabinol	27179-28-8				

## 5 Component Potency Mix 1 in Acetonitrile

Component	CAS number	Concentration	Matrix	Package Size	Part #
Cannabichromenic acid (CBCA)	185505-15-1	1000 µg/mL	Acetonitrile	1 mL	C-928
Cannabichromene (CBC)	20675-51-8				
Cannabidivarinic acid (CBDVA)	31932-13-5				
Cannabicyclol (CBL)	21366-63-2				
Cannabidivarin (CBDV)	24274-48-4				

## 6 Component Potency Mix in Acetonitrile

Component	CAS number	Concentration	Matrix	Package Size	Part #
Cannabidiol (CBD)	13956-29-1	500 µg/mL	Acetonitrile	1 mL	C-924
Cannabidiolic Acid	1244-58-2				
Cannabigerol (CBG)	25654-31-1				
Cannabinol (CBN)	521-35-7				
Delta9-Tetrahydrocannabinol	1972-08-3				
Tetrahydrocannabinolic Acid	23978-85-0				

## 6 Component Potency Mix in Acetonitrile

Component	CAS number	Concentration	Matrix	Package Size	Part #
Cannabidiol (CBD)	13956-29-1	1000 µg/mL	Acetonitrile	1 mL	C-925
Cannabidiolic Acid (CBDA)	1244-58-2				
Cannabigerol (CBG)	25654-31-1				
Cannabinol (CBN)	521-35-7				
Dronabinol (D9-THC)	1972-08-3				
Tetrahydrocannabinolic Acid (THCA)	23978-85-0				

## 11 Component Cannabinoids Potency Mix in Acetonitrile

Component	CAS number	Concentration	Matrix	Package Size	Part #
Cannabichromene (CBC)	20675-51-8	250 µg/mL	Acetonitrile	1 mL	C-918
Cannabidiol (CBD)	13956-29-1				
Cannabidiolic Acid (CBDA)	1244-58-2				
Cannabidivarin (CBDV)	24274-48-4				
Cannabigerol (CBG)	25654-31-1				
Cannabigerolic Acid (CBGA)	25555-57-1				
Cannabinol (CBN)	521-35-7				
delta-8-Tetrahydrocannabinol (D8-THC)	5957-75-5				
delta-9-Tetrahydrocannabivarin (THCV)	31262-37-0				
Dronabinol (D9-THC)	1972-08-3				
Tetrahydrocannabinolic Acid (THCA)	23978-85-0				

## Cannabinoids Potency Mix in Native Hemp

Component	CAS number	Concentration	Matrix	Package Size	Part #
Total THC, Total CBD and up to 17 individual cannabinoids (varies by lot)	Multiple	Varies by lot	Hemp	10 x 500 mg	C-939

## Single Components - Potency

Component	CAS number	Concentration	Matrix	Package Size	Part #
(-)-delta8-THC	5957-75-5	1,000 µg/mL	Methanol	1 mL	S-10261
(-)-delta9-THC	1972-08-3	1,000 µg/mL	Methanol	1 mL	S-10260
(6aR,9R)-delta10-THC	95543-62-7	1000 µg/mL	Acetonitrile	1 mL	C-2542
(R)-H4-Cannabidiol	No published CAS#	500 µg/mL	Methanol	1 mL	C-2601
(S)-H4-Cannabidiol	No published CAS#	500 µg/mL	Methanol	1 mL	C-2602
Cannabichromene (CBC)	20675-51-8	1,000 µg/mL	Methanol	1 mL	S-10248

## Single Components - Potency

Component	CAS number	Concentration	Matrix	Package Size	Part #
Cannabichromene (CBC)	20675-51-8	1,000 µg/mL	Methanol-P&T	1 mL	C-2430
Cannabichromenic acid (CBCA)	185505-15-1	1,000 µg/mL	Acetonitrile	1 mL	C-2515
Cannabicyclol (CBL)	21366-63-2	1,000 µg/mL	Acetonitrile	1 mL	C-2517
Cannabicyclolic Acid (CBLA)	40524-99-0	1000 µg/mL	Acetonitrile	1 mL	C-2543
Cannabidivarinic acid (CBDVA)	31932-13-5	1,000 µg/mL	Acetonitrile	1 mL	C-2516
Cannabidiol (CBD)	13956-29-1	1,000 µg/mL	Methanol	1 mL	S-10241
Cannabidiol (CBD)	13956-29-1	1,000 µg/mL	Methanol-P&T	1 mL	C-2422
Cannabidiolic acid (CBDA)	1244-58-2	1,000 µg/mL	Acetonitrile	1 mL	C-2420
Cannabidivarin (CBDV)	24274-48-4	1,000 µg/mL	Methanol	1 mL	S-10245
Cannabidivarin (CBDV)	24274-48-4	1,000 µg/mL	Methanol-P&T	1 mL	C-2426
Cannabidolic acid (CBDA)	1244-58-2	1,000 µg/mL	Acetonitrile	1 mL	S-10249
Cannabigerol (CBG)	2808-33-5	1,000 µg/mL	Methanol	1 mL	S-10246
Cannabigerol (CBG)	25654-31-3	1,000 µg/mL	Methanol-P&T	1 mL	C-2421
Cannabigerolic acid (CBGA)	25555-57-1	1,000 µg/mL	Acetonitrile	1 mL	C-2427
Cannabigerolic acid (CBGA)	25555-57-1	1,000 µg/mL	Acetonitrile	1 mL	S-10247
Cannabinol (CBN)	521-35-7	1,000 µg/mL	Methanol	1 mL	S-10242
Cannabinol (CBN)	521-35-7	1,000 µg/mL	Methanol-P&T	1 mL	C-2423
Cannabinolic acid (CBNA)	2808-39-1	1,000 µg/mL	Acetonitrile	1 mL	C-2518
Cannabiquinone (CBQ)	137252-25-6	1000 µg/mL	Acetonitrile	1 mL	C-2545
delta-8-Tetrahydrocannabinol (D8-THC)	5957-75-5	1,000 µg/mL	Methanol-P&T	1 mL	C-2429
delta-9-Tetrahydrocannabivarin (THCV)	31262-37-0	1,000 µg/mL	Methanol-P&T	1 mL	C-2428
delta-9-Tetrahydrocannabivarinic acid (THCVA)	39986-26-0	1,000 µg/mL	Acetonitrile	1 mL	C-2519
Dronabinol (D9-THC)	1972-08-3	1,000 µg/mL	Methanol-P&T	1 mL	C-2424
Exo-Tetrahydrocannabinol	27179-28-8	1000 µg/mL	Methanol-P&T	1 mL	C-2544
Tetrahydrocannabinolic acid (THCA)	23978-85-0	100 µg/mL	Acetonitrile	1 mL	C-2425
Tetrahydrocannabinolic acid (THCA)	23978-85-0	1,000 µg/mL	Acetonitrile	1 mL	S-11056
Tetrahydrocannabivarin (THCV)	31262-37-0	1,000 µg/mL	Methanol	1 mL	S-11057
THC-O-Acetate	23132-17-4	1000 µg/mL	Acetonitrile	1 mL	C-2628



## Potency QC Standards in Hemp Matrices

Matrix matched potency QC contain a spiking material ampule and a vial of matrix blank. To use the QC, spike material is combined with matrix.

Description	Matrix	Package Size	Part #
Potency in Hemp Matrix QC	Hemp	1 mL + Matrix	CMQC-023
Potency in Edible Matrix QC	Edible	1 mL + Matrix	CMQC-076
Potency in Hemp Oil QC	Hemp Oil	1 mL + Matrix	CMQC-077
THC Potency in Hemp Matrix QC	Hemp	1 mL + Matrix	CMQC-082
THC Potency in Hemp Oil QC	Oil	1 mL + Matrix	CMQC-083
THC Potency in Edible Matrix QC	Edible	1 mL + Matrix	CMQC-084

## Scheduled Proficiency Tests for Potency

Matrix matched potency PTs contain a spiking material ampule and a vial of matrix blank. To use the QC, spike material is combined with matrix.

Description	Matrix	Package Size	Part #
Potency in Hemp PT	Hemp	1 mL + Matrix	CMPT-023
Potency in Edible PT Part	Edible	1 mL + Matrix	CMPT-076
Potency in Hemp Oil PT Part	Hemp Oil	1 mL + Matrix	CMPT-077
THC Potency in Hemp PT Part	Hemp	1 mL + Matrix	CMPT-082
THC Potency in Hemp Oil PT Part	Oil	1 mL + Matrix	CMPT-083
THC Potency in Hemp Oil PT Part	Edible	1 mL + Matrix	CMPT-084

## PT Express for Cannabinoid Analysis

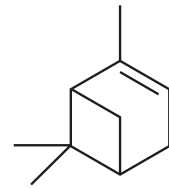
Matrix matched potency PTs contain a spiking material ampule and a vial of matrix blank. To use the QC, spike material is combined with matrix.

Description	Matrix	Package Size	Part #
Potency in Hemp PT Express	Hemp	1 mL + Matrix	CMPT-023B
Potency in Edible PT Express	Edible	1 mL + Matrix	CMPT-076B
Potency in Hemp Oil PT Express	Hemp Oil	1 mL + Matrix	CMPT-077B
THC Potency in Hemp PT Express	Hemp	1 mL + Matrix	CMPT-082B
THC Potency in Hemp Oil PT Express	Oil	1 mL + Matrix	CMPT-083B
THC Potency in Hemp Oil PT Express	Edible	1 mL + Matrix	CMPT-084B



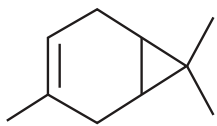
# COMMON TERPENES & TERPENOIDS

Pinene



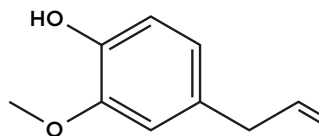
(Pines & Conifers)

Carene



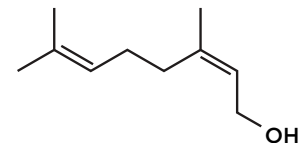
(Cedar)

Eugenol



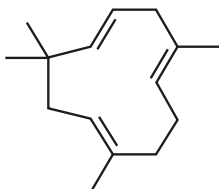
(Cloves)

Nerol



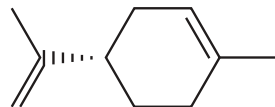
(Lemon Grass)

Humulene



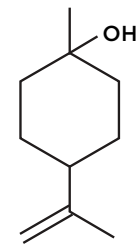
(Hops)

Limonene



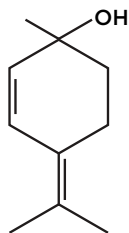
(Citrus Fruits)

Terpineols



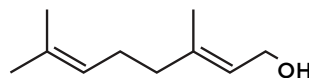
(Junipers, Orange Peel)

Linalool



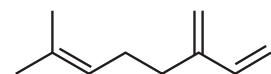
(Mint, Lavender)

Geraniol



(Roses & Wine Grapes)

Myrcene



(Myrtles & Cannabis)

# TERPENES & FLAVONOIDS

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Terpenes are the common name for a large group of compounds that contribute to flavor and odor of botanical products. Terpene analysis plays a critical role in the development and QC of cannabis products as it provides a quantitative measure of the product's flavor and scent profile.

Flavonoids are naturally occurring secondary metabolic products that can have important functions within plants and benefit consumers with health and healing properties. Similar to terpenes, flavonoids share a role in how we perceive cannabis.

## Terpene Kits

Component	Number of Compounds	Concentration	Matrix	Package Size	Part #
CAN-TERP-KIT (Mix 1 & 2)	42	100 µg/mL	Methanol	1 mL each Mix	CAN-TERP-KIT
CAN-TERP-KIT High (Mix 1H & 2H)	42	100 µg/mL	Methanol	1 mL each Mix	CAN-TERP-KIT-H

## Terpenes Mixes

### 18 Component Terpene Mix in Hexane

Concentration	Matrix	Package Size	Part #
2500 µg/mL	Hexane	1.5 mL ampule	C-937
Component	CAS number	Component	CAS number
alpha-Pinene	80-56-8	(1R)-endo-(+)-Fenchyl alcohol	2217-02-9
Sabinene	3387-41-5	(+)-Borneol	464-43-7
beta-Pinene	127-91-3	Terpineol	8000-41-7
alpha-Terpinene	99-86-5	(+)-Pulegone	89-82-7
d-limonene	5989-27-5	Geraniol	106-24-1
gamma-Terpinene	99-85-4	(-)-alpha-Cedrene	469-61-4
Sabinene hydrate	546-79-2	alpha-Humulene	6753-98-6
Terpinolene	586-62-9	trans-Nerolidol	40716-66-3
(1R)-(-)-Fenchone	7787-20-4	(-)-Guaiol	489-86-1

### Cannabis Terpenes Standard #1

Concentration	Matrix	Package Size	Part #
2500 µg/mL	Isopropanol	1.5 mL ampule	C-901
Component	CAS number	Component	CAS number
alpha-Humulene	6753-98-6	Linalool	78-70-6
alpha-Pinene	80-56-8	Myrcene	123-35-3
Beta-Caryophyllene	87-44-5	Ocimene (mix of isomers)	13877-91-3
d-limonene	5989-27-5	Terpinolene	586-62-9

### Cannabis Terpenes Standard #2

Concentration	Matrix	Package Size	Part #
2500 µg/mL	Isopropanol	1.5 mL ampule	C-902
Component	CAS number	Component	CAS number
(-)-Caryophyllene	1139-30-6	Eucalyptol	470-82-6

## Cannabis Terpenes Standard #3

Concentration	Matrix	Package Size	Part #
2500 µg/mL	Isopropanol	1.5 mL ampule	C-903
Component	CAS number	Component	CAS number
(-)-alpha-bisabolol	23089-26-1	Camphene	79-92-5
(-)-beta-Pinene	18172-67-3	gamma-Terpinene	99-85-4
(-)-Isopulegol	89-79-2	Geraniol	106-24-1
3-Carene	13466-78-9	Nerolidol (mix of isomers)	7212-44-4
alpha-Terpinene	99-86-5	p-cymene	99-87-6

## CAN-TERP Mix 1 in Methanol

Concentration	Matrix	Package Size	Part #
100 µg/mL	Methanol	1 mL	CAN-TERP-MIX1
Component	CAS number	Component	CAS number
(+)-Cedrol	77-53-2	Farnesene (mix of isomers)	502-61-4
(+)-Fenchone	4695-62-9	Geranyl Acetate	105-87-3
(-)-Alpha-Bisabolol	23089-26-1	Hexahydrothymol	89-78-1
(-)-Caryophyllene Oxide	1139-30-6	Isoborneol	124-76-5
(-)-Isopulegol	89-79-2	Linalool	78-70-6
(1S)-(+)-3-Carene	498-15-7	Nerol	106-25-2
beta-Myrcene	123-35-3	Ocimene	13877-91-3
Camphene	79-92-5	p-Mentha-1,5-diene	99-83-2
Camphor	76-22-2	trans-Caryophyllene	87-44-5
cis-Nerolidol	3790-78-1	Valencene	4630-07-3
Eucalyptol	470-82-6		

## CAN-TERP High Level Terpene Mix 1 in Methanol

Concentration	Matrix	Package Size	Part #
1,000 µg/mL	Methanol	1 mL	CAN-TERP-MIX1H
Component	CAS number	Component	CAS number
(+)-Cedrol	77-53-2	Farnesene (mix of isomers)	502-61-4
(+)-Fenchone	4695-62-9	Geranyl Acetate	105-87-3
(-)-Alpha-Bisabolol	23089-26-1	Hexahydrothymol	89-78-1
(-)-Caryophyllene Oxide	1139-30-6	Isoborneol	124-76-5
(-)-Isopulegol	89-79-2	Linalool	78-70-6
(1S)-(+)-3-Carene	498-15-7	Nerol	106-25-2
beta-Myrcene	123-35-3	Ocimene	13877-91-3
Camphene	79-92-5	p-Mentha-1,5-diene	99-83-2

### CAN-TERP High Level Terpene Mix 1 in Methanol

Concentration	Matrix	Package Size	Part #
1,000 µg/mL	Methanol	1 mL	CAN-TERP-MIX1H
Component	CAS number	Component	CAS number
Camphor	76-22-2	trans-Caryophyllene	87-44-5
cis-Nerolidol	3790-78-1	Valencene	4630-07-3
Eucalyptol	470-82-6		

### CAN-TERP Mix 2 in Methanol

Concentration	Matrix	Package Size	Part #
100 µg/mL	Methanol	1 mL	CAN-TERP-MIX2
Component	CAS number	Component	CAS number
(+)-Borneol	464-43-7	alpha-Terpinene	99-86-5
(+)-Pulegone	89-82-7	beta-Pinene	127-91-3
(-)-Borneol	464-45-9	gamma-Terpinene	99-85-4
(-)-Guaiol	489-86-1	Geraniol	106-24-1
(1R)-(+)-Camphor	464-49-3	L(-)-Fenchone	7787-20-4
(1R)-Endo-(+)-Fenchyl Alcohol	2217-02-9	Sabinene	3387-41-5
(1S)-(-)-Camphor	464-48-2	Sabinene Hydrate	546-79-2
(R)-(+)-Limonene	5989-27-5	Terpineol (mixture of isomers)	8000-41-7
a-Pinene	80-56-8	Terpinolene	586-62-9
alpha-Cedrene	469-61-4	trans-Nerolidol	40716-66-3
alpha-Humulene	6753-98-6		

### CAN-TERP High Level Terpene Mix 2 in Methanol

Concentration	Matrix	Package Size	Part #
1,000 µg/mL	Methanol	1 mL	CAN-TERP-MIX2H
Component	CAS number	Component	CAS number
(+)-Borneol	464-43-7	alpha-Terpinene	99-86-5
(+)-Pulegone	89-82-7	beta-Pinene	127-91-3
(-)-Borneol	464-45-9	gamma-Terpinene	99-85-4
(-)-Guaiol	489-86-1	Geraniol	106-24-1
(1R)-(+)-Camphor	464-49-3	L(-)-Fenchone	7787-20-4
(1R)-Endo-(+)-Fenchyl Alcohol	2217-02-9	Sabinene	3387-41-5
(1S)-(-)-Camphor	464-48-2	Sabinene Hydrate	546-79-2
(R)-(+)-Limonene	5989-27-5	Terpineol (mixture of isomers)	8000-41-7
a-Pinene	80-56-8	Terpinolene	586-62-9
alpha-Cedrene	469-61-4	trans-Nerolidol	40716-66-3
alpha-Humulene	6753-98-6		



## CAN-TERP High Abundance Terpene Mix in Methanol

Concentration	Matrix	Package Size	Part #
5,000 µg/mL	Methanol	1 mL	CAN-TERP-HA
Component	CAS number	Component	CAS number
(R)-(+)-Limonene	5989-27-5	Linalool	78-70-6
a-Pinene	80-56-8	Ocimene	13877-91-3
alpha-Humulene	6753-98-6	β-Phellandrene	555-10-2
beta-Myrcene	123-35-3	Terpinolene	586-62-9
beta-Pinene	127-91-3	trans-Caryophyllene	87-44-5

## 21 Terpene Mix in Hexane

Concentration	Matrix	Package Size	Part #
2500 µg/mL	Hexane	1.5 mL ampule	C-938
Component	CAS number	Component	CAS number
Camphene	79-92-5	Menthol	89-78-1
beta-Myrcene	123-35-3	Nerol	106-25-2
alpha-Phellandrene	99-83-2	Geranyl Acetate	105-87-3
(1S)-(+)-3-Carene	498-15-7	beta-Caryophyllene	87-44-5
p-cymene	99-87-6	Farnesene, mix of isomers	502-61-4
Eucalyptol	470-82-6	Valencene	4630-07-3
Ocimene (mix of isomers)	13877-91-3	cis-Nerolidol	3790-78-1
Linalool	78-70-6	(-)-Caryophyllene oxide	1139-30-6
(-)-Isopulegol	89-79-2	(+) - Cedrol	77-53-2
Camphor	76-22-2	(-)-alpha-bisabolol	23089-26-1
Isoborneol	124-76-5		

## Cannabis Terpenes Standard #4 in Methanol

Concentration	Matrix	Package Size	Part #
1000 µg/mL	Methanol	1.5 mL ampule	C-955
Component	CAS number	Component	CAS number
Camphor	76-22-2	(-)-alpha-bisabolol	23089-26-1
Farnesene, mix of isomers	502-61-4	Camphene	79-92-5
(+) - Cedrol	77-53-2	beta-Caryophyllene	87-44-5
Valencene	4630-07-3	Eucalyptol	470-82-6
Menthol	89-78-1	(1S)-(+)-3-Carene	498-15-7
alpha-Phellandrene	99-83-2	beta-Myrcene	123-35-3
Isoborneol	124-76-5	Linalool	78-70-6
(-)-Caryophyllene oxide	1139-30-6	Ocimene (mix of isomers)	13877-91-3

## Cannabis Terpenes Standard #4 in Methanol

Concentration	Matrix	Package Size	Part #
1000 µg/mL	Methanol	1.5 mL ampule	C-955
Component	CAS number	Component	CAS number
(+)-Fenchone	4695-62-9	Geranyl Acetate	105-87-3
Nerol	106-25-2	(-)-Isopulegol	89-79-2
cis-Nerolidol	3790-78-1		

## Cannabis Terpenes Standard #5 in Methanol

Concentration	Matrix	Package Size	Part #
1000 µg/mL	Methanol	1.5 mL ampule	C-956
Component	CAS number	Component	CAS number
(-)-alpha-Cedrene	469-61-4	delta-Limonene	5989-27-5
(-)-Guaiol	489-86-1	Geraniol	106-24-1
(-)-Borneol	464-45-9	alpha-Humulene	6753-98-6
Camphor	464-49-3	alpha-Pinene	80-56-8
(1R)-endo-(+)-Fenchyl alcohol	2217-02-9	(+)-Pulegone	89-82-7
beta-Pinene	127-91-3	Terpinolene	586-62-9
(+)-Borneol	464-43-7	gamma-Terpinene	99-85-4
(1S)-(-)-Camphor	464-48-2	alpha-Terpinene	99-86-5
Sabinene hydrate	546-79-2	Sabinene	3387-41-5
Terpineol	8000-41-7	trans-Nerolidol	40716-66-3
(1R)-(-)-Fenchone	7787-20-4		

## Terpenes Singles

Component	CAS number	Concentration	Matrix	Package Size	Part #
(-)-alpha-Bisabolol	23089-26-1	1,000 µg/mL	Methanol	1 mL	S-7598
(-)-Borneol	464-45-9	1,000 µg/mL	Methanol	1 mL	S-7587
(-)-Caryophyllene oxide	1139-30-6	1,000 µg/mL	Methanol	1 mL	S-7584
(-)-Isopulegol	89-79-2	1,000 µg/mL	Methanol	1 mL	S-7606
(+)-Borneol	464-43-7	1,000 µg/mL	Methanol-P&T	1 mL	S-5093
(+)-Cedrol	77-53-2	1,000 µg/mL	Methanol	1 mL	S-7603
(+)-Fenchone	4695-62-9	1,000 µg/mL	Methanol	1 mL	S-7585
(+)-Pulegone	89-82-7	1,000 µg/mL	Methanol	1 mL	S-5136
(1R)-(+)-Camphor	464-49-3	1,000 µg/mL	Methanol	1 mL	S-7600
(1R)-endo-(+)-Fenchyl alcohol	2217-02-9	1,000 µg/mL	Methanol	1 mL	S-7604
(1S)-(-)-Camphor	464-48-2	1,000 µg/mL	Methanol	1 mL	S-7601
(1S)-(+)-3-Carene	498-15-7	1,000 µg/mL	Methanol	1 mL	S-7602
(R)-(+)-Limonene	5989-27-5	1,000 µg/mL	Methanol-P&T	1 mL	S-4021

## Terpenes Singles

Component	CAS number	Concentration	Matrix	Package Size	Part #
2,6,10,14-Tetramethylpentadecane	1921-70-6	1,000 µg/mL	Tetrachloroethylene	1 mL	LCS-3125-TETCHET
2-ethyl-Fenchol	18368-91-7	1,000 µg/mL	Ethanol	1 mL	S-4952
3-Carene	13466-78-9	1,000 µg/mL	Methanol-P&T	1 mL	S-4171
alpha-Cedrene	469-61-4	1,000 µg/mL	Methanol	1 mL	S-5691
alpha-Humulene	6753-98-6	1,000 µg/mL	Methanol	1 mL	S-5692
alpha-Pinene	80-56-8	1,000 µg/mL	Methanol-P&T	1 mL	S-4172
alpha-Terpinene	99-86-5	1,000 µg/mL	Methanol	1 mL	S-5687
alpha-Terpineol	98-55-5	1,000 µg/mL	Methanol-P&T	1 mL	S-4145
beta-Myrcene	123-35-3	1,000 µg/mL	Hexane	1 mL	S-2654
beta-Myrcene	123-35-3	1,000 µg/mL	Methanol	1 mL	S-2654-MEOH
beta-Pinene	127-91-3	1,000 µg/mL	Methanol-P&T	1 mL	S-3142
Bisabolene	495-62-5	1,000 µg/mL	Methanol-P&T	1 mL	S-502
Borneol	507-70-0	1,000 µg/mL	Methanol-P&T	1 mL	S-4570
Camphene (mix of isomers)	79-92-5	1,000 µg/mL	Methanol	1 mL	S-7599
Camphor	76-22-2	1,000 µg/mL	Methanol-P&T	1 mL	S-3925
cis-Nerolidol	3790-78-1	1,000 µg/mL	Methanol	1 mL	S-7608
Citronellol	106-22-9	1,000 µg/mL	Methanol-P&T	1 mL	S-4868
D-Camphene	5794-03-6	1,000 µg/mL	Methanol-P&T	1 mL	S-710
Eucalyptol	470-82-6	1,000 µg/mL	Methanol	1 mL	S-4352
Farnese (mix of isomers)	502-61-4	1,000 µg/mL	Methanol-P&T	1 mL	S-1989
Fenchone	1195-79-5	1,000 µg/mL	Methanol-P&T	1 mL	S-4569
gamma-Terpinene	99-85-4	1,000 µg/mL	Methanol	1 mL	S-5688
Geraniol	106-24-1	1,000 µg/mL	Methanol-P&T	1 mL	S-4866
Geranyl acetate	105-87-3	1,000 µg/mL	Methanol	1 mL	S-7605
Guaiol	489-86-1	1,000 µg/mL	Methanol-P&T	1 mL	S-5698
Hexahydrothymol	89-78-1	1,000 µg/mL	Methanol	1 mL	S-7588
Isobomeol	124-76-5	1,000 µg/mL	Methanol	1 mL	S-4674
Isoprene	78-79-5	1,000 µg/mL	Methanol-P&T	1 mL	S-2300
L(-)-Fenchone	7787-20-4	1,000 µg/mL	Methanol-P&T	1 mL	S-5091
L-alpha-Terpineol	10482-56-1	1,000 µg/mL	Acetone	1 mL	S-3356-AC
Linalool	78-70-6	1,000 µg/mL	Methanol	1 mL	S-5133
Menthol	2216-51-5	1,000 µg/mL	Methanol-P&T	1 mL	S-4669
Nerol	106-25-2	1,000 µg/mL	Methanol	1 mL	S-7607
Ocimene (mix of isomers)	13877-91-3	1,000 µg/mL	Methanol	1 mL	S-7515
p-Isopropyltoluene	99-87-6	1,000 µg/mL	Methanol-P&T	1 mL	S-2320

## Terpenes Singles

Component	CAS number	Concentration	Matrix	Package Size	Part #
p-Mentha-1,5-diene	99-83-2	1,000 µg/mL	Methanol	1 mL	S-4173
Sabinene	3387-41-5	1,000 µg/mL	Methanol	1 mL	S-6645
Sabinene hydrate	546-79-2	1,000 µg/mL	Methanol	1 mL	S-7610
Terpineol (mix of isomers)	8000-41-7	1,000 µg/mL	Methanol	1 mL	S-7611
trans-Caryophyllene	87-44-5	1,000 µg/mL	Methanol	1 mL	S-5690
trans-Nerolidol	40716-66-3	1,000 µg/mL	Methanol	1 mL	S-7609
Valencene	4630-07-3	1,000 µg/mL	Methanol	1 mL	S-7612

## Terpene QC Samples

Description	Matrix	Package Size	Part #
Quantitative Terpenoids	Hemp	2 x 1.5 mL + Matrix	CMQC-024
Quantitative Terpenoids	Hemp Oil	2 x 1.5 mL + Matrix	CMQC-080

## Scheduled Terpene Proficiency Tests

Description	Matrix	Package Size	Part #
Quantitative Terpenoids in Hemp	Hemp	2 x 1.5 mL + Matrix	CMPT-024
Quantitative Terpenoids in Hemp Oil	Hemp Oil	2 x 1.5 mL + Matrix	CMPT-080

## PT Express for Terpenes

Description	Matrix	Package Size	Part #
Quantitative Terpenoids	Hemp	2 x 1.5 mL + Matrix	CMPT-024B
Quantitative Terpenoids	Hemp Oil	2 x 1.5 mL + Matrix	CMPT-080B

## Flavonoids

### Flavonoid Standard Compound Mix

Concentration	Matrix	Package Size	Part #
1000 µg/mL	Dimethyl Sulfoxide	1 ml	FLAVIN-1
Component	CAS number	Component	CAS number
(+)-Catechin	154-23-4	Kaempferol	520-18-3
(-)-Epicatechin	490-46-0	Luteolin	491-70-3
Apigenin	520-36-5	Myricetin	529-44-2
Baicalin	21967-41-9	Orientin	28608-75-5
Catechol	120-80-9	Quercetin	117-39-5
Chrysin	480-40-0	Rutin	153-18-4
Epigallocatechin	989-51-5	Vitexin	3681-93-4
Isovitexin	38953-85-4		



# MICROBIOLOGICAL CRMs & PT FOR HEMP & CANNABIS

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The cannabis industry depends upon accurate microbiological analysis to guarantee the safety and shelf-life claims made by cannabis product manufacturers. Spex + NSI offer the most comprehensive product selection for cannabis microbiologists. Whether you use culture or molecular test methods, Spex-NSI is the only source for biologically inoculated cannabis matrices. Plant material, edible, and oil matrix selections are available for our QC and proficiency testing products.





## Hemp Plant Matrix

Qualitative CRMs in Hemp are prepared with hydroponically grown hemp and packed in 1 g x 10 vials. These CRMs are intended for qualitative applications, analyst DOCs and daily QC with molecular and cultural test methods.

### Qualitative Microbiological CRMs in Hemp

CRM Description	Package Size	Part #
<i>Aspergillus flavus</i> CRM	10 vials x 1 g pack	FM-602
<i>Aspergillus fumigatus</i> CRM	10 vials x 1 g pack	FM-604
<i>Aspergillus niger</i> CRM	10 vials x 1 g pack	FM-601
<i>Aspergillus terreus</i> CRM	10 vials x 1 g pack	FM-603
<i>Listeria monocytogenes</i> CRM	10 vials x 1 g pack	FM-627
<i>Pseudomonas aeruginosa</i> CRM	10 vials x 1 g pack	FM-629
<i>Salmonella species</i> CRM	10 vials x 1 g pack	FM-732
<i>Staphylococcus aureus</i> CRM	10 vials x 1 g pack	FM-628

Qualitative QC Samples are a five sample set where 2 of the 5 samples are positive for the target microorganisms. Can be used for molecular or cultural testing techniques.

### Qualitative Microbiological QCs in Hemp

QC Description	Package Size	Part #
<i>Aspergillus species</i> QC	5 samples + 1 DI vial	CMQC-031
<i>Escherichia coli</i> O157:H7 QC	5 samples + 1 DI vial	CMQC-035
<i>Escherichia coli</i> QC	5 samples + 1 DI vial	CMQC-034
<i>Listeria monocytogenes</i> QC	5 samples + 1 DI vial	CMQC-064
<i>Pseudomonas aeruginosa</i> QC	5 samples + 1 DI vial	CMQC-070
<i>Salmonella species</i> QC	5 samples + 1 DI vial	CMQC-025
Shiga toxin-producing <i>Escherichia coli</i> (STEC) QC	5 samples + 1 DI vial	CMQC-028*
<i>Staphylococcus aureus</i> QC	5 samples + 1 DI vial	CMQC-067

Quantitative CRMs packs contain 10 x 1 g vials of hydroponically grown hemp and single-use lyophilized samples that are ready for hydration with sterile water or Butterfield's Buffer. CRMs are designed to be diluted and used with culture methods. These materials are best used for control charts, analyst DOCs and method validations.

### Quantitative Microbiological CRMs & QC in Hemp

CRM Description	Package Size	Part #
Aerobic Plate Count (APC) CRM	10 vials x 1 g pack	FM-726

\*ECCN restrictions apply to international sales of these items.

<i>Aspergillus species</i> (Molds) CRM	10 vials x 1 g pack	FM-729
Coliform/ <i>Escherichia coli</i> CRM	10 vials x 1 g pack	FM-727
<i>Enterobacteriaceae</i> CRM	10 vials x 1 g pack	FM-730
Yeast CRM	10 vials x 1 g pack	FM-728

Quantitative QC samples are designed for quantitative determination of microorganisms in the range of >500 CFU/gram. Samples are inoculated with the target microorganisms and can be used with culture techniques.

### Quantitative Microbiological QCs in Hemp

QC Description	Package Size	Part #
Aerobic Plate Count (APC) QC	2 Samples + 2 DI	CMQC-036
Shiga toxin-producing <i>Escherichia coli</i> (STEC) QC	2 Samples + 2 DI	CMQC-039*
Total Coliform & <i>E. coli</i> QC	2 Samples + 2 DI	CMQC-037
Total Yeast & Mold QC	2 Samples + 2 DI	CMQC-040

Qualitative PTs are a five sample set where 2 of the 5 samples are positive for the target microorganisms. Acceptable evaluation requires at least 4 of 5 recorded correctly with no false negatives. Can be used for molecular or cultural testing techniques.

### Qualitative Microbiological Scheduled PT

Description	Package Size	Part #
<i>Aspergillus species</i>	5 samples + 1 DI vial	CMPT-031
<i>Escherichia coli</i>	5 samples + 1 DI vial	CMPT-034
<i>Escherichia coli</i> O157:H7	5 samples + 1 DI vial	CMPT-035
<i>Listeria monocytogenes</i>	5 samples + 1 DI vial	CMPT-064
<i>Pseudomonas aeruginosa</i>	5 samples + 1 DI vial	CMPT-070
<i>Salmonella species</i>	5 samples + 1 DI vial	CMPT-025
Shiga toxin-producing <i>Escherichia coli</i> (STEC)	5 samples + 1 DI vial	CMPT-028*
<i>Staphylococcus aureus</i>	5 samples + 1 DI vial	CMPT-067

### Qualitative Microbiological PT Express in Hemp

Description	Package Size	Part #
<i>Aspergillus species</i>	5 samples + 1 DI vial	CMPT-031B
<i>Escherichia coli</i>	5 samples + 1 DI vial	CMPT-034B
<i>Escherichia coli</i> O157:H7	5 samples + 1 DI vial	CMPT-035B
<i>Listeria monocytogenes</i>	5 samples + 1 DI vial	CMPT-064B
<i>Pseudomonas aeruginosa</i>	5 samples + 1 DI vial	CMPT-070B

\*ECCN restrictions apply to international sales of these items.

<i>Salmonella</i> species	5 samples + 1 DI vial	CMPT-025B
Shiga toxin-producing <i>Escherichia coli</i> (STEC)	5 samples + 1 DI vial	CMPT-028B*
<i>Staphylococcus aureus</i>	5 samples + 1 DI vial	CMPT-067B

Quantitative PT samples are designed for quantitative determination of microorganisms in the range of >500 CFU/gram. Samples are inoculated with the target microorganisms and can be used with culture techniques.

### Quantitative Microbiological Scheduled PT in Hemp

Description	Package Size	Part #
Aerobic Plate Count (APC) & Total Viable Count (TVC)	2 Samples + 2 DI	CMPT-036
<i>BTGN / EB</i>	2 Samples + 2 DI	CMPT-039
Coliform/ <i>E. coli</i>	2 Samples + 2 DI	CMPT-037
qPCR Yeast & Mold	2 Samples + 2 DI	CMPT-085
Yeast or Mold	2 Samples + 2 DI	CMPT-040

### Quantitative Microbiological PT Express in Hemp

Description	Package Size	Part #
Aerobic Plate Count (APC) & Total Viable Count (TVC)	2 Samples + 2 DI	CMPT-036B
<i>BTGN / EB</i>	2 Samples + 2 DI	CMPT-039B
Coliform/ <i>E. coli</i>	2 Samples + 2 DI	CMPT-037B
qPCR Yeast & Mold	2 Samples + 2 DI	CMPT-085B
Yeast or Mold	2 Samples + 2 DI	CMPT-040B

## Edible Matrix

Qualitative Edible CRMs are created using organic brownie packed in 1 g x 10 vials intended as a qualitative CRM inoculated with approximately log 5 of microorganisms per vial. These materials can be used for analyst DOCs, daily QC and method validation in molecular and culture techniques.

### Qualitative Microbiological CRMs in Edible Matrix

CRM Description	Package Size	Part #
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\*ECCN restrictions apply to international sales of these items.

<i>Aspergillus flavus</i> CRM	10 vials x 1 g pack	FM-608
<i>Aspergillus fumigatus</i> CRM	10 vials x 1 g pack	FM-610
<i>Aspergillus niger</i> CRM	10 vials x 1 g pack	FM-607
<i>Aspergillus terreus</i> CRM	10 vials x 1 g pack	FM-609
<i>Listeria monocytogenes</i> CRM	10 vials x 1 g pack	FM-630
<i>Pseudomonas aeruginosa</i> CRM	10 vials x 1 g pack	FM-635
<i>Salmonella species</i> CRM	10 vials x 1 g pack	FM-605
<i>Staphylococcus aureus</i> CRM	10 vials x 1 g pack	FM-631

Qualitative QC Samples are a five sample set where 2 of the 5 samples are positive for the target microorganisms. Can be used for molecular or culture techniques.

### Qualitative Microbiological QCs in Edible Matrix

Description	Package Size	Part #
<i>Aspergillus species</i> QC	5 samples + 1 DI vial	CMQC-032
<i>Listeria monocytogenes</i> QC	5 samples + 1 DI vial	CMQC-065
<i>Pseudomonas aeruginosa</i> QC	5 samples + 1 DI vial	CMQC-071
<i>Salmonella species</i> QC	5 samples + 1 DI vial	CMQC-026
Shiga toxin-producing <i>Escherichia coli</i> (STEC) QC	5 samples + 1 DI vial	CMQC-029*
<i>Staphylococcus aureus</i> QC	5 samples + 1 DI vial	CMQC-068

Quantitative QC samples are designed for quantitative determination of microorganisms in the range of >500 CFU/gram. Samples are inoculated with the target microorganisms and can be used with culture techniques.

### Quantitative Microbiological QC in Edible Matrix

Description	Package Size	Part #
Aerobic Plate Count (APC)	2 Samples + 2 DI	CMQC-057
Bile-tolerant Gram Negative (BTGN) <i>Enterobacteriaceae</i>	2 Samples + 2 DI	CMQC-058
Coliform/ <i>Escherichia coli</i>	2 Samples + 2 DI	CMQC-038
Yeast/Mold	2 Samples + 2 DI	CMQC-059

Qualitative PTs are a five sample set where 2 of the 5 samples are positive for the target microorganisms. Acceptable evaluation requires at least 4 of 5 recorded correctly with no false negatives. Can be used for molecular or culture techniques.

### Qualitative Microbiological Scheduled PT in Edible Matrix

Description	Package Size	Part #
<i>Aspergillus</i> Molds	5 samples + 1 DI vial	CMPT-032

\*ECCN restrictions apply to international sales of these items.

<i>Listeria monocytogenes</i>	5 samples + 1 DI vial	CMPT-065
<i>Pseudomonas aeruginosa</i>	5 samples + 1 DI vial	CMPT-071
Salmonella species	5 samples + 1 DI vial	CMPT-026
Shiga toxin-producing <i>Escherichia coli</i> (STEC)	5 samples + 1 DI vial	CMPT-029*
<i>Staphylococcus aureus</i>	5 samples + 1 DI vial	CMPT-068

### Qualitative Microbiological PT Express in Edible Matrix

Description	Package Size	Part #
<i>Aspergillus</i> species	5 samples + 1 DI vial	CMPT-032B
<i>Listeria monocytogenes</i>	5 samples + 1 DI vial	CMPT-065B
<i>Pseudomonas aeruginosa</i>	5 samples + 1 DI vial	CMPT-071B
<i>Salmonella</i> species	5 samples + 1 DI vial	CMPT-026B
Shiga toxin-producing <i>Escherichia coli</i> (STEC)	5 samples + 1 DI vial	CMPT-029B*
<i>Staphylococcus aureus</i>	5 samples + 1 DI vial	CMPT-068B

Quantitative PT samples are designed for quantitative determination of microorganisms in the range of >500 CFU/gram. Samples are inoculated with the target microorganisms and can be used with culture techniques.

### Quantitative Microbiological Scheduled PT in Edible Matrix

Description	Package Size	Part #
Aerobic Plate Count (APC)	2 Samples + 2 DI	CMPT-057
Bile-tolerant Gram Negative (BTGN) <i>Enterobacteriaceae</i>	2 Samples + 2 DI	CMPT-058
Coliform/ <i>Escherichia coli</i>	2 Samples + 2 DI	CMPT-038
Yeast or Mold	2 Samples + 2 DI	CMPT-059

### Quantitative Microbiological PT Express in Edible Matrix

Description	Package Size	Part #
Aerobic Plate Count (APC)	2 Samples + 2 DI	CMPT-057B
Bile-tolerant Gram Negative (BTGN) <i>Enterobacteriaceae</i>	2 Samples + 2 DI	CMPT-058B
Coliform/ <i>Escherichia coli</i>	2 Samples + 2 DI	CMPT-038B
Yeast or Mold	2 Samples + 2 DI	CMPT-059B

## Hemp Oil Matrix

Qualitative Microbiological CRMs are used as a positive control and are supplied in a two-part set: 5 x 1 g blank hemp oil and a cryovial (600 µL) of viable culture. To prepare sample, spike a vial of hemp oil with 100 µL of the supplied culture and process under your normal molecular or cultural test methods.

\*ECCN restrictions apply to international sales of these items.



## Qualitative Microbiological CRMs in Hemp Oil Matrix

CRM Component	Package Size	Part #
<i>Aspergillus flavus</i> CRM	5 x 1 g Hemp Oil + 600 uL culture	FM-614
<i>Aspergillus fumigatus</i> CRM	5 x 1 g Hemp Oil + 600 uL culture	FM-616
<i>Aspergillus niger</i> CRM	5 x 1 g Hemp Oil + 600 uL culture	FM-613
<i>Aspergillus terreus</i> CRM	5 x 1 g Hemp Oil + 600 uL culture	FM-615
<i>Listeria monocytogenes</i> CRM	5 x 1 g Hemp Oil + 600 uL culture	FM-634
<i>Pseudomonas aeruginosa</i> CRM	5 x 1 g Hemp Oil + 600 uL culture	FM-633
<i>Salmonella</i> species CRM	5 x 1 g Hemp Oil + 600 uL culture	FM-611
<i>Staphylococcus aureus</i> CRM	5 x 1 g Hemp Oil + 600 uL culture	FM-632

Qualitative QC Samples are a five sample set where 2 of the 5 samples are positive for the target microorganisms. Can be used for molecular or cultural test methods.

## Quantitative Microbiological QC in Hemp Oil Matrix

QC Component	Package Size	Part #
<i>Aspergillus</i> species QC	5 Samples	CMQC-033
<i>Listeria monocytogenes</i> QC	5 Samples	CMQC-066
<i>Pseudomonas aeruginosa</i> QC	5 Samples	CMQC-072
<i>Salmonella</i> species QC	5 Samples	CMQC-027
Shiga toxin-producing <i>Escherichia coli</i> (STEC) QC	5 Samples	CMQC-030*
<i>Staphylococcus aureus</i> QC	5 Samples	CMQC-069

Qualitative PTs are a five sample set where 2 of the 5 samples are positive for the target microorganisms. Acceptable evaluation requires at least 4 of 5 recorded correctly with no false negatives. Can be used for molecular or cultural test methods.

## Qualitative Microbiological Scheduled PT in Hemp Oil Matrix

Component	Package Size	Part #
<i>Aspergillus</i> Mold	5 samples + 1 DI vial	CMPT-033
<i>Listeria monocytogenes</i>	5 samples + 1 DI vial	CMPT-066

\*ECCN restrictions apply to international sales of these items.

<i>Pseudomonas aeruginosa</i>	5 samples + 1 DI vial	CMPT-072
<i>Salmonella</i>	5 samples + 1 DI vial	CMPT-027
Shiga toxin-producing <i>Escherichia coli</i> (STEC)	5 samples + 1 DI vial	CMPT-030*
<i>Staphylococcus aureus</i>	5 samples + 1 DI vial	CMPT-069

### Qualitative Microbiological PT Express in Hemp Oil Matrix

Component	Package Size	Part #
<i>Aspergillus</i> species	5 samples + 1 DI vial	CMPT-033B
<i>Listeria monocytogenes</i>	5 samples + 1 DI vial	CMPT-066B
<i>Pseudomonas aeruginosa</i>	5 samples + 1 DI vial	CMPT-072B
<i>Salmonella</i> species	5 samples + 1 DI vial	CMPT-027B
Shiga toxin-producing <i>Escherichia coli</i> (STEC)	5 samples + 1 DI vial	CMPT-030B*
<i>Staphylococcus aureus</i>	5 samples + 1 DI vial	CMPT-069B

\*ECCN restrictions apply to international sales of these items.

# PESTICIDES & MYCOTOXINS

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Pesticides from algacides to virucides are used in large quantities in industrial and private agriculture including cannabis. We facilitate ease of monitoring and testing of pesticides by creating pesticide test mixes to suit your monitoring needs. In addition to pesticides, the threat of mycotoxins must also be measured in cannabis to ensure the safety of products.

Mold and fungi are ubiquitous in the world and their size and spore mobility allows it to quickly spread through agricultural products causing significant crop loss or illness. Mold and fungi create secondary metabolites called mycotoxins which are extremely toxic when inhaled or ingested. Our cannabis portfolio contains many different types of mycotoxin standards for cannabis safety.

## Mycotoxin Mixes

### 5 Component Aflatoxin Mix in Acetonitrile

Component	CAS number	Concentration	Matrix	Package Size	Part #
Aflatoxin B1	1162-65-8	10 µg/mL	Acetonitrile	1 mL	MYCO-1*
Aflatoxin B2	7220-81-7				
Aflatoxin G1	1165-39-5				
Aflatoxin G2	7241-98-7				
Ochratoxin A	303-47-9				

### 4 Component Aflatoxin Mix in Acetonitrile

Component	CAS number	Concentration	Matrix	Package Size	Part #
Aflatoxin B1	1162-65-8	25 µg/mL	Acetonitrile	1.2 mL	Single: C-927* 4 Pack: C-927P* 10 Pack: C-927TP*
Aflatoxin B2	7220-81-7				
Aflatoxin G1	1165-39-5				
Aflatoxin G2	7241-98-7				

### 4 Component High Mycotoxin Mix in Acetonitrile

Component	CAS number	Concentration	Matrix	Package Size	Part #
Aflatoxin B1	1162-65-8	20 µg/mL	Acetonitrile	1.2 mL	C-941*
Aflatoxin B2	7220-81-7				
Aflatoxin G1	1165-39-5				
Aflatoxin G2	7241-98-7				

### 5 Component Low Mycotoxin Mix in Acetonitrile

Component	CAS number	Concentration	Matrix	Package Size	Part #
Aflatoxin B1	1162-65-8	10 µg/mL	Acetonitrile	1.2 mL	C-940*
Aflatoxin B2	7220-81-7				
Aflatoxin G1	1165-39-5				
Aflatoxin G2	7241-98-7				
Ochratoxin A	303-47-9				

### 5 Component Low Mycotoxin Mix in Edible

Component	CAS number	Concentration	Matrix	Package Size	Part #
Ochratoxin A	303-47-9	varied	Edible	1 x 1.2 mL	C-914*
Aflatoxin B1	1162-65-8				
Aflatoxin B2	7220-81-7				
Aflatoxin G1	1165-39-5				
Aflatoxin G2	7241-98-7				

\*ECCN restrictions apply to international sales of these items.

## Mycotoxin Free Hemp Blank

Component	CAS number	Matrix	Package Size	Part #
Blank Mycotoxins Hemp Matrix				
Ochratoxin A	303-47-9	Hemp	2 g	C-913-MATRIX
Aflatoxin B1	1162-65-8			
Aflatoxin B2	7220-81-7			
Aflatoxin G1	1165-39-5			
Aflatoxin G2	7241-98-7			

## 5 Component Mycotoxin Mix in Hemp

Component	CAS number	Concentration	Matrix	Package Size	Part #
Mycotoxins CRM in Hemp					
Ochratoxin A	303-47-9	varied	Hemp	1 x 1.2 mL + 2 g	C-913*
Aflatoxin B1	1162-65-8				
Aflatoxin B2	7220-81-7				
Aflatoxin G1	1165-39-5				
Aflatoxin G2	7241-98-7				

## 5 Component Low Mycotoxin Mix in Hemp Oil

Component	CAS number	Concentration	Matrix	Package Size	Part #
Mycotoxins CRM in Hemp Oil					
Ochratoxin A	303-47-9	varied	Hemp Oil	1 x 1.2 mL	C-915*
Aflatoxin B1	1162-65-8				
Aflatoxin B2	7220-81-7				
Aflatoxin G1	1165-39-5				
Aflatoxin G2	7241-98-7				

## Quantitative Mycotoxins in Edible QC

Description	Matrix	Package Size	Part #
Mycotoxins in Edible QC	Edible	2x1.2 mL + Edible Matrix	CMQC-060*

## Quantitative Mycotoxins in Hemp Oil QC

Component	Matrix	Package Size	Part #
Mycotoxins in Hemp Oil QC	Hemp Oil		CMQC-061*

## Quantitative Mycotoxins in Hemp QC

Component	Matrix	Package Size	Part #
Mycotoxins in Hemp QC	Hemp		CMQC-042*

\*ECCN restrictions apply to international sales of these items.

## Mycotoxins Singles

Component	CAS number	Concentration	Matrix	Package Size	Part #
Aflatoxin B1	1162-65-8	10 µg/mL	Acetonitrile	1.2 mL	2227*
Aflatoxin B2	7220-81-7				2239*
Aflatoxin G1	1165-39-5				2240*
Aflatoxin G2	7241-98-7				2228*
Ochratoxin A	303-47-9				2226*

## Scheduled Proficiency Tests for Mycotoxins

Description	Matrix	Package Size	Part #
Quantitative Mycotoxins in Edible PT	Edible	2 x 1.2 mL	CMPT-060*
Quantitative Mycotoxins in Hemp PT	Hemp		CMPT-042*
Quantitative Mycotoxins in Hemp Oil PT	Hemp Oil		CMPT-061*

## PT Express for Mycotoxins

Description	Matrix	Package Size	Part #
Quantitative Mycotoxins in Edible PT Express	Edible	2 x 1.2 mL	CMPT-060B*
Quantitative Mycotoxins in Hemp PT Express	Hemp		CMPT-042B*
Quantitative Mycotoxins in Hemp Oil PT Express	Hemp Oil		CMPT-061B*

*\*ECCN restrictions apply to international sales of these items.*



## Pesticides Kits

### Canadian Pesticide Kit CAN-CAN-KIT

CANADIAN PESTICIDE MIX 1			
Concentration	Matrix	Package Size	Part #
100 µg/mL	LCMS Acetonitrile	6 x 1 mL	CAN-CAN-1
Component	CAS number	Component	CAS number
Aldicarb	116-06-3	Iprodione	36734-19-7
Baygon (Propoxur)	114-26-1	Methiocarb	2032-65-7
Carbaryl	63-25-2	Methomyl	16752-77-5
Carbofuran	1563-66-2	Novaluron	116714-46-6
Fenoxycarb	72490-01-8	Oxamyl	23135-22-0
Imazalil	35554-44-0	Pirimicarb	23103-98-2
Imidacloprid	138261-41-3	Thiacloprid	111988-49-9

### Canadian Pesticide Mix 2

Concentration	Matrix	Package Size	Part #
100 µg/mL	LCMS Acetonitrile	6 x 1 mL	CAN-CAN-2
Component	CAS number	Component	CAS number
Allethrin	584-79-2	Methoprene	40596-69-8
Baythroid (Cyfluthrin)	68359-37-5	MGK 264 (TM)	113-48-4
Bifenthrin	82657-04-3	Permethrin	52645-53-1
Cypermethrin	52315-07-8	Piperonyl butoxide	51-03-6
d-(cis-trans)-Phenothrin	26002-80-2	Prallethrin	23031-36-9
Deltamethrin	52918-63-5	Pyrethrins (mix of isomers)	8003-34-7
Fenvalerate	51630-58-1	Resmethrin	10453-86-8
Kinoprene	42588-37-4	Tetramethrin	7696-12-0

### Canadian Pesticide Mix 3

Concentration	Matrix	Package Size	Part #
100 µg/mL	LCMS Acetonitrile	6 x 1 mL	CAN-CAN-3
Component	CAS number	Component	CAS number
Azadirachtin	11141-17-6	Endosulfan sulfate	1031-07-8
Benzovindiflupyr	1072957-71-1	Fipronil	120068-37-3
Endosulfan I	959-98-8	Pentachloronitrobenzene	82-68-8
Endosulfan II	33213-65-9	Trifloxystrobin	141517-21-7

## Canadian Pesticide Mix 4

Concentration	Matrix	Package Size	Part #
100 µg/mL	LCMS Acetonitrile	6 x 1 mL	CAN-CAN-4
Component	CAS number	Component	CAS number
Acephate	30560-19-1	Imidan (Phosmet)	732-11-6
Chlorpyrifos	2921-88-2	Malathion	121-75-5
Coumaphos	56-72-4	Methyl parathion	298-00-0
Diazinon	333-41-5	Mevinphos	7786-34-7
Dichlorvos	62-73-7	Prophos	13194-48-4
Dimethoate	60-51-5	Spiroxamine	118134-30-8
Etofenprox	80844-07-1	Terrazole	2593-15-9
Etoxazole	153233-91-1	Tetrachlorvinphos (Z)	22248-79-9
Fensulfothion	115-90-2	Thiophanate-methyl	23564-05-8
Fenthion	55-38-9		

## Canadian Pesticide Mix 5

Concentration	Matrix	Package Size	Part #
100 µg/mL	LCMS Acetonitrile	6 x 1 mL	CAN-CAN-5
Component	CAS number	Component	CAS number
(E)-Fenpyroximate	134098-61-6	Dinotefuran	165252-70-0
Acequinocyl	57960-19-7	Flonicamid	158062-67-0
Acetamiprid	135410-20-7	Fludioxonil	131341-86-1
Azoxystrobin	131860-33-8	Fluopyram	658066-35-4
Bifenazate	149877-41-8	Folicur	107534-96-3
Boscalid	188425-85-6	Hexythiazox	78587-05-0
Buprofezin	69327-76-0	Paclobutrazol	76738-62-0
Chlorantraniliprole	500008-45-7	Propiconazole	60207-90-1
Chlorfenapyr	122453-73-0	Pyraclostrobin	175013-18-0
Clofentezine	74115-24-5	Sythane (Myclobutanil)	88671-89-0
Clothianidin	210880-92-5	Tebufenozide	112410-23-8
Cyantraniliprole	736994-63-1	Teflubenzuron	83121-18-0
Cyprodinil	121552-61-2	Thiamethoxam	153719-23-4

## Canadian Pesticide Mix 6

Concentration	Matrix	Package Size	Part #
100 µg/mL	LCMS Acetonitrile: LCMS Methanol(50:50)	6 x 1 mL	CAN-CAN-6
Component	CAS number	Component	CAS number
Abamectin	71751-41-2	Spinetoram	187166-40-1
Daminozide	1596-84-5	Spinosad	168316-95-8
Dodemorph	1593-77-7	Spirodiclofen	148477-71-8
Kresoxim-Methyl	143390-89-0	Spiromesifen	283594-90-1
Metalaxyl	57837-19-1	Spirotetramat	203313-25-1
Pyridaben	96489-71-3		

## Pesticides Mixes

### Mass Cannabis Pesticide Std #1

Concentration	Matrix	Package Size	Part #
100 µg/mL	Acetone	1.5 mL	C-932
Component	CAS number	Component	CAS number
Bifenazate	149877-41-8	Imidacloprid	138261-41-3
Bifenthrin	82657-04-3	Myclobutanil	88671-89-0
Cyfluthrin (mix of isomers)	68359-37-5	Spiromesifen	283594-90-1
Etoxazole	153233-91-1	Trifloxystrobin	141517-21-7
Imazalil	35554-44-0	Permethrin (24.3% cis/73.4% trans)	52645-53-1

### Mass Cannabis Pesticide Std #2

Concentration	Matrix	Package Size	Part #
100 µg/mL	Acetone	1.5 mL	C-933
Component	CAS number	Component	CAS number
Abamectin	71751-41-2	lambda-Cyhalothrin	91465-08-6
Azadirachtin	11141-17-6	Paclobutrazol	76738-62-0
Azoxystrobin	131860-33-8	Piperonyl Butoxide	51-03-6
Boscalid	188425-85-6	Pyrethrin	8003-34-7
Carbaryl	63-25-2	Spinosad	168316-95-8
Chlorfenapyr	122453-73-0	Spirotetramat	203313-25-1
Dinotefuran	165252-70-0		

### Nitrogen-Phosphorus Pesticides Mix D

Concentration	Matrix	Package Size	Part #
200 µg/mL	Acetone	1 mL	5252-PD
Component	CAS number	Component	CAS number
Beam	41814-78-2	Sonar/Flouridone	59756-60-4
Fenarimol	60168-88-9	Tebuthiuron	34014-18-1
Hexazinone	51235-04-2	Tetrachlorvinphos	961-11-5
Norflurazon	27314-13-2	Triadimefon	43121-43-3
Phenamiphos	22224-92-6		

## Organochlorine Pesticides Mix A

Concentration	Matrix	Package Size	Part #
200 µg/mL	Acetone	1 mL	5252-PA
Component	CAS number	Component	CAS number
Aldrin	309-00-2	Endosulfan II	33213-65-9
alpha-BHC	319-84-6	Endosulfan sulfate	1031-07-8
beta-BHC	319-85-7	Endrin	72-20-8
delta-BHC	319-86-8	Endrin aldehyde	7421-93-4
Dieldrin	60-57-1	Endrin ketone	53494-70-5
p,p'-DDD	72-54-8	gamma-BHC	58-89-9
p,p'-DDE	72-55-9	Heptachlor	76-44-8
p,p'-DDT	50-29-3	Heptachlor epoxide (Isomer B)	1024-57-3
Endosulfan I	959-98-8	Methoxychlor	72-43-5

## Organochlorine Pesticides Mix B

Concentration	Matrix	Package Size	Part #
200 µg/mL	Acetone	1 mL	5252-PB
Component	CAS number	Component	CAS number
Alachlor	15972-60-8	Hexachlorobenzene	118-74-1
alpha-Chlordane	5103-71-9	Methyl dacthal	1861-32-1
Bladex	21725-46-2	Permethrin	52645-53-1
Chlorobenzilate	510-15-6	Propachlor	1918-16-7
Chloroneb	2675-77-6	Terrazole	2593-15-9
Chlorothalonil	1897-45-6	trans-Nonachlor	39765-80-5
Chlorpyrifos	2921-88-2	Trifluralin	1582-09-8
gamma-Chlordane	5103-74-2		

## Nitrogen-Phosphorus Pesticides Mix E

Concentration	Matrix	Package Size	Part #
200 µg/mL	Acetone	1 mL	5252-E
Component	CAS number	Component	CAS number
Carboxin	5234-68-4	Tributylphosphoro-trithioite	150-50-5
Disulfoton	298-04-4		

## Organochlorine Pesticides Mix

Concentration	Matrix	Package Size	Part #
2,000 µg/mL	Benzene	1 mL	625-PH
Component	CAS number	Component	CAS number
Aldrin	309-00-2	Endosulfan II	33213-65-9
alpha-BHC	319-84-6	Endosulfan sulfate	1031-07-8
beta-BHC	319-85-7	Endrin	72-20-8
delta-BHC	319-86-8	Endrin aldehyde	7421-93-4
p,p'-DDD	72-54-8	Endrin ketone	53494-70-5
p,p'-DDE	72-55-9	gamma-BHC	58-89-9
p,p'-DDT	50-29-3	Heptachlor	76-44-8
Dieldrin	60-57-1	Heptachlor epoxide (Isomer B)	1024-57-3
Endosulfan I	959-98-8	Methoxychlor	72-43-5

## Cannabis Pesticide Std Mix #1

Concentration	Matrix	Package Size	Part #
100 µg/mL	Acetonitrile	1.5 mL	C-908
Component	CAS number	Component	CAS number
Aldicarb	116-06-3	Carbaryl	63-25-2
Carbofuran	1563-66-2	Imidacloprid	138261-41-3
Fenoxycarb	72490-01-8	Methomyl	16752-77-5
Methiocarb	2032-65-7	Oxamyl	23135-22-0
Propoxur	114-26-1	Thiamethoxam	153719-23-4
Thiacloprid	111988-49-9		

## Cannabis Pesticide Std Mix #2

Concentration	Matrix	Package Size	Part #
100 µg/mL	Acetonitrile	1.5 mL	C-909
Component	CAS number	Component	CAS number
Captan	133-06-2	Fludioxonil	131341-86-1
Chlorantraniliprole	500008-45-7	Imazalil	35554-44-0
Chlorfenapyr	122453-73-0	Mevinphos	7786-34-7
Dichlorvos	62-73-7	Naled	300-76-5
Fipronil	120068-37-3	Pentachloronitrobenzene	82-68-8



## Cannabis Pesticide Std Mix #3

Concentration	Matrix	Package Size	Part #
100 µg/mL	Acetonitrile	1.5 mL	C-910
Component	CAS number	Component	CAS number
Acephate	30560-19-1	Malathion	121-75-5
Chlorpyrifos	2921-88-2	Methyl parathion	298-00-0
Diazinon	333-41-5	Phosmet (Imidan)	732-11-6
Dimethoate	60-51-5	Prophos (Ethoprophos)	13194-48-4
Etofenprox	80844-07-1	Pyridaben	96489-71-3
Etoxazole	153233-91-1		

## Cannabis Pesticide Std Mix #4

Concentration	Matrix	Package Size	Part #
100 µg/mL	Acetonitrile	1.5 mL	C-911
Component	CAS number	Component	CAS number
Bifenazate	149877-41-8	Permethrin (24.3% cis/73.4% trans)	52645-53-1
Bifenthrin	82657-04-3	Piperonyl butoxide	51-03-6
Coumaphos	56-72-4	Prallethrin [ 49.43 (I)+47.45(II) ]	23031-36-9
Cyfluthrin (mix of isomers)	68359-37-5	Pyrethrum (37.1%PY1+19.8%PY2)	8003-34-7
Cypermethrin (mixed isomers)	52315-07-8		

## Cannabis Pesticide Std Mix #5

Concentration	Matrix	Package Size	Part #
100 µg/mL	Acetonitrile	1.5 mL	C-912
Component	CAS number	Component	CAS number
Abamectin [2.9%B1Bii/95.7%B1Ai]	71751-41-2	Kresoxim-methyl	143390-89-0
Acequinocyl	57960-19-7	Metalaxyl	57837-19-1
Acetamiprid	135410-20-7	Myclobutanil	88671-89-0
Azoxystrobin	131860-33-8	Paclobutrazol	76738-62-0
Boscalid	188425-85-6	Spinetoram [76.6(J)+10.8(L)]	187166-40-1
Clofentezine	74115-24-5	Spinosad [71.9%(A) + 24.9(D)]	168316-95-8
Daminozide	1596-84-5	Spiromesifen	283594-90-1
Dimethomorph	110488-70-5	Spirotetramat	203313-25-1
Fenhexamid	126833-17-8	Spiroxamine	118134-30-8
Fenpyroximate	134098-61-6	Tebuconazole	107534-96-3
Fonicamid	158062-67-0	Tilt™	60207-90-1
Hexythiazox	78587-05-0	Trifloxystrobin	141517-21-7

## Cannabis Pesticide Std Mix #6

Concentration	Matrix	Package Size	Part #
100 µg/mL	Acetonitrile	1.5 mL	C-919
Component	CAS number	Component	CAS number
Benzovindiflupyr	1072957-71-1	Endosulfan II	33213-65-9
Endosulfan sulfate	1031-07-8	Fluopyram	658066-35-4
a-Endosulfan	959-98-8		

## Cannabis Pesticide Std Mix #7

Concentration	Matrix	Package Size	Part #
100 µg/mL	Acetonitrile	1.5 mL	C-920
Component	CAS number	Component	CAS number
Buprofezine	69327-76-0	Dinotefuran	165252-70-0
Clothianidin	210880-92-5	Pyraclostrobin	175013-18-0
Cyantraniliprole	736994-63-1	Tebufenozide	112410-23-8
Cyprodinil	121552-61-2	Teflubenzuron	83121-18-0
Deltamethrin	52918-63-5		

## Cannabis Pesticide Std Mix #8

Concentration	Matrix	Package Size	Part #
100 µg/mL	Acetonitrile	1.5 mL	C-921
Component	CAS number	Component	CAS number
Allethrin	584-79-2	MGK-264	113-48-4
Fenvalerate (Sanmarton)	51630-58-1	d-(cis-trans)-Phenothrin	26002-80-2
Kinoprene (Mix of isomers)	42588-37-4	Resmethrin	10453-86-8
Methoprene	40596-69-8	Tetramethrin	7696-12-0

## Cannabis Pesticide Std Mix #9

Concentration	Matrix	Package Size	Part #
100 µg/mL	Acetonitrile	1.5 mL	C-922
Component	CAS number	Component	CAS number
Etridiazole (Terrazole)	2593-15-9	Tetrachlorvinphos	22248-79-9
Fensulfothion	115-90-2	Thiophanate-methyl	23564-05-8
Fenthion	55-38-9		

## Cannabis Pesticide Std Mix #10

Concentration	Matrix	Package Size	Part #
100 µg/mL	Acetonitrile	1.5 mL	C-923
Component	CAS number	Component	CAS number
Abamectin (1.3% B1B + 94.2% B1A)	71751-41-2	Noraluron	116714-46-6
Azadirachtin	11141-17-6	Pirimicarb	23103-98-2
Dodemorph	1593-77-7	Spirodiclofen	148477-71-8
Iprodione	36734-19-7		

## EU 20813 MIX A

Concentration	Matrix	Package Size	Part #
100 µg/mL	Acetonitrile	1.5 mL	EU-20813-A
Component	CAS number	Component	CAS number
1,2,4,5-Tetrachloro-3-nitrobenzene	117-18-0	Phosalone	2310-17-0
2,3,4,5,6-Pentachloroanisole	1825-21-4	Piperonyl butoxide	51-03-6
Bis (2,3,3,3-tetrachloropropyl) ether (S421)	127-90-2	Pirimiphos-ethyl	23505-41-1
Dimethyl-p-Nitrophenylphosphate	950-35-6	Pirimiphos-methyl	29232-93-7
Imidan (Phosmet)	732-11-6	Procymidone	32809-16-8
Methyl parathion	298-00-0	Profenofos	41198-08-7
N-desethyl-primiphos-methyl	67018-59-1	Prowl (Pendimethalin)	40487-42-1
Paraoxon	311-45-5	Pyrethrins (mix of isomers)	8003-34-7
Pentachloroaniline	527-20-8	Quinalphos	13593-03-8
Pentachloronitrobenzene	82-68-8	Tetradifon	116-29-0
Permethrin	52645-53-1	Tokuthion/Prothiophos	34643-46-4

## EU 20813 MIX B

Concentration	Matrix	Package Size	Part #
100 µg/mL	Acetonitrile	1.5 mL	EU-20813-B
Component	CAS number	Component	CAS number
alpha-BHC	319-84-6	Malaoxon	1634-78-2
beta-BHC	319-85-7	Malathion	121-75-5
delta-BHC	319-86-8	Methamidophos	10265-92-6
Endosulfan sulfate	1031-07-8	Methidathion	950-37-8
Endrin	72-20-8	Methoxychlor	72-43-5
Etrimfos	38260-54-7	Mirex	2385-85-5
gamma-BHC	58-89-9	Monocrotophos	6923-22-4
Heptachlor	76-44-8	Parathion	56-38-2
Heptachlor epoxide (Isomer A)	28044-83-9	tau-Fluvalinate	102851-06-9
Heptachlor epoxide (Isomer B)	1024-57-3	Vinclozolin	50471-44-8
Hexachlorobenzene	118-74-1		

## EU 20813 MIX C

Concentration	Matrix	Package Size	Part #
100 µg/mL	Acetonitrile	1.5 mL	EU-20813-C
Component	CAS number	Component	CAS number
Acarol (Bromopropylate)	18181-80-1	Dichlofluanid	1085-98-9
Azinphos-ethyl	2642-71-9	Dyfonate (Fonofos)	944-22-9
Azinphos-methyl	86-50-0	Ethion	563-12-2
Baythroid (Cyfluthrin)	68359-37-5	Fenclorophos	299-84-3
Bromophos-ethyl	4824-78-6	Fenitrothion	122-14-5
Bromophos-methyl	2104-96-3	Fensulfothion	115-90-2
Chlorfenvinfos	470-90-6	Fenthion	55-38-9
Chlorpyrifos-ethyl	39475-55-3	Fenvalerate	51630-58-1
Chlorpyrifos-methyl	5598-13-0	Kelthane (Dicofol)	115-32-2
Cypermethrin	52315-07-8	lambda-Cyhalothrin	91465-08-6

## EU 20813 MIX D

Concentration	Matrix	Package Size	Part #
100 µg/mL	Acetonitrile	1.5 mL	EU-20813-D
Component	CAS number	Component	CAS number
Acephate	30560-19-1	Diazinon	333-41-5
Alachlor	15972-60-8	Dichlorvos	62-73-7
Aldrin	309-00-2	Dieldrin	60-57-1
alpha-Chlordane	5103-71-9	Dimethoate	60-51-5
Deltamethrin	52918-63-5	Endosulfan I	959-98-8
o,p'-DDD	53-19-0	Endosulfan II	33213-65-9
p,p'-DDD	72-54-8	Endosulfan II	33213-65-9
o,p'-DDE	3424-82-6	gamma-Chlordane	5103-74-2
p,p'-DDE	72-55-9	Omethoate	1113-02-6
o,p'-DDT	789-02-6	Oxychlordane	27304-13-8
p,p'-DDT	50-29-3		

## EU 20813 MIX E

Concentration	Matrix	Package Size	Part #
100 µg/mL	Acetonitrile	1.5 mL	EU-20813-E
Component	CAS number	Component	CAS number
Fenchlorophos-oxon	3983-45-7	Fenthion-oxon-sulfone	14086-35-2
Fenpropathrin	39515-41-8	Fenthion-oxon-sulfoxide	6552-13-2
Fensulfothion-oxon	6552-21-2	Fenthion-sulfone	3761-42-0
Fensulfothion-oxon-sulfone	6132-17-8	Flucythrinate	70124-77-5
Fensulfothion-sulfone	14255-72-2	Mecarbam	2595-54-2
Fenthion sulfoxide	3761-41-9	Methacrifos	62610-77-9
Fenthion-oxon	6552-12-1	Methyl pentachlorophenyl sulfide	1825-19-0

## EU 20813 MIX F

Concentration	Matrix	Package Size	Part #
100 µg/mL	Acetonitrile	1.5 mL	EU-20813-F
Component	CAS number		
Ziram	137-30-4		



## USP <561> Standards

The United States Pharmacopeia (USP) creates standards for the monitoring of pharmaceutical and botanical products. General Chapter <561> Articles of Botanical Origin, outlines tests and specifications for the safety of botanical products. The chapter defines sampling procedures and tests for general characteristics for moisture, ash, starch and fiber. The chapter also describes methods for extractables and volatile compounds. In the interests of safety, USP <561> has procedures for the testing of targeted pesticides and Spex CertiPrep provides standards for that testing under the General Chapter <561>.

### USP <561> Mix A

Concentration	Matrix	Package Size	Part #
100 µg/mL	Acetonitrile	1 mL	USP-561-A
Component	CAS #	Component	CAS #
1,2,4,5-Tetrachloro-3-nitrobenzene	117-18-0	Phosalone	2310-17-0
2,3,4,5,6-Pentachloroanisole	1825-21-4	Piperonyl butoxide	51-03-6
bis-(2,3,3,3-Tetrachloropropyl) ether	127-90-2	Pirimiphos-ethyl	23505-41-1
Dimethyl-p-Nitrophenylphosphate	950-35-6	Pirimiphos-methyl	29232-93-7
Imidan (Phosmet)	732-11-6	Procymidone	32809-16-8
Methyl parathion	298-00-0	Profenofos	41198-08-7
N-desethyl-primiphos-methyl	67018-59-1	Prowl (Pendimethalin)	40487-42-1
Paraoxon	311-45-5	Pyrethrins (mix of isomers)	8003-34-7
Pentachloroaniline	527-20-8	Quinalphos	13593-03-8
Pentachloronitrobenzene	82-68-8	Tetradifon	116-29-0
Permethrin	52645-53-1	Tokuthion/Prothiophos	34643-46-4

### USP <561> Mix B

Concentration	Matrix	Package Size	Part #
100 µg/mL	Acetonitrile	1 mL	USP-561-B
Component	CAS #	Component	CAS #
alpha-BHC	319-84-6	Malaoxon	1634-78-2
beta-BHC	319-85-7	Malathion	121-75-5
delta-BHC	319-86-8	Methamidophos	10265-92-6
Endosulfan sulfate	1031-07-8	Methidathion	950-37-8
Endrin	72-20-8	Methoxychlor	72-43-5
Etrimfos	38260-54-7	Mirex	2385-85-5
gamma-BHC	58-89-9	Monocrotophos	6923-22-4
Heptachlor	76-44-8	Parathion	56-38-2
Heptachlor epoxide (Isomer A)	28044-83-9	tau-Fluvalinate	102851-06-9
Heptachlor epoxide (Isomer B)	1024-57-3	Vinclozolin	50471-44-8
Hexachlorobenzene	118-74-1		

## USP &lt;561&gt; Mix C

Concentration	Matrix	Package Size	Part #
100 µg/mL	Acetonitrile	1 mL	USP-561-C
Component	CAS #	Component	CAS #
Acarol (Bromopropylate)	18181-80-1	Cypermethrin	52315-07-8
Azinphos-ethyl	2642-71-9	Dichlofluanid	1085-98-9
Azinphos-Methyl	86-50-0	Dyfonate (Fonofos)	944-22-9
Baythroid (Cyfluthrin)	68359-37-5	Ethion	563-12-2
Bromophos-ethyl	4824-78-6	Fenchlorphos	299-84-3
Bromophos-methyl	2104-96-3	Fenitrothion	122-14-5
Chlorfenvinfos	470-90-6	Fensulfothion	115-90-2
Chlorpyrifos-ethyl	39475-55-3	Fenthion	55-38-9
Chlorpyrifos-methyl	5598-13-0	Fenvalerate	51630-58-1
lambda-Cyhalothrin	91465-08-6	Kelthane (Dicofol)	115-32-2

## USP &lt;561&gt; Mix D

Concentration	Matrix	Package Size	Part #
100 µg/mL	Acetonitrile	1 mL	USP-561-D
Component	CAS #	Component	CAS #
Acephate	30560-19-1	p,p'-DDT	50-29-3
Alachlor	15972-60-8	Deltamethrin	52918-63-5
Aldrin	309-00-2	Diazinon	333-41-5
alpha-Chlordane	5103-71-9	Dichlorvos	62-73-7
gamma-Chlordane	5103-74-2	Dieldrin	60-57-1
o,p'-DDD	53-19-0	Dimethoate	60-51-5
p,p'-DDD	72-54-8	Endosulfan I	959-98-8
o,p'-DDE	3424-82-6	Endosulfan II	33213-65-9
p,p'-DDE	72-55-9	Omethoate	1113-02-6
o,p'-DDT	789-02-6	Oxychlordane	27304-13-8

## USP &lt;561&gt; Mix E

Concentration	Matrix	Package Size	Part #
100 µg/mL	Acetonitrile	1 mL	USP-561-E
Component	CAS #	Component	CAS #
Fenchlorphos-oxon	3983-45-7	Fenthion-oxon-sulfone	14086-35-2
Fenpropathrin	39515-41-8	Fenthion-oxon-sulfoxide	6552-13-2
Fensulfothion-oxon	6552-21-2	Fenthion-sulfone	3761-42-0
Fensulfothion-oxon-sulfone	6132-17-8	Flucythrinate	70124-77-5

## USP &lt;561&gt; Mix E Contined

Component	CAS #	Component	CAS #
Fensulfothion-sulfone	14255-72-2	Mecarbam	2595-54-2
Fenthion sulfoxide	3761-41-9	Methacrifos	62610-77-9
Fenthion-oxon	6552-12-1	Methyl pentachlorophenyl sulfide	1825-19-0

## USP &lt;561&gt; Mix F

Component	CAS number	Concentration	Matrix	Package Size	Part #
Acetonitrile (Ziram) 1 compound	137-30-4	100 µg/mL	Acetonitrile	1 mL	USP-561-F

## USP &lt;561&gt; Mix G

Component	CAS number	Concentration	Matrix	Package Size	Part #
Acetonitrile (Epsilon-HCH) 1 compound	10/7/6108	100 µg/mL	Toluene	1 mL	USP-561-G

## Canadian Cannabis Pesticide Mix 1A

Concentration	Matrix	Package Size	Part #
varied	Acetonitrile LCMS	1 mL	CAN-CAN-1A
Component	CAS #	Component	CAS #
Aldicarb	116-06-3	Iprodione	36734-19-7
Baygon (Propoxur)	114-26-1	Methiocarb	2032-65-7
Carbaryl	63-25-2	Methomyl	16752-77-5
Carbofuran	1563-66-2	Novaluron	116714-46-6
Fenoxycarb	72490-01-8	Oxamyl	23135-22-0
Imazalil	35554-44-0	Pirimicarb	23103-98-2
Imidacloprid	138261-41-3	Thiacloprid	111988-49-9

## Canadian Cannabis Pesticide Mix 2A

Concentration	Matrix	Package Size	Part #
varied	Acetonitrile LCMS	1 mL	CAN-CAN-2A
Component	CAS #	Component	CAS #
Allethrin	584-79-2	Methoprene	40596-69-8
Baythroid (Cyfluthrin)	68359-37-5	MGK 264 (TM)	113-48-4
Bifenthrin	82657-04-3	Permethrin	52645-53-1
Cypermethrin	52315-07-8	Piperonyl butoxide	51-03-6
d-(cis-trans)-Phenothrin	26002-80-2	Prallethrin	23031-36-9
Deltamethrin	52918-63-5	Pyrethrins (mix of isomers)	8003-34-7
Fenvalerate	51630-58-1	Resmethrin	10453-86-8
Kinoprene	42588-37-4	Tetramethrin	7696-12-0

## Canadian Cannabis Pesticide Mix 4A

Concentration	Matrix	Package Size	Part #
varied	Acetonitrile LCMS	1 mL	CAN-CAN-4A
Component	CAS #	Component	CAS #
Acephate	30560-19-1	Imidan (Phosmet)	732-11-6
Chlorpyrifos	2921-88-2	Malathion	121-75-5
Coumaphos	56-72-4	Methyl parathion	298-00-0
Diazinon	333-41-5	Mevinphos	7786-34-7
Dichlorvos	62-73-7	Prophos	13194-48-4
Dimethoate	60-51-5	Spiroxamine	118134-30-8
Etofenprox	80844-07-1	Terrazole	2593-15-9
Etoxazole	153233-91-1	Tetrachlorvinphos (Z)	22248-79-9
Fensulfothion	115-90-2	Thiophanate-methyl	23564-05-8
Fenthion	55-38-9		

## Canadian Cannabis Pesticide Mix 5A

Concentration	Matrix	Package Size	Part #
varied	Acetonitrile LCMS	1 mL	CAN-CAN-5A
Component	CAS #	Component	CAS #
Acequinocyl	57960-19-7	(E)-Fenpyroximate	134098-61-6
Acetamiprid	135410-20-7	Flonicamid	158062-67-0
Azoxystrobin	131860-33-8	Fludioxonil	131341-86-1
Bifenazate	149877-41-8	Fluopyram	658066-35-4
Boscalid	188425-85-6	Folicur	107534-96-3
Buprofezin	69327-76-0	Hexythiazox	78587-05-0
Chlorantraniliprole	500008-45-7	Paclobutrazol	76738-62-0
Chlorfenapyr	122453-73-0	Propiconazole	60207-90-1
Clofentezine	74115-24-5	Pyraclostrobin	175013-18-0
Clothianidin	210880-92-5	Systhane (Myclobutanil)	88671-89-0
Cyantraniliprole	736994-63-1	Tebufenozide	112410-23-8
Cyprodinil	121552-61-2	Teflubenzuron	83121-18-0
Dinotefuran	165252-70-0	Thiamethoxam	153719-23-4

## Canadian Cannabis Pesticide Mix 6A

Concentration	Matrix	Package Size	Part #
varied	Acetonitrile LCMS	1 mL	CAN-CAN-6A
Component	CAS #	Component	CAS #
Abamectin	71751-41-2	Spinetoram	187166-40-1
Daminozide	1596-84-5	Spinosad	168316-95-8
Dodemorph	1593-77-7	Spirodiclofen	148477-71-8
Kresoxim-Methyl	143390-89-0	Spiromesifen	283594-90-1
Metalaxyl	57837-19-1	Spirotetramat	203313-25-1
Pyridaben	96489-71-3		

## Canadian Pesticide Mix 1

Concentration	Matrix	Package Size	Part #
100 µg/mL	Acetonitrile LCMS	1 mL	CAN-CAN-1
Component	CAS #	Component	CAS #
Aldicarb	116-06-3	Iprodione	36734-19-7
Baygon (Propoxur)	114-26-1	Methiocarb	2032-65-7
Carbaryl	63-25-2	Methomyl	16752-77-5
Carbofuran	1563-66-2	Novaluron	116714-46-6
Fenoxycarb	72490-01-8	Oxamyl	23135-22-0
Imazalil	35554-44-0	Pirimicarb	23103-98-2
Imidacloprid	138261-41-3	Thiacloprid	111988-49-9

## Canadian Pesticide Mix 2

Concentration	Matrix	Package Size	Part #
100 µg/mL	Acetonitrile LCMS	1 mL	CAN-CAN-2
Component	CAS #	Component	CAS #
Allethrin	584-79-2	MGK 264 (TM)	113-48-4
Baythroid (Cyfluthrin)	68359-37-5	Permethrin	52645-53-1
Bifenthrin	82657-04-3	d-(cis-trans)-Phenothrin	26002-80-2
Cypermethrin	52315-07-8	Piperonyl butoxide	51-03-6
Deltamethrin	52918-63-5	Prallethrin	23031-36-9
Fenvalerate	51630-58-1	Pyrethrins (mix of isomers)	8003-34-7
Kinoprene	42588-37-4	Resmethrin	10453-86-8
Methoprene	40596-69-8	Tetramethrin	7696-12-0



## Canadian Pesticide Mix 3

Concentration	Matrix	Package Size	Part #
100 µg/mL	Acetonitrile LCMS	1 mL	CAN-CAN-3
Component	CAS #	Component	CAS #
Azadirachtin	11141-17-6	Endosulfan sulfate	1031-07-8
Benzovindiflupyr	1072957-71-1	Fipronil	120068-37-3
Endosulfan I	959-98-8	Pentachloronitrobenzene	82-68-8
Endosulfan II	33213-65-9	Trifloxystrobin	141517-21-7

## Canadian Pesticide Mix 4

Concentration	Matrix	Package Size	Part #
100 µg/mL	Acetonitrile LCMS	1 mL	CAN-CAN-4
Component	CAS #	Component	CAS #
Acephate	30560-19-1	Imidan (Phosmet)	732-11-6
Chlorpyrifos	2921-88-2	Malathion	121-75-5
Coumaphos	56-72-4	Methyl parathion	298-00-0
Diazinon	333-41-5	Mevinphos	7786-34-7
Dichlorvos	62-73-7	Prophos	13194-48-4
Dimethoate	60-51-5	Spiroxamine	118134-30-8
Etofenprox	80844-07-1	Terrazole	2593-15-9
Etoxazole	153233-91-1	Tetrachlorvinphos (Z)	22248-79-9
Fensulfothion	115-90-2	Thiophanate-methyl	23564-05-8
Fenthion	55-38-9		

## Canadian Pesticide Mix 5

Concentration	Matrix	Package Size	Part #
100 µg/mL	Acetonitrile LCMS	1 mL	CAN-CAN-5
Component	CAS #	Component	CAS #
Acequinocyl	57960-19-7	(E)-Fenpyroximate	134098-61-6
Acetamiprid	135410-20-7	Flonicamid	158062-67-0
Azoxystrobin	131860-33-8	Fludioxonil	131341-86-1
Bifenazate	149877-41-8	Fluopyram	658066-35-4
Boscalid	188425-85-6	Folicur	107534-96-3
Buprofezin	69327-76-0	Hexythiazox	78587-05-0
Chlorantraniliprole	500008-45-7	Paclobutrazol	76738-62-0
Chlorfenapyr	122453-73-0	Propiconazole	60207-90-1
Dinotefuran	165252-70-0	Pyraclostrobin	175013-18-0

Canadian Pesticide Mix 5 Continued

Component	CAS #	Component	CAS #
Clofentezine	74115-24-5	Systhane (Myclobutanil)	88671-89-0
Clothianidin	210880-92-5	Tebufenozide	112410-23-8
Cyantraniliprole	736994-63-1	Teflubenzuron	83121-18-0
Cyprodinil	121552-61-2	Thiamethoxam	153719-23-4

## Canadian Pesticide Mix 6

Concentration	Matrix	Package Size	Part #
100 µg/mL	Acetonitrile LCMS	1 mL	CAN-CAN-6
Component	CAS #	Component	CAS #
Abamectin	71751-41-2	Spinetoram	187166-40-1
Daminozide	1596-84-5	Spinosad	168316-95-8
Dodemorph	1593-77-7	Spirodiclofen	148477-71-8
Kresoxim-Methyl	143390-89-0	Spiromesifen	283594-90-1
Metalaxyl	57837-19-1	Spirotetramat	203313-25-1
Pyridaben	96489-71-3		

## Canadian Pesticide Mix 7

Concentration	Matrix	Package Size	Part #
100 µg/mL	Acetonitrile LCMS	1 mL	CAN-CAN-7
Component	CAS #	Component	CAS #
Azadirachtin	11141-17-6	Endosulfan sulfate	1031-07-8
Benzovindiflupyr	1072957-71-1	Fipronil	120068-37-3
Dimethomorph	110488-70-5	Pentachloronitrobenzene	82-68-8
Endosulfan I	959-98-8	Trifloxystrobin	141517-21-7
Endosulfan II	33213-65-9		

## Massachusetts Cannabis Pesticide Residue Mix 1

Concentration	Matrix	Package Size	Part #
100 µg/mL	Acetonitrile LCMS	1 mL	MA-CAN-1
Component	CAS #	Component	CAS #
Baythroid (Cyfluthrin)	68359-37-5	Imidacloprid	138261-41-3
Bifenazate	149877-41-8	Spiromesifen	283594-90-1
Bifenthrin	82657-04-3	Systhane (Myclobutanil)	88671-89-0
Etoxazole	153233-91-1	Trifloxystrobin	141517-21-7
Imazalil	35554-44-0		

## Massachusetts Cannabis Pesticide Residue Mix 2

Concentration	Matrix	Package Size	Part #
100 µg/mL	Acetonitrile LCMS	1 mL	MA-CAN-2
Component	CAS #	Component	CAS #
Abamectin	71751-41-2	Dinotefuran	165252-70-0
Azadirachtin	11141-17-6	Pacllobutrazol	76738-62-0
Azoxystrobin	131860-33-8	Permethrin	52645-53-1
Boscalid	188425-85-6	Piperonyl butoxide	51-03-6
Carbaryl	63-25-2	Pyrethrins (mix of isomers)	8003-34-7
Chlorfenapyr	122453-73-0	Spinosad	168316-95-8
lambda-Cyhalothrin	91465-08-6	Spirotetramat	203313-25-1

## Quantitative Pesticides in Edible

Description	Matrix	Package Size	Part #
Quantitative Pesticides	Edible	2 x 1.6 mL	CMQC-063

## Quantitative Pesticides in Hemp

Description	Matrix	Package Size	Part #
Quantitative Pesticides	Hemp	2 x 1.6 mL	CMQC-043

## Quantitative Pesticides in Hemp Oil

Description	Matrix	Package Size	Part #
Quantitative Pesticides	Hemp Oil	2 x 1.6 mL	CMQC-062

## Carbamate Pesticides Mix A

Component	CAS #	Concentration	Matrix	Package Size	Part #
3-Hydroxycarbofuran	16655-82-6	100 µg/mL	Acetonitrile	1 mL	5311-A10
Aldicarb	116-06-3				
Aldicarb sulfone	1646-88-4				
Aldicarb sulfoxide	1646-87-3				
Baygon (Propoxur)	114-26-1				
Carbaryl	63-25-2				
Carbofuran	1563-66-2				
Methiocarb	2032-65-7				
Methomyl	16752-77-5				
Oxamyl	23135-22-0				

## Pyrethroids/Pesticides Single CRMs

Component	CAS number	Concentration	Matrix	Package Size	Part #
Allethrin	584-79-2	1,000 µg/mL	Methanol-P&T	1 mL	S-4240
Bifenthrin	82657-04-3	1,000 µg/mL	Acetone	1 mL	S-494
Bifenthrin	82657-04-3	1,000 µg/mL	Acetonitrile	1 mL	S-494-ACN
Deltamethrin	52918-63-5	1,000 µg/mL	Methanol-P&T	1 mL	S-3977
Fenpropathrin	39515-41-8	1,000 µg/mL	Acetone	1 mL	S-5781
tau-Fluvalinate	102851-06-9	1,000 µg/mL	Acetone	1 mL	S-4161
trans-Permethrin (mix of isomers)	61949-77-7	1,000 µg/mL	Acetone	1 mL	S-5732
d-(cis-trans)-Phenothrin	26002-80-2	1,000 µg/mL	Acetone	1 mL	S-3041
Prallethrin	23031-36-9	1,000 µg/mL	Acetonitrile	1 mL	LCS-5783
Resmethrin	10453-86-8	1,000 µg/mL	Acetone	1 mL	S-3252
Tetramethrin	7696-12-0	1,000 µg/mL	Acetone	1 mL	S-4251-AC
Tetramethrin	7696-12-0	1,000 µg/mL	Methanol-P&T	1 mL	S-4251

## Pesticides Singles

Component	CAS number	Concentration	Matrix	Package Size	Part #
Bifenazate	149877-41-8	1,000 µg/mL	Acetonitrile	1 mL	S-6082
Carbaryl	63-25-2	1,000 µg/mL	Acetonitrile	1 mL	S-725
Chlormequat chloride	999-81-5	1,000 µg/mL	Acetonitrile HPLC	1 mL	LCS-4838
Daminozide	1596-84-5	1,000 µg/mL	Acetonitrile LCMS	1 mL	LCS-6654
Dibrom (NALED)	300-76-5	1,000 µg/mL	Acetonitrile LCMS	1 mL	LCS-2650
Flubendiamide	272451-65-7	1,000 µg/mL	Acetonitrile HPLC	1 mL	LCS-5773-ACN
Imidacloprid	138261-41-3	1,000 µg/mL	Acetone	1 mL	S-2247
Maltodextrin	9050-36-6	1,000 µg/mL	Water HPLC	1 mL	LCS-5705
Maltose	6363-53-7	1,000 µg/mL	Water HPLC	1 mL	LCS-4188
Paclobutrazol	76738-62-0	1,000 µg/mL	Acetonitrile HPLC	1 mL	LCS-4345-ACN
Permethrin (cis & trans)	52645-53-1	1,000 µg/mL	Acetone	1 mL	S-3000
Piperonyl butoxide	51-03-6	1,000 µg/mL	Acetonitrile HPLC	1 mL	LCS-3117-ACN
Pyrethrins (mix of isomers)	8003-34-7	1,000 µg/mL	Acetonitrile	1 mL	S-5506-ACN
Systhane (Myclobutanil)	88671-89-0	1,000 µg/mL	Acetone HPLC	1 mL	LCS-3306

## Scheduled Proficiency Tests for Pesticides

Description	Matrix	Package Size	Part #
Quantitative Pesticides in Edible PT	Edible	2x1.6 mL	CMPT-063
Quantitative Pesticides in Hemp PT	Hemp	2x1.6 mL	CMPT-043
Quantitative Pesticides in Hemp Oil PT	Hemp Oil	2x1.6 mL	CMPT-062

## PT Express for Pesticides

Description	Matrix	Package Size	Part #
Quantitative Pesticides in Edible PT Express	Edible	2x1.6 mL	CMPT-063B
Quantitative Pesticides in Hemp PT Express	Hemp	2x1.6 mL	CMPT-043B
Quantitative Pesticides in Hemp Oil PT Express	Hemp Oil	2x1.6 mL	CMPT-062B



# RESIDUAL SOLVENTS MIXES

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Solvents are a crucial component of chemical processes including many extraction processes. Many types of extraction for cannabis involve potentially dangerous solvents. The regulatory bodies have created regulations to limit solvent exposure from cannabis products created from extracts. Our product portfolio assists the cannabis laboratory in controlling the residual solvent testing of their cannabis products.





## Residual Solvent Mix in Dimethyl Sulfoxide

Concentration	Matrix	Package Size	Part #
1,000 µg/mL	DMSO	1 mL	USP-RS-C3A
Component	CAS number	Component	CAS number
Acetone	67-64-1	Isobutyl acetate	110-19-0
Anisole	100-66-3	Isopropyl acetate	108-21-4
1-Butanol	71-36-3	Isopropylbenzene	98-82-8
2-Butanol	78-92-2	Methyl acetate	79-20-9
2-Butanone	78-93-3	3-Methyl-1-butanol	123-51-3
Butyl acetate	123-86-4	2-Methyl-1-propanol	78-83-1
tert-Butyl methyl ether	1634-04-4	4-Methyl-2-pentanone	108-10-1
Ethanol	64-17-5	n-Pentane	109-66-0
Ether	60-29-7	1-Pentanol	71-41-0
Ethyl acetate	141-78-6	1-Propanol	71-23-8
Ethyl formate	109-94-4	2-Propanol (Isopropanol, Isopropyl alcohol)	67-63-0
n-Heptane	142-82-5	Propyl acetate	109-60-4

## Arkansas Cannabis Residual Solvent Mix 1 in N,N-Dimethylacetamide

Concentration	Matrix	Package Size	Part #
5,000 µg/mL	DMA	1 mL	RS-AR-1
Component	CAS number	Component	CAS number
Acetone	67-64-1	Isopropyl acetate	108-21-4
1-Butanol	71-36-3	Methyl sulfoxide	67-68-5
2-Butanol	78-92-2	2-Methylbutane	78-78-4
2-Butanone	78-93-3	n-Pentane	109-66-0
Ethanol	64-17-5	1-Pentanol	71-41-0
Ether	60-29-7	1-Propanol	71-23-8
Ethyl acetate	141-78-6	2-Propanol (Isopropanol, Isopropyl alcohol)	67-63-0
n-Heptane	142-82-5		

## Arkansas Cannabis Residual Solvent Mix 2 in Dimethyl Sulfoxide

Matrix	Package Size	Part #
DMSO	1 mL	RS-AR-2
Component	CAS number	Concentration
Acetonitrile	75-05-8	410 µg/mL
Benzene	71-43-2	2 µg/mL
Cyclohexane	110-82-7	3880 µg/mL
1,2-Dimethoxyethane	110-71-4	100 µg/mL
N,N-Dimethylacetamide	127-19-5	1090 µg/mL
2,2-Dimethylbutane	75-83-2	290 µg/mL
2,3-Dimethylbutane	79-29-8	290 µg/mL
Dimethylformamide	68-12-2	880 µg/mL
1,4-Dioxane	123-91-1	380 µg/mL
2-Ethoxyethanol	110-80-5	160 µg/mL
Ethylbenzene	100-41-4	2170 µg/mL
Ethylene glycol	107-21-1	620 µg/mL
n-Hexane	110-54-3	290 µg/mL
Isopropylbenzene	98-82-8	70 µg/mL
Methanol	67-56-1	3000 µg/mL
Methylene chloride	75-09-2	600 µg/mL
2-Methylpentane	107-83-5	290 µg/mL
3-Methylpentane	96-14-0	290 µg/mL
Pyridine	110-86-1	200 µg/mL
Tetrahydrofuran	109-99-9	720 µg/mL
Tetramethylene sulfone	126-33-0	160 µg/mL
Toluene	108-88-3	890 µg/mL
n-Hexane	110-54-3	290 µg/mL
o-Xylene	95-47-6	2170 µg/mL
p-Xylene	106-42-3	2170 µg/mL

## Arkansas Cannabis Residual Solvent Mix 3 in N,N-Dimethylacetamide

Matrix	Package Size	Part #
DMA	1 mL	RS-AR-3
Component	CAS number	Concentration
n-Butane	106-97-8	5,000 µg/mL
Ethylene oxide	75-21-8	50 µg/mL
2-Methylpropane	75-28-5	2,000 µg/mL
Propane	74-98-6	5,000 µg/mL

## Canadian Residual Solvent Mix 1 in Methanol-P&amp;T

Concentration		Matrix	Package Size	Part #
1,000 µg/mL		Methanol-P&T	1 mL	CAN-CAN-RS-1
Component	CAS number	Component	CAS number	
Acetic Acid	64-19-7	Isobutyl acetate	110-19-0	
Acetone	67-64-1	Isopropyl acetate	108-21-4	
Anisole	100-66-3	Methyl acetate	79-20-9	
1-Butanol	71-36-3	Methyl sulfoxide	67-68-5	
2-Butanol	78-92-2	3-Methyl-1-butanol	123-51-3	
2-Butanone	78-93-3	2-Methyl-1-propanol	78-83-1	
Butyl acetate	123-86-4	n-Pentane	109-66-0	
tert-Butyl methyl ether	1634-04-4	1-Pentanol	71-41-0	
Ethanol	64-17-5	1-Propanol	71-23-8	
Ether	60-29-7	2-Propanol	67-63-0	
Ethyl acetate	141-78-6	Propyl acetate	109-60-4	
Ethyl formate	109-94-4	Triethylamine	121-44-8	
n-Heptane	142-82-5			

## Quantitative Residual Solvents

Concentration		Matrix	Package Size	Part #
100 µg/mL		Hemp Oil	1.5 mL	C-904
Component	CAS number	Component	CAS number	
Acetone	67-64-1	n-Hexane	110-54-3	
Acetonitrile	75-05-8	Methanol	67-56-1	
Benzene	71-43-2	Naphta	8030-30-6	
Butane	106-97-8	Pentane	109-66-0	
Chloroform	67-66-3	Petroleum ether	8032-32-4	
1,2-Dichloroethane	107-06-2	Propane	74-98-6	
1,1-Dichloroethylene	75-35-4	2-Propanol	67-63-0	
Dichloromethane	75-09-2	Toluene	108-88-3	
Diethyl ether	60-29-7	Trichloroethylene	79-01-6	
Ethyl acetate	141-78-6	m-Xylene	108-38-3	
Ethyl alcohol	64-17-5	o-Xylene	95-47-6	
Ethylene oxide	75-21-8	p-Xylene	106-42-3	
n-Hexane	110-54-3	Xylenes, Total	1330-20-7	

## Residual Solvents Standard Mix 1

Concentration	Matrix	Package Size	Part #
3000 µg/mL	DMA	1.5 mL	C-900
Component	CAS number	Component	CAS number
Acetone	67-64-1	n-Heptane (C7)	142-82-5
Acetonitrile	75-05-8	n-Hexane (C6)	110-54-3
Benzene	71-43-2	Isopropyl alcohol (2-Propanol)	67-63-0
Chloroform	67-66-3	Methanol	67-56-1
Cyclohexane	110-82-7	Pentane	109-66-0
1,2-Dichloroethane	107-06-2	Toluene	108-88-3
1,1-Dichloroethylene	75-35-4	Trichloroethylene	79-01-6
Dichloromethane	75-09-2	m-Xylene	108-38-3
Diethyl ether	60-29-7	o-Xylene	95-47-6
Ethanol	64-17-5	p-Xylene	106-42-3
Ethyl Acetate	141-78-6		

## Residual Solvents Standard Mix 2

Concentration	Matrix	Package Size	Part #
10,000 µg/mL	DMA	1.5 mL	C-916
Component	CAS number		
Ethyl alcohol	64-17-5		
n-Heptane (C7)	142-82-5		

## Residual Solvents Standard Mix 3

Matrix	Package Size	Part #
DMA	1.5 mL	C-917
Component	CAS number	Concentration
Acetone	67-64-1	9000 µg/mL
Acetonitrile	75-05-8	720 µg/mL
Benzene	71-43-2	12 µg/mL
Chloroform	67-66-3	24 µg/mL
1,2-Dichloroethane	107-06-2	24 µg/mL
1,1-Dichloroethylene	75-35-4	133 µg/mL
Dichloromethane	75-09-2	1500 µg/mL
Diethyl ether	60-29-7	6000 µg/mL
Ethyl Acetate	141-78-6	4800 µg/mL
n-Hexane (C6)	110-54-3	3267 µg/mL

## Residual Solvents Standard Mix 3

Matrix	Package Size	Part #
DMA	1.5 mL	C-917
Component	CAS number	Concentration
Isopropyl alcohol (2-Propanol)	67-63-0	6000 µg/mL
Methanol	67-56-1	3000 µg/mL
Pentane	109-66-0	9000 µg/mL
Toluene	108-88-3	1800 µg/mL
Trichloroethylene	79-01-6	300 µg/mL
m-Xylene	108-38-3	1800 µg/mL
o-Xylene	95-47-6	1799 µg/mL
p-Xylene	106-42-3	1800 µg/mL

## Residual Solvents Standard in Hemp Oil

Concentration	Matrix	Package Size	Part #
100 µg/mL	Hemp Oil	1.5 mL	C-904
Component	CAS number	Component	CAS number
Acetone	67-64-1	n-Hexane (C6)	110-54-3
Acetonitrile	75-05-8	Methanol	67-56-1
Benzene	71-43-2	Pentane	109-66-0
Chloroform	67-66-3	2-Propanol	67-63-0
1,2-Dichloroethane	107-06-2	Toluene	108-88-3
1,1-Dichloroethylene	75-35-4	Trichloromethane	79-01-6
Dichloromethane	75-09-2	m-Xylene	108-38-3
Diethyl ether	60-29-7	o-Xylene	95-47-6
Ethyl Acetate	141-78-6	p-Xylene	106-42-3
Ethyl alcohol	64-17-5	Xylenes - Total	1330-20-7
n-Heptane (C7)	142-82-5		

## 4 Component Gas Mix

Concentration	Matrix	Package Size	Part #
Varied	DMA	1.5 mL	C-957
Component	CAS number		
n-Butane	106-97-8		
Ethylene Oxide	75-21-8		
2-Methylpropane (Isobutane)	75-28-5		
Propane	74-98-6		

## Residual Solvents Singles

Component	CAS number	Concentration	Matrix	Package Size	Part #
Acetic acid	64-19-7	1,000 µg/mL	Methanol-P&T	1 mL	S-133
Acetone	67-64-1	5,000 µg/mL	Methanol:Water (9:1)	4 x 1.5 mL	284P
Acetone	67-64-1	1,000 µg/mL	Methanol-P&T	1 mL	S-140
Acetonitrile	75-05-8	1,000 µg/mL	Methanol-P&T	4 x 1.5 mL	473P
Acetonitrile	75-05-8	1,000 µg/mL	Methanol-P&T	1 mL	S-145
Anisole	100-66-3	1,000 µg/mL	Methanol	1 mL	S-288
Benzene	71-43-2	2,000 µg/mL	Methanol-P&T	4 x 1.5 mL	4P
Benzene	71-43-2	1,000 µg/mL	Methanol-P&T	1 mL	S-405
n-Butane	106-97-8	1,000 µg/mL	Methanol-P&T	1 mL	S-605
1-Butanol	71-36-3	1,000 µg/mL	Methanol-P&T	1 mL	S-610
2-Butanol	78-92-2	1,000 µg/mL	Methanol-P&T	1 mL	S-615
2-Butanone	78-93-3	1,000 µg/mL	Methanol-P&T	1 mL	S-620
Butyl acetate	123-86-4	1,000 µg/mL	Methanol-P&T	1 mL	S-635
Chloroform	67-66-3	2,000 µg/mL	Methanol-P&T	4 x 1.5 mL	21P
Chloroform	67-66-3	1,000 µg/mL	Methanol-P&T	1 mL	S-865
Cyclohexane	110-82-7	2,000 µg/mL	Methanol	4 x 1.5 mL	901P
Cyclohexane	110-82-7	1,000 µg/mL	Methanol-P&T	1 mL	S-1015
1,1-Dichloroethene	75-35-4	2,000 µg/mL	Methanol-P&T	4 x 1.5 mL	27P
1,1-Dichloroethene	75-35-4	1,000 µg/mL	Methanol-P&T	1 mL	S-1390
1,2-Dichloroethane	107-06-2	2,000 µg/mL	Methanol-P&T	4 x 1.5 mL	9P
1,2-Dichloroethane	107-06-2	1,000 µg/mL	Methanol-P&T	1 mL	S-1380
Dichloromethane	75-09-2	2,000 µg/mL	Methanol-P&T	4 x 1.5 mL	42P
Diethyl ether	60-29-7	2,000 µg/mL	Methanol-P&T	4 x 1.5 mL	285P
1,2-Dimethoxyethane	110-71-4	1,000 µg/mL	Methanol-P&T	1 mL	S-1572
N,N-Dimethylacetamide	127-19-5	1,000 µg/mL	Methanol-P&T	1 mL	S-1597
2,2-Dimethylbutane	73-85-2	1,000 µg/mL	Methanol-P&T	1 mL	S-1614
2,3-Dimethylbutane	79-29-8	1,000 µg/mL	Methanol-P&T	1 mL	S-1615
Dimethylformamide	68-12-2	1,000 µg/mL	Methanol-P&T	1 mL	S-1620
1,4-Dioxane	123-91-1	1,000 µg/mL	Methanol-P&T	1 mL	S-1715
Ethane	74-84-0	1,000 µg/mL	Methanol-P&T	1 mL	S-1880
Ethanol	64-17-5	2,000 µg/mL	Methanol-P&T	4 x 1.5 mL	1218P
Ethanol	64-17-5	1,000 µg/mL	Methanol-P&T	1 mL	S-1885
Ether	60-29-7	1,000 µg/mL	Methanol-P&T	1 mL	S-1900
2-Ethoxyethanol	110-80-5	1,000 µg/mL	Methanol-P&T	1 mL	S-1910



## Residual Solvents Singles

Component	CAS number	Concentration	Matrix	Package Size	Part #
Ethyl acetate	141-78-6	10,000 µg/mL	Methanol:Water (9:1)	4 x 1.5 mL	681P
Ethyl acetate	141-78-6	1,000 µg/mL	Methanol-P&T	1 mL	S-1920
Ethyl formate	109-94-4	1,000 µg/mL	Methanol-P&T	1 mL	S-4279
Ethylbenzene	100-41-4	1,000 µg/mL	Methanol-P&T	1 mL	S-1940
Ethylene glycol	107-21-1	1,000 µg/mL	Methanol-P&T	1 mL	S-1952
Ethylene oxide	75-21-8	1,000 µg/mL	Methanol-P&T	1 mL	S-1960
n-Heptane	142-82-5	1,000 µg/mL	Methanol	4 x 1.5 mL	1241P
n-Heptane	142-82-5	1,000 µg/mL	Methanol-P&T	1 mL	S-2125
n-Hexane	110-54-3	1,000 µg/mL	Methanol-P&T	1 mL	S-2190
Isobutyl acetate	110-19-0	1,000 µg/mL	Methanol-P&T	1 mL	S-2274
Isopropyl acetate	108-21-4	1,000 µg/mL	Methanol-P&T	1 mL	S-2305
Isopropylbenzene	98-82-8	1,000 µg/mL	Methanol-P&T	1 mL	S-2315
Methane	74-82-8	1,000 µg/mL	Methanol-P&T	1 mL	S-2379
Methanol	67-56-1	10,000 µg/mL	DI Water	4 x 1.5 mL	1217P
Methanol	67-56-1	1,000 µg/mL	Water	1 mL	S-2380
Methyl acetate	79-20-9	1,000 µg/mL	Methanol-P&T	1 mL	S-3893
Methyl sulfoxide	67-68-5	1,000 µg/mL	Methanol-P&T	1 mL	S-2565
Methyl tertiary-butyl ether	1634-04-4	1,000 µg/mL	Methanol-P&T	1 mL	S-2455
3-Methyl-1-butanol	123-51-3	1,000 µg/mL	Methanol-P&T	1 mL	S-2579
2-Methyl-1-propanol	78-83-1	1,000 µg/mL	Methanol-P&T	1 mL	S-2585
4-Methyl-2-pentanone	108-10-1	1,000 µg/mL	Methanol-P&T	1 mL	S-2600
2-Methylbutane	78-78-4	1,000 µg/mL	Methanol-P&T	1 mL	S-2462
Methylene chloride	75-09-2	1,000 µg/mL	Methanol-P&T	1 mL	S-2480
2-Methylpentane	107-83-5	1,000 µg/mL	Methanol-P&T	1 mL	S-2527
3-Methylpentane	96-14-0	1,000 µg/mL	Methanol-P&T	1 mL	S-2530
2-Methylpropane	75-28-5	1,000 µg/mL	Methanol-P&T	1 mL	S-2555
n-Pentane	109-66-0	5,000 µg/mL	Methanol	4 x 1.5 mL	1307P
n-Pentane	109-66-0	1,000 µg/mL	Methanol-P&T	1 mL	S-2975
1-Pentanol	71-41-0	1,000 µg/mL	Methanol-P&T	1 mL	S-2980
Propane	74-98-6	1,000 µg/mL	Methanol-P&T	1 mL	S-3145
1-Propanol	71-23-8	1,000 µg/mL	Methanol-P&T	1 mL	S-3160
2-Propanol	67-63-0	50,000 µg/mL	DI Water	4 x 1.5 mL	123P
2-Propanol	67-63-0	1,000 µg/mL	Methanol-P&T	1 mL	S-3165
Propyl acetate	109-60-4	1,000 µg/mL	Methanol-P&T	1 mL	S-3204

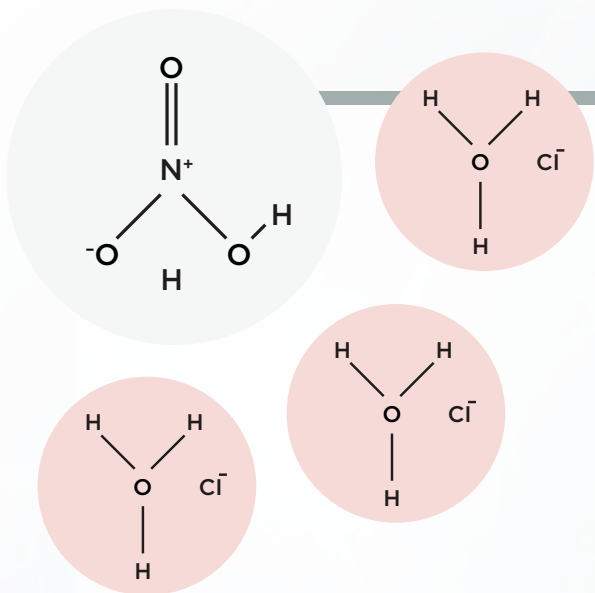
## Residual Solvents Singles

Component	CAS number	Concentration	Matrix	Package Size	Part #
Pyridine	110-86-1	1,000 µg/mL	Methanol-P&T	1 mL	S-3240
Tetrahydrofuran	109-99-9	1,000 µg/mL	Methanol-P&T	1 mL	S-3460
Tetramethylene sulfone	126-33-0	1,000 µg/mL	Methanol-P&T	1 mL	S-3877
Toluene	108-88-3	2,000 µg/mL	Methanol-P&T	4 x 1.5 mL	84P
Toluene	108-88-3	1,000 µg/mL	Methanol-P&T	1 mL	S-3505
Trichloroethene	79-01-6	1,000 µg/mL	Methanol-P&T	1 mL	S-3615
Trichloroethylene	79-01-6	2,000 µg/mL	Methanol-P&T	4 x 1.5 mL	85P
Triethylamine	121-44-8	1,000 µg/mL	Methanol-P&T	1 mL	S-3704
m-Xylene	108-38-3	2,000 µg/mL	Methanol-P&T	4 x 1.5 mL	202P
m-Xylene	108-38-3	1,000 µg/mL	Methanol-P&T	1 mL	S-3830
o-Xylene	95-47-6	2,000 µg/mL	Methanol	4 x 1.5 mL	201P
o-Xylene	95-47-6	1,000 µg/mL	Methanol-P&T	1 mL	S-3835
p-Xylene	106-42-3	2,000 µg/mL	Methanol-P&T	4 x 1.5 mL	203P
p-Xylene	106-42-3	1,000 µg/mL	Methanol-P&T	1 mL	S-3840
Xylene (mix of isomers)	1330-20-7	1,000 µg/mL	Methanol-P&T	1 mL	S-3845

## Scheduled Proficiency Tests for Residual Solvents

Component	Matrix	Package Size	Part #
Quantitative Residual Solvents in HEMP Oil PT Express	Hemp Oil	2 x 1.5 mL	CMPT-018B
Quantitative Residual Solvents PT in Hemp Oil	Hemp Oil	2 x 1.5 mL in Hemp oil	CMPT-018

# HELPFUL HINTS



**Aqua regia, or “royal water”,** is a mixture of 1 part nitric acid and 3 parts hydrochloric acid used to digest gold and platinum. An aqua regia solution can be prepared by using SPEX nitric acid and hydrochloric acid blanks!

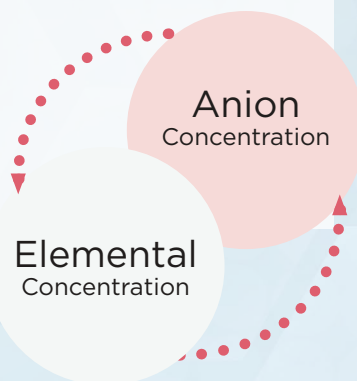
When calculating gravimetric factors for Ion Chromatography standards, remember that:

## Anion Concentration

1,000 µg/mL Nitrate =  
1,000 µg/mL Nitrite =  
1,000 µg/mL Phosphate =  
1,000 µg/mL Sulfate =  
1,000 µg/mL Nitrogen as Nitrate =  
1,000 µg/mL Nitrogen as Nitrite =  
1,000 µg/mL Phosphorus as Phosphate =  
1,000 µg/mL Sulfur as Sulfate =

## Elemental Concentration

226 µg/mL Nitrogen  
305 µg/mL Nitrogen  
326 µg/mL Phosphorus  
334 µg/mL Sulfur  
1,000 µg/mL Nitrogen  
1,000 µg/mL Nitrogen  
1,000 µg/mL Phosphorus  
1,000 µg/mL Sulfur



# INORGANIC STANDARDS FOR ELEMENTAL CANNABIS ANALYSIS

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In the US and other countries regulatory bodies are pushing for the cannabis industry to provide accurate, quantifiable results for heavy metals. Specifically arsenic, cadmium, chromium, copper, nickel, lead, and mercury for cannabis inhalation products and cannabis goods (i.e., edibles, native matrix, and oils). Many regulations have mandated the testing of cannabis for dangerous elemental impurities. Our extensive experience in creating quality trace metal standards, QC standards and PT samples, coupled with our ICP and ICP-MS analyses, our products for inorganics in cannabis make it easy to stay compliant with new and changing regulations.

### Claritas PPT® Grade Single Element Standards for ICP-MS

Element	Concentration	Matrix	30 mL	125 mL
Arsenic	1,000 µg/mL	2% HNO <sub>3</sub>	CLAS2-2M	CLAS2-2Y
Cadmium	1,000 µg/mL	2% HNO <sub>3</sub>	CLCD2-2M	CLCD2-2Y
Chromium	1,000 µg/mL	2% HNO <sub>3</sub>	CLCR2-2M	CLCR2-2Y
Copper	1,000 µg/mL	2% HNO <sub>3</sub>	CLCU2-2M	CLCU2-2Y
Gold	1,000 µg/mL	2% HNO <sub>3</sub>	CLAU1-1M	CLAU1-1Y
Lead	1,000 µg/mL	2% HNO <sub>3</sub>	CLPB2-2M	CLPB2-2Y
Mercury	1,000 µg/mL	10% HNO <sub>3</sub>	CLHG4-2M	CLHG4-2Y
Nickel	1,000 µg/mL	2% HNO <sub>3</sub>	CLNI2-2M	CLNI2-2Y

Additional single and multi-element formulations are available in other concentration and package sizes at [spex.com](http://spex.com)

### Assurance® Grade Single Element Standards for ICP & AA

Element	Concentration	Matrix	125 mL
Arsenic	1,000 µg/mL	2% HNO <sub>3</sub>	PLAS2-2Y
Cadmium	1,000 µg/mL	2% HNO <sub>3</sub>	PLCD2-2Y
Chromium	1,000 µg/mL	2% HNO <sub>3</sub>	PLCR2-2Y
Copper	1,000 µg/mL	2% HNO <sub>3</sub>	PLCU2-2Y
Lead	1,000 µg/mL	2% HNO <sub>3</sub>	PLPB2-2Y
Mercury	1,000 µg/mL	10% HNO <sub>3</sub>	PLHG4-2Y
Nickel	1,000 µg/mL	2% HNO <sub>3</sub>	PLNI2-2Y

Additional single and multi-element formulations are available in other concentration and package sizes at [spex.com](http://spex.com)

### Heavy Metals Testing Kit (5 x 30 mL)

Element	Concentration	Matrix	Package Size	Part #
Arsenic	1,000 µg/mL	2% HNO <sub>3</sub>	30 mL	SPXHM-KIT
Cadmium		2% HNO <sub>3</sub>	30 mL	
Chromium		2% HNO <sub>3</sub>	30 mL	
Lead		2% HNO <sub>3</sub>	30 mL	
Mercury		10% HNO <sub>3</sub>	30 mL	

### Cannabis Inhalation Elemental Standard

Element	Concentration	Matrix	Package Size	Part #
Arsenic	2 mg/kg	5% HNO <sub>3</sub>	125 mL	CANN-INHL1
Cadmium	2 mg/kg			
Lead	5 mg/kg			
Mercury	1 mg/kg			

## Cannabis Edible Elemental Standard

Element	Concentration	Matrix	Package Size	Part #
Arsenic	15 mg/kg	5% HNO <sub>3</sub> /1% HCl	125 mL	CANN-EDBIL
Cadmium	5 mg/kg			
Lead	5 mg/kg			
Mercury	30 mg/kg			

## USP Oral Elemental Impurities Mix A

Element	Concentration	Matrix	Package Size	Part #
Arsenic	1.5 mg/kg	5% HNO <sub>3</sub>	125 mL	USP-TXM2
Cadmium	25 mg/kg			
Lead	5 mg/kg			
Mercury	15 mg/kg			

## Matrix Matched Standards

## Heavy Metals Standard in Hemp Matrix

Element	Matrix	Package Size	Part #
Antimony	Hemp	2 g	FM-740
Arsenic			
Boron			
Cadmium			
Calcium			
Chromium			
Copper			
Iron			
Lead			
Magnesium			
Manganese			
Mercury			
Molybdenum			
Nickel			
Potassium			
Zinc			



### Heavy Metals Standard in Hemp Oil Matrix

Element	Concentration	Matrix	Package Size	Part #
Arsenic	10 ppm	Hemp Oil	20 g	FM-740-O
Cadmium				
Lead				
Mercury				

## Matrix Matched PTs & QC

### Heavy Metals in Hemp QC Sample

Element	Matrix	Package Size	Part #
Arsenic	Hemp	2 g	CMQC-020
Cadmium			
Chromium			
Copper			
Lead			
Mercury			
Nickel			

### Heavy Metals in Hemp Scheduled PT

Element	Matrix	Package Size	Part #
Arsenic	Hemp	2 analyses	CMPT-020
Cadmium			
Chromium			
Copper			
Lead			
Mercury			
Nickel			

### Heavy Metals in Hemp PT Express

Element	Matrix	Package Size	Part #
Arsenic	Hemp	2 analyses	CMPT-020B
Cadmium			
Chromium			
Copper			
Lead			
Mercury			
Nickel			

# PHYSICAL CHEMISTRY

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Cannabis regulations often require measurements for physical contamination, moisture, and water activity. Spex/NSI's comprehensive catalog includes many reference materials and Proficiency Tests to reach the cannabis lab's testing requirements.

## Moisture & Water Activity CRMs & QC for Cannabis & Hemp

Component	Matrix	Package Size	Part #
Water Activity in Edible QC	Edible	2 x 5 mL Vials	CMQC-078
Water Activity in Edible CRM	Edible	10 pack	FM-747
Moisture in Hemp QC	Hemp	2 x 500 mg	CMQC-022
Moisture in Hemp CRM	Hemp	10 x 1 g Vial	C-931
Water Activity in Hemp QC	Hemp	2 x 5 mL Vials	CMQC-021
Water Activity in Hemp CRM	Hemp	10 pack	FM-746
Water Activity in Hemp Oil QC	Oil	2 x 10 mL Vials	CMQC-081
Water Activity in Hemp Oil CRM	Oil	10 pack	FM-636

## Physical Contamination CRMs & QC for Cannabis & Hemp

Component	Matrix	Package Size	Part #
Filth/Extraneous Materials in Hemp QC	Hemp	5 Samples	CMQC-047
Foreign Materials in Hemp in Hemp CRM	Hemp	10 Samples	FM-617

## Quantitative Physical Contamination QC in Hemp

Description	Matrix	Package Size	Part #
Foreign Materials in Hemp	Hemp	10 pack	FM-617

## Quantitative Water Activity QC

Description	Matrix	Package Size	Part #
Water Activity in Oil	Oil	10 pack	FM-636
Water Activity in Hemp	Hemp	10 pack	FM-746
Water Activity in Edible	Edible	10 pack	FM-747

## Quantitative Moisture QC in Hemp

Description	Matrix	Package Size	Part #
Moisture in Hemp	Hemp	10 pack	C-931

## Quantitative Water Activity & Moisture QC

Description	Matrix	Package Size	Part #
Water Activity in Hemp	Hemp	2 x 5 mL Vials	CMQC-021
Water Activity in Edible	Edible	2 x 5 mL Vials	CMQC-078
Water Activity in Oil	Oil	2 x 5 mL Vials	CMQC-081
Moisture in Hemp	Hemp	2 x 500 mg	CMQC-022

## Physical Contamination QC

Component	Matrix	Package Size	Part #
Foreign Materials in Hemp	Hemp	5 samples	CMQC-047

## Scheduled Proficiency Tests for Water Activity &amp; Moisture

Component	Matrix	Package Size	Part #
Water Activity in Hemp Scheduled PT	Hemp	2 x 5 mL Vials	CMPT-021
Moisture in Hemp Scheduled PT	Hemp	2 x 500 mg	CMPT-022
Water Activity in Edible Scheduled PT	Edible	2 x 5 mL Vials	CMPT-078
Water Activity in Oil Scheduled PT	Oil	2 x 5 mL Vials	CMPT-081

## PT Express for Water Activity &amp; Moisture

Component	Matrix	Package Size	Part #
Water Activity in Hemp PT Express	Hemp	2 x 5 mL Vials	CMPT-021B
Moisture in Hemp PT Express	Hemp	2 x 500 mg	CMPT-022B
Water Activity in Edible PT Express	Edible	2 x 5 mL Vials	CMPT-078B
Water Activity in Oil PT Express	Oil	2 x 5 mL Vials	CMPT-081B

## Scheduled Proficiency Tests for Physical Contamination

Component	Matrix	Package Size	Part #
Foreign Materials in Hemp Scheduled PT	Hemp	5 Samples	CMPT-047

## PT Express for Physical Contamination

Component	Matrix	Package Size	Part #
Foreign Materials in Hemp PT Express	Hemp	5 Samples	CMPT-047B





# ORGANIC BLANK

Blank materials are needed to provide a baseline analysis for all types of products. Blanks by their nature are a type of standard which defines the lower limit or baseline for analysis.

## Blank/Matrix

Component	Matrix	Package Size	Part #
Blank Hemp Matrix	Hemp	10x1 g Vial	C-930
Blank Hemp Matrix	Hemp	100 g	C-930-100
Edible Blank	Edible	10 x 1.5 grams	CM-EDIBLE-10
Ground Hemp Tea	Hemp Tea	50 g - Sterilized	CM-BLANK-50
Hemp Blank	Hemp	1.5 g single vial	CM-BLANK
Hemp Blank	Hemp	10 x 1.5 g	CM-BLANK-10
Hemp Oil Matrix	Hemp Oil	5 g Amber Vial	C-934
Hemp Oil Matrix	Hemp Oil	100 g	C-934-100
Oil Blank 1.5 grams	Oil	10 amber vials	CM-OIL-10

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# Hemp Microbiology Proficiency Tests

## Hemp Oil Matrix

Qualitative PTs are a five sample set where 2 of the 5 samples are positive for the target microorganisms. Acceptable evaluation requires at least 4 of 5 recorded correctly with no false negatives. Can be used for molecular or culture techniques.

### Qualitative Microbiological Scheduled PT in Hemp Oil Matrix

Component	Package Size	Part #
<i>Aspergillus</i> Mold	5 samples + 1 DI vial	CMPT-033
<i>Listeria monocytogenes</i>	5 samples + 1 DI vial	CMPT-066
<i>Pseudomonas aeruginosa</i>	5 samples + 1 DI vial	CMPT-072
<i>Salmonella</i> species	5 samples + 1 DI vial	CMPT-027
Shiga toxin-producing <i>Escherichia coli</i> (STEC)	5 samples + 1 DI vial	CMPT-030*
<i>Staphylococcus aureus</i>	5 samples + 1 DI vial	CMPT-069

### Qualitative Microbiological PT Express in Hemp Oil Matrix

Component	Package Size	Part #
<i>Aspergillus</i> species	5 samples + 1 DI vial	CMPT-033B
<i>Listeria monocytogenes</i>	5 samples + 1 DI vial	CMPT-066B
<i>Pseudomonas aeruginosa</i>	5 samples + 1 DI vial	CMPT-072B
<i>Salmonella</i> species	5 samples + 1 DI vial	CMPT-027B
Shiga toxin-producing <i>Escherichia coli</i> (STEC)	5 samples + 1 DI vial	CMPT-030B*
<i>Staphylococcus aureus</i>	5 samples + 1 DI vial	CMPT-069B

## Edible Matrix

Qualitative PTs are a five sample set where 2 of the 5 samples are positive for the target microorganisms. Acceptable evaluation requires at least 4 of 5 recorded correctly with no false negatives. Can be used for molecular or culture techniques. Matrix is chocolate.

### Qualitative Microbiological Scheduled PT in Edible Matrix

Component	Package Size	Part #
<i>Aspergillus</i> Molds	5 samples + 1 DI vial	CMPT-032
<i>Listeria monocytogenes</i>	5 samples + 1 DI vial	CMPT-065
<i>Pseudomonas aeruginosa</i>	5 samples + 1 DI vial	CMPT-071
<i>Salmonella</i> species	5 samples + 1 DI vial	CMPT-026
Shiga toxin-producing <i>Escherichia coli</i> (STEC)	5 samples + 1 DI vial	CMPT-029*
<i>Staphylococcus aureus</i>	5 samples + 1 DI vial	CMPT-068

### Qualitative Microbiological PT Express in Edible Matrix

Component	Package Size	Part #
<i>Aspergillus</i> species	5 samples + 1 DI vial	CMPT-032B
<i>Listeria monocytogenes</i>	5 samples + 1 DI vial	CMPT-065B
<i>Pseudomonas aeruginosa</i>	5 samples + 1 DI vial	CMPT-071B
<i>Salmonella</i> species	5 samples + 1 DI vial	CMPT-026B
Shiga toxin-producing <i>Escherichia coli</i> (STEC)	5 samples + 1 DI vial	CMPT-029B*
<i>Staphylococcus aureus</i>	5 samples + 1 DI vial	CMPT-068B

\*ECCN restrictions apply to international sales of these items.

Quantitative PT samples are designed for quantitative determination of microorganisms in the range of >500 CFU/gram. Samples are inoculated with the target microorganisms and can be used with culture techniques.

### Quantitative Microbiological Scheduled PT in Edible Matrix

Component	Package Size	Part #
APC	2 Samples + 2 DI	CMPT-057
<i>BTGN / EB</i>	2 Samples + 2 DI	CMPT-058
Coliform/ <i>Escherichia coli</i>	2 Samples + 2 DI	CMPT-038
Yeast or Mold	2 Samples + 2 DI	CMPT-059

### Quantitative Microbiological PT Express in Edible Matrix

Component	Package Size	Part #
APC	2 Samples + 2 DI	CMPT-057B
<i>BTGN / EB</i>	2 Samples + 2 DI	CMPT-058B
Coliform/ <i>Escherichia coli</i>	2 Samples + 2 DI	CMPT-038B
Yeast or Mold	2 Samples + 2 DI	CMPT-059B

### Hemp Plant Matrix

Qualitative PTs are a five sample set where 2 of the 5 samples are positive for the target microorganisms. Acceptable evaluation requires at least 4 of 5 recorded correctly with no false negatives. Can be used for molecular or culture techniques.

### Qualitative Microbiological Scheduled PT

Component	Package Size	Part #
<i>Aspergillus</i> species	5 samples + 1 DI vial	CMPT-031
<i>Escherichia coli</i>	5 samples + 1 DI vial	CMPT-034
<i>Escherichia coli</i> O157:H7	5 samples + 1 DI vial	CMPT-035*
<i>Listeria monocytogenes</i>	5 samples + 1 DI vial	CMPT-064
<i>Pseudomonas aeruginosa</i>	5 samples + 1 DI vial	CMPT-070
<i>Salmonella</i> species	5 samples + 1 DI vial	CMPT-025
Shiga toxin-producing <i>Escherichia coli</i> (STEC)	5 samples + 1 DI vial	CMPT-028*
<i>Staphylococcus aureus</i>	5 samples + 1 DI vial	CMPT-067

### Qualitative Microbiological PT Express in Hemp

Component	Package Size	Part #
<i>Aspergillus</i> species	5 samples + 1 DI vial	CMPT-031B
<i>Escherichia coli</i>	5 samples + 1 DI vial	CMPT-034B
<i>Escherichia coli</i> O157:H7	5 samples + 1 DI vial	CMPT-035B*
<i>Listeria monocytogenes</i>	5 samples + 1 DI vial	CMPT-064B
<i>Pseudomonas aeruginosa</i>	5 samples + 1 DI vial	CMPT-070B
<i>Salmonella</i> species	5 samples + 1 DI vial	CMPT-025B
Shiga toxin-producing <i>Escherichia coli</i> (STEC)	5 samples + 1 DI vial	CMPT-028B*
<i>Staphylococcus aureus</i>	5 samples + 1 DI vial	CMPT-067B

\*ECCN restrictions apply to international sales of these items.

Quantitative PT samples are designed for quantitative determination of microorganisms in the range of >500 CFU/gram. Samples are inoculated with the target microorganisms and can be used with culture techniques.

### Quantitative Microbiological Scheduled PT in Hemp

Component	Package Size	Part #
Aerobic Plate Count (APC) & Total Viable Count (TVC)	2 Samples + 2 DI	CMPT-036
<i>BTGN / EB</i>	2 Samples + 2 DI	CMPT-039
Coliform/ <i>E. coli</i>	2 Samples + 2 DI	CMPT-037
qPCR Yeast & Mold	2 Samples + 2 DI	CMPT-085
Yeast or Mold	2 Samples + 2 DI	CMPT-040

### Quantitative Microbiological PT Express in Hemp

Component	Package Size	Part #
Aerobic Plate Count (APC) & Total Viable Count (TVC)	2 Samples + 2 DI	CMPT-036B
<i>BTGN / EB</i>	2 Samples + 2 DI	CMPT-039B
Coliform/ <i>E. coli</i>	2 Samples + 2 DI	CMPT-037B
qPCR Yeast & Mold	2 Samples + 2 DI	CMPT-085B
Yeast or Mold	2 Samples + 2 DI	CMPT-040B

## Cannabinoids Potency Testing

### Scheduled Proficiency Tests for Potency

Matrix matched potency PTs contain a spiking material ampule and a vial of matrix blank. To use the QC, spike material is combined with matrix.

Description	Matrix	Package Size	Part #
Potency in Hemp PT	Hemp	1 mL + Matrix	CMPT-023
Potency in Edible PT Part	Edible	1 mL + Matrix	CMPT-076
Potency in Hemp Oil PT Part	Hemp Oil	1 mL + Matrix	CMPT-077
THC Potency in Hemp PT Part	Hemp	1 mL + Matrix	CMPT-082
THC Potency in Hemp Oil PT Part	Oil	1 mL + Matrix	CMPT-083
THC Potency in Hemp Oil PT Part	Edible	1 mL + Matrix	CMPT-084

### PT Express for Cannabinoid Analysis

Matrix matched potency PTs contain a spiking material ampule and a vial of matrix blank. To use the QC, spike material is combined with matrix.

Description	Matrix	Package Size	Part #
Potency in Hemp PT Express	Hemp	1 mL + Matrix	CMPT-023B
Cannabinoid Profile-No THC	Oil	1 mL + Matrix	CMPT-075B
Potency in Edible PT Express	Edible	1 mL + Matrix	CMPT-076B
Potency in Hemp Oil PT Express	Hemp Oil	1 mL + Matrix	CMPT-077B
Cannabinoid Profile-No THC	Edible	1 mL + Matrix	CMPT-079B
THC Potency in Hemp PT Express	Hemp	1 mL + Matrix	CMPT-082B
THC Potency in Hemp Oil PT Express	Oil	1 mL + Matrix	CMPT-083B
THC Potency in Hemp Oil PT Express	Edible	1 mL + Matrix	CMPT-084B

## Terpenes & Flavonoids

### Scheduled Terpene Proficiency Tests

Description	Matrix	Package Size	Part #
Quantitative Terpenoids in Hemp	Hemp	2 x 1.5 mL + Matrix	CMPT-024
Quantitative Terpenoids in Hemp Oil	Hemp Oil	2 x 1.5 mL + Matrix	CMPT-080

### PT Express for Terpenes

Description	Matrix	Package Size	Part #
Quantitative Terpenoids	Hemp	2 x 1.5 mL + Matrix	CMPT-024B
Quantitative Terpenoids	Hemp Oil	2 x 1.5 mL + Matrix	CMPT-080B

### Terpene QC Samples

Description	Matrix	Package Size	Part #
Quantitative Terpenoids	Hemp	2 x 1.5 mL + Matrix	CMQC-024
Quantitative Terpenoids	Hemp Oil	2 x 1.5 mL + Matrix	CMQC-080

## Pesticides & Mycotoxins

### Scheduled Proficiency Tests for Pesticides

Description	Matrix	Package Size	Part #
Quantitative Pesticides in Edible PT	Edible	2 x 1.6 mL	CMPT-063
Quantitative Pesticides in Hemp PT	Hemp	2 x 1.6 mL	CMPT-043
Quantitative Pesticides in Hemp Oil PT	Hemp Oil	2 x 1.6 mL	CMPT-062

### PT Express for Pesticides

Description	Matrix	Package Size	Part #
Quantitative Pesticides in Edible PT Express	Edible	2 x 1.6 mL	CMPT-063B
Quantitative Pesticides in Hemp PT Express	Hemp	2 x 1.6 mL	CMPT-043B
Quantitative Pesticides in Hemp Oil PT Express	Hemp Oil	2 x 1.6 mL	CMPT-062B

### Scheduled Proficiency Tests for Mycotoxins

Description	Matrix	Package Size	Part #
Quantitative Mycotoxins in Edible PT	Edible	2 x 1.2 mL	CMPT-060
Quantitative Mycotoxins in Hemp PT	Hemp	2 x 1.2 mL	CMPT-042
Quantitative Mycotoxins in Hemp Oil PT	Hemp Oil	2 x 1.2 mL	CMPT-061

## PT Express for Mycotoxins

Description	Matrix	Package Size	Part #
Quantitative Mycotoxins in Edible PT Express	Edible	2 x 1.2 mL	CMPT-060B
Quantitative Mycotoxins in Hemp PT Express	Hemp	2 x 1.2 mL	CMPT-042B
Quantitative Mycotoxins in Hemp Oil PT Express	Hemp Oil	2 x 1.2 mL	CMPT-061B

## Residual Solvents

### Scheduled Proficiency Tests for Residual Solvents

Component	Matrix	Package Size	Part #
Quantitative Residual Solvents in HEMP Oil PT Express	Hemp Oil	2 x 1.5 mL	CMPT-018B
Quantitative Residual Solvents PT in Hemp Oil	Hemp Oil	2 x 1.5 mL in Hemp oil	CMPT-018

## Inorganic Standards for Elemental Cannabis Analysis

### Heavy Metals in Hemp Scheduled PT

Element	Matrix	Package Size	Part #
Arsenic	Hemp	2 analyses	CMPT-020
Cadmium			
Chromium			
Copper			
Lead			
Mercury			
Nickel			

### Heavy Metals in Hemp PT Express

Element	Matrix	Package Size	Part #
Arsenic	Hemp	2 analyses	CMPT-020B
Cadmium			
Chromium			
Copper			
Lead			
Mercury			
Nickel			

## Physical Chemistry

### Scheduled Proficiency Tests for Water Activity & Moisture

Component	Matrix	Package Size	Part #
Water Activity in Hemp Scheduled PT	Hemp	2 x 5 mL Vials	CMPT-021
Moisture in Hemp Scheduled PT	Hemp	2 x 500 mg	CMPT-022
Water Activity in Edible Scheduled PT	Edible	2 x 5 mL Vials	CMPT-078
Water Activity in Oil Scheduled PT	Oil	2 x 5 mL Vials	CMPT-081

### PT Express for Water Activity & Moisture

Component	Matrix	Package Size	Part #
Water Activity in Hemp PT Express	Hemp	2 x 5 mL Vials	CMPT-021B
Moisture in Hemp PT Express	Hemp	2 x 500 mg	CMPT-022B
Water Activity in Edible PT Express	Edible	2 x 5 mL Vials	CMPT-078B
Water Activity in Oil PT Express	Oil	2 x 5 mL Vials	CMPT-081B

### Scheduled Proficiency Tests for Physical Contamination

Component	Matrix	Package Size	Part #
Foreign Materials in Hemp Scheduled PT	Hemp	5 Samples	CMPT-047

### PT Express for Physical Contamination

Component	Matrix	Package Size	Part #
Foreign Materials in Hemp PT Express	Hemp	5 Samples	CMPT-047B

Proficiency Testing Schedule:

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