

ANALYTICAL REFERENCE MATERIALS ENVIRONMENTAL MATERIALS

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Top: Joe Tallon, Manufacturing Technician
Bottom: Don McCandless, Head Coach



500 Series Methods - US EPA Safe Drinking Water Act (SDWA)

US EPA Method No.	Compound Class	US EPA Method No.	Compound Class
501.1, 501.2, 501.3	.Trihalomethanes	527	.Pesticides & Flame Retardants (GC/MS)
502.1, 502.2	.Volatile Halogenated Organics	528	.Phenols
504.1	.Ethylene Dibromide/Dibromochloropropane	529	.Nitroaromatics & Nitramines
505	.Organohalide Pesticides & PCBs	531.1, 531.2	.Carbamates
506	.Phthalate & Adipate Esters	532	.Phenylurea Pesticides
507	.Nitrogen & Phosphorus Pesticides	535 	.Chloroacetanilide Herbicide Degradates
508, 508.1, 508A	.Chlorinated Pesticides	547	.Glyphosate
515, 515.4	.Chlorinated Acid Herbicides	549.2	.Paraquat/Diquat
521	.Nitrosamines	551.1	.Chlorinated Pesticides & Herbicides
524.1, 524.2	.Volatile Organics	552, 552.1, 552.2, 552.3	.Haloacetic Acids and Dalapon
525, 525.1, 525.2	 .Semivolatile Organics	555	.Chlorinated Acids
526	.Semivolatile Organics	—	.Drinking Water Odor Standard

Method 501.1, 501.2, 501.3 (Trihalomethanes)

501 Trihalomethane Mix

bromodichloromethane	chloroform
bromoform	dibromochloromethane
200 μ g/mL each in P&T methanol, 1mL/ampul	
cat. # 30036 (ea.)	
2,000 μ g/mL each in P&T methanol, 1mL/ampul	
cat. # 30211 (ea.)	

DW-VOC Mix #1 (8 components)

benzene	1,1-dichloroethene
carbon tetrachloride	1,1,1-trichloroethane
1,4-dichlorobenzene	trichloroethene
1,2-dichloroethane	vinyl chloride
200 μ g/mL each in P&T methanol, 1mL/ampul	
cat. # 30037 (ea.)	
2,000 μ g/mL each in P&T methanol, 1mL/ampul	
cat. # 30219 (ea.)	

DW-VOC Mix #2 (12 components)

chlorobenzene	styrene
1,2-dichlorobenzene	tetrachloroethene
cis-1,2-dichloroethene	toluene
trans-1,2-dichloroethene	m-xylene
1,2-dichloropropane	o-xylene
ethylbenzene	p-xylene
200 μ g/mL each in P&T methanol, 1mL/ampul	
cat. # 30038 (ea.)	
2,000 μ g/mL each in P&T methanol, 1mL/ampul	
cat. # 30220 (ea.)	

DW-VOC Mix #3

methylene chloride	1,1,2-trichloroethane
1,2,4-trichlorobenzene	
200 μ g/mL each in P&T methanol, 1mL/ampul	
cat. # 30209 (ea.)	
2,000 μ g/mL each in P&T methanol, 1mL/ampul	
cat. # 30235 (ea.)	

Revised DW-VOC Kit (200 μ g/mL)

30036: 501 Trihalomethane Mix
30037: DW-VOC Mix #1
30038: DW-VOC Mix #2
30209: DW-VOC Mix #3

Contains 1mL each of these mixtures.
cat. # 30210 (kit)



DW-VOC Kit #2 (2,000 μ g/mL)

30211: 501 Trihalomethane Mix
30219: DW-VOC Mix #1
30220: DW-VOC Mix #2
30235: DW-VOC Mix #3

Contains 1mL each of these mixtures.
cat. # 30221 (kit)



did you know?

We have more than 2,000 pure, characterized, neat compounds in our inventory!
If you do not see the EXACT mixture you need listed on any of these pages,
contact us for a custom standard.



also available

Rb[®]-502.2 GC Columns
See page 92 for details.

500 Series Methods

Method 502.1, 502.2 (Volatile Halogenated Organics)

502.2 Internal Standard #1

1-chloro-2-fluorobenzene
2,000 μ g/mL in P&T methanol, 1mL/ampul
cat. # 30040 (ea.)

502.2 Internal Standard Mix #2

2-bromo-1-chloropropane fluorobenzene
2,000 μ g/mL each in P&T methanol, 1mL/ampul
cat. # 30041 (ea.)

8021/502.2 Surrogate Mix #1

1-bromo-2-chloroethane fluorobenzene
1-chloro-3-fluorobenzene
2,000 μ g/mL each in P&T methanol, 1mL/ampul
cat. # 30463 (ea.)

8021/502.2 Surrogate Mix #2

1-bromo-2-chloroethane 1-chloro-3-fluorobenzene
4-bromochlorobenzene fluorobenzene
2,000 μ g/mL each in P&T methanol, 1mL/ampul
cat. # 30464 (ea.)

Volatiles MegaMix® with Gases

(60 components)

benzene
bromobenzene
bromochloromethane
bromodichloromethane
bromoform
bromomethane (methyl bromide)
n-butylbenzene
sec-butylbenzene
tert-butylbenzene
carbon tetrachloride
chlorobenzene
chloroethane (ethyl chloride)
chloroform
chloromethane (methyl chloride)
2-chlorotoluene
4-chlorotoluene
dibromochloromethane
1,2-dibromo-3-chloropropane (DBCP)
1,2-dibromoethane (EDB)
dibromomethane
1,2-dichlorobenzene
1,3-dichlorobenzene
1,4-dichlorobenzene
dichlorodifluoromethane (CFC-12)
1,1-dichloroethane
1,2-dichloroethane
1,1-dichloroethene
cis-1,2-dichloroethene
trans-1,2-dichloroethene
1,2-dichloropropane
1,3-dichloropropane
2,2-dichloropropane
2,2-dichloropropane
1,1-dichloropropene
cis-1,3-dichloropropene
trans-1,3-dichloropropene
ethylbenzene
hexachloro-1,3-butadiene
(hexachlorobutadiene)
isopropylbenzene (cumene)
4-isopropyltoluene (*p*-cymene)

200 μ g/mL each in P&T methanol, 1mL/ampul
cat. # 30603 (ea.)



methylene chloride (dichloromethane)
naphthalene
n-propylbenzene
styrene
1,1,1,2-tetrachloroethane
1,1,2,2-tetrachloroethane
tetrachloroethene
toluene
1,2,3-trichlorobenzene
1,2,4-trichlorobenzene
1,1,1-trichloroethane
1,1,2-trichloroethane
trichloroethene
1,2,3-trichloropropane
1,2,4-trimethylbenzene
1,3,5-trimethylbenzene
m-xylene
o-xylene
p-xylene

200 μ g/mL each in P&T methanol, 1mL/ampul
cat. # 30432 (ea.)

502.2 MegaMix® (54 components)

Includes all target analytes except the six gases, which are available separately as 502.2 Calibration Mix #1.

benzene 1,1-dichloropropene
bromobenzene *cis*-1,3-dichloropropene
bromochloromethane *trans*-1,3-dichloropropene
bromodichloromethane ethylbenzene
bromoform hexachloro-1,3-butadiene
n-butylbenzene (hexachlorobutadiene)
sec-butylbenzene isopropylbenzene (cumene)
tert-butylbenzene 4-isopropyltoluene (*p*-cymene)
carbon tetrachloride methylene chloride (dichloromethane)
chlorobenzene naphthalene
chloroform *n*-propylbenzene
2-chlorotoluene styrene
4-chlorotoluene 1,1,1,2-tetrachloroethane
dibromochloromethane 1,1,2,2-tetrachloroethane
1,2-dibromo-3-chloropropane (DBCP) tetrachloroethene
1,2-dibromoethane toluene
dibromomethane 1,2,3-trichlorobenzene
1,2-dichlorobenzene 1,2,4-trichlorobenzene
1,3-dichlorobenzene 1,1,1-trichloroethane
1,4-dichlorobenzene 1,1,2-trichloroethane
1,1-dichloroethane trichloroethene
1,2-dichloroethane 1,2,3-trichloropropane
1,1-dichloroethene 1,2,4-trimethylbenzene
cis-1,2-dichloroethene 1,3,5-trimethylbenzene
trans-1,2-dichloroethene *m*-xylene
1,2-dichloropropane *o*-xylene
1,3-dichloropropane *p*-xylene

200 μ g/mL each in P&T methanol, 1mL/ampul
cat. # 30432 (ea.)

2,000 μ g/mL each in P&T methanol, 1mL/ampul
cat. # 30431 (ea.)

502.2 Calibration Mix #1 (gases)

bromomethane dichlorodifluoromethane (CFC-12)
chloroethane trichlorodifluoromethane (CFC-11)
chloromethane vinyl chloride

200 μ g/mL each in P&T methanol, 1mL/ampul
cat. # 30439 (ea.)

2,000 μ g/mL each in P&T methanol, 1mL/ampul
cat. # 30042 (ea.)

502.2 Calibration Mix #2 (14 components)

bromodichloromethane 1,3-dichloropropene
bromoform 2,2-dichloropropane
carbon tetrachloride *cis*-1,3-dichloropropene
chloroform *trans*-1,3-dichloropropene
1,1-dichloroethane methylene chloride
1,1-dichloroethene 1,1,1-trichloroethane
trans-1,2-dichloroethene trichloroethene
1,2-dichloropropane 2,000 μ g/mL each in P&T methanol, 1mL/ampul
1,3-dichloropropane cat. # 30043 (ea.)

Antifoam Agent for Purge & Trap Samples

Foam generated as purge gas passes through a sample can enter the analytical trap, and possibly into the GC column. Our silica-containing antifoam agent is effective over a wide pH range, and will not conflict with chromatography of target analytes.

Neat, 1mL/ampul
cat. # 31822 (ea.)

No data pack available.

Method 502.1, 502.2 (Volatile Halogenated Organics),
cont'd

502.2 Calibration Mix #3 (14 components)

bromochloromethane	1,2-dichloropropane
dibromochloromethane	1,1-dichloropropene
1,2-dibromo-3-chloropropane	1,1,1,2-tetrachloroethane
1,2-dibromoethane	1,1,2,2-tetrachloroethane
dibromomethane	tetrachloroethene
1,2-dichloroethane	1,1,2-trichloroethane
cis-1,2-dichloroethene	1,2,3-trichloropropane
2,000 μ g/mL each in P&T methanol, 1mL/ampul	
	cat. # 30044 (ea.)

502.2 Calibration Mix #4 (9 components)

benzene	styrene
tert-butylbenzene	toluene
chlorobenzene	1,3,5-trimethylbenzene
isopropylbenzene	m-xylene
n-propylbenzene	
2,000 μ g/mL each in P&T methanol, 1mL/ampul	
	cat. # 30045 (ea.)

502.2 Calibration Mix #5 (10 components)

bromobenzene	ethylbenzene
n-butylbenzene	1,2,4-trichlorobenzene
sec-butylbenzene	1,2,4-trimethylbenzene
2-chlorotoluene	<i>o</i> -xylene
1,3-dichlorobenzene	<i>p</i> -xylene
2,000 μ g/mL each in P&T methanol, 1mL/ampul	
	cat. # 30046 (ea.)

502.2 Calibration Mix #6 (7 components)

4-chlorotoluene	4-isopropyltoluene
1,2-dichlorobenzene	naphthalene
1,4-dichlorobenzene	1,2,3-trichlorobenzene
hexachlorobutadiene	
2,000 μ g/mL each in P&T methanol, 1mL/ampul	
	cat. # 30047 (ea.)

502.2 VOA Calibration Kit #1 (2,000 μ g/mL)

30042: 502.2 Calibration Mix #1
 30043: 502.2 Calibration Mix #2
 30044: 502.2 Calibration Mix #3
 30045: 502.2 Calibration Mix #4
 30046: 502.2 Calibration Mix #5
 30047: 502.2 Calibration Mix #6

Contains 1mL each of these mixtures.

cat. # 30444 (kit)



502.2 VOA Calibration Kit #2 (2,000 μ g/mL)

30042: 502.2 Calibration Mix #1
 30431: 502.2 MegaMix

Contains 1mL each of these mixtures.

cat. # 30445 (kit)



502.2 VOA Calibration Kit #3 (200 μ g/mL)

30439: 502.2 Calibration Mix #1
 30432: 502.2 MegaMix

Contains 1mL each of these mixtures.

cat. # 30446 (kit)



**Method 504.1 (Ethylene Dibromide/
Dibromochloropropane)**

504.1 Calibration Mix

1,2-dibromo-3-chloropropane	1,2,3-trichloropropane
1,2-dibromoethane	
200 μ g/mL each in P&T methanol, 1mL/ampul	cat. # 30239 (ea.)

Method 505 (Organohalide Pesticides & PCBs)

505 Organohalide Pesticide Mix (16 components)

aldrin	heptachlor
alachlor	heptachlor epoxide (isomer B)
atrazine	hexachlorobenzene
γ -BHC (lindane)	hexachlorocyclopentadiene
α -chlordane	methoxychlor
γ -chlordane	cis-nonachlor
die�din	trans-nonachlor
endrin	simazine
2,000 μ g/mL each in methanol, 1mL/ampul	
	cat. # 32024 (ea.)

Toxaphene Solutions

1,000 μ g/mL in hexane, 1mL/ampul	cat. # 32005 (ea.)
2,000 μ g/mL in methanol, 1mL/ampul	cat. # 32015 (ea.)
5,000 μ g/mL in isoctane, 1mL/ampul	cat. # 32071 (ea.)

Method 506 (Phthalate & Adipate Esters)

506 Calibration Mix (7 components)

benzyl butyl phthalate	di-n-octyl phthalate
bis(2-ethylhexyl)adipate	diethylphthalate
bis(2-ethylhexyl)phthalate	dimethylphthalate
di-n-butylphthalate	
1,000 μ g/mL in isoctane, 1mL/ampul	cat. # 31845 (ea.)

506 Laboratory Performance Check Mix (7 components)

benzyl butyl phthalate	250 μ g/mL	di-n-octyl phthalate	650
bis(2-ethylhexyl)adipate	1,200	diethylphthalate	100
bis(2-ethylhexyl)phthalate	250	dimethylphthalate	100
di-n-butylphthalate	100		
In P&T methanol, 1mL/ampul		cat. # 31844 (ea.)	

free data

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500 Series Methods

Method 507 (Nitrogen & Phosphorus Pesticides)

Organonitrogen Pesticide Mix #1 (Rev), Method 525.2

(37 components)

alachlor	molinate
ametryn	napropamide (Devrinol)
atraton	norflurazon
atrazine	pebulate
bromacil	prometon
butachlor	prometryne
butylate	pronamide (propyzamide)
chlorpropham	propachlor
cyanazine (Bladex)	propazine
cycloate	simazine
diphenamid	simetryn
EPTC	tebuthiuron
etridiazole (Terrazole)	terbacil
fenarimol	terbutryn
fluridone (Sonar)	triadimefon
hexazinone (Velpar)	tricyclazole (Beam)
metolachlor	trifluralin
metribuzin	vernolate
MGK-264	

500µg/mL each in acetone, 1mL/ampul

cat. # 33012 (ea.)

Organophosphorus Pesticide Mix #1 (Rev), Method 525.2

(7 components)

chlorpyrifos (Dursban)	methyl paraoxon (parathion methyl-O-analog)
dichlorvos (DDVP)	mevinphos (phosdrin)
disulfoton sulfone	stirofos (tetrachlorvinphos)
ethoprop (ethoprophos)	

500µg/mL each in acetone, 1mL/ampul

cat. # 33013 (ea.)

Method 525.2 Nitrogen/Phosphorus Pesticide Mix #2

(6 components)

carboxin	fenamiphos
diazinon	merphos
disulfoton	terbufos

1,000µg/mL each in acetone, 1mL/ampul

cat. # 32423 (ea.)

Method 508, 508.1, 508A (Chlorinated Pesticides)

508.1 Internal Standard

pentachloronitrobenzene

100µg/mL in ethyl acetate, 1mL/ampul

cat. # 32091 (ea.)

508.1 Surrogate

4,4'-dibromobiphenyl

500µg/mL in ethyl acetate, 1mL/ampul

cat. # 32092 (ea.)

508.1 GC Degradation Check Mix

4,4'-DDT endrin

100µg/mL each in ethyl acetate, 1mL/ampul

cat. # 32093 (ea.)

did you know?

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Method 508, 508.1, 508A (Chlorinated Pesticides)

cont'd

508 Performance Check Mix

δ-BHC	0.4µg/mL	chlorpyrifos	0.02
chlorothalonil	0.5	DCPA (Dacthal)	0.5
At concentrations listed in methyl <i>tert</i> -butyl ether, 1mL/ampul			

cat. # 32045 (ea.)

508.1 Calibration Mix #1 (17 components)

aldrin	endosulfan I
α-BHC	endosulfan II
β-BHC	endosulfan sulfate
δ-BHC	endrin
γ-BHC (lindane)	endrin aldehyde
4,4'-DDD	heptachlor
4,4'-DDE	heptachlor epoxide (isomer B)
4,4'-DDT	methoxychlor
dieldrin	

500µg/mL each in ethyl acetate, 1mL/ampul

cat. # 32094 (ea.)

508.1 Calibration Mix #2 (11 components)

chlorbenzilate	hexachlorobenzene
α-chlordane	cis-permethrin*
γ-chlordane	trans-permethrin*
chlorneb	propachlor
DCPA (Dacthal)	trifluralin
etridiazole	

500µg/mL each in ethyl acetate, 1mL/ampul

cat. # 32095 (ea.)

*1,000µg/mL total permethrin. Exact content of each isomer listed on certificate of analysis.

508.1 Calibration Mix #3 (8 components)

alachlor	hexachlorocyclopentadiene
atrazine	metolachlor
chlorthalonil	metribuzin
cyanazine	simazine

500µg/mL each in ethyl acetate, 1mL/ampul

cat. # 32096 (ea.)

Toxaphene Solutions

1,000µg/mL in hexane, 1mL/ampul

cat. # 32005 (ea.)

2,000µg/mL in methanol, 1mL/ampul

cat. # 32015 (ea.)

5,000µg/mL in isoctane, 1mL/ampul

cat. # 32071 (ea.)

Organochlorine Pesticide System Evaluation Mix

4,4'-DDT 200µg/mL

100µg/mL

In methyl *tert*-butyl ether, 1mL/ampul

cat. # 32417 (ea.)

Decachlorobiphenyl, 508A

200µg/mL in acetone, 1mL/ampul

cat. # 32029 (ea.)

200µg/mL in acetone, 5mL/ampul

cat. # 32030 (ea.)

10µg/mL in isoctane, 1mL/ampul

cat. # 32289 (ea.)

Method 508, 508.1, 508A (Chlorinated Pesticides)
cont'd

508.1 Pesticide Kit

32045: 508 Performance Check Mix
 32091: 508.1 Internal Standard Mix
 32092: 508.1 Surrogate Mix
 32093: 508.1 GC Degradation Check Mix
 32094: 508.1 Calibration Mix #1
 32095: 508.1 Calibration Mix #2
 32096: 508.1 Calibration Mix #3

Contains 1mL each of these mixtures.

cat. # 32097 (kit)



Method 515, 515.4 (Chlorinated Acid Herbicides)

Herbicide Internal Standard

4,4'-dibromo-octafluorobiphenyl

250 μ g/mL in hexane, 1mL/ampul

cat. # 32053 (ea.)

2,000 μ g/mL in methyl *tert*-butyl ether, 1mL/ampul

cat. # 31856 (ea.)

Herbicide Surrogate

Free Acid Form:

2,4-dichlorophenylacetic acid (DCAA)

200 μ g/mL in methanol, 1mL/ampul

cat. # 32049 (ea.)

1,000 μ g/mL in acetone, 1mL/ampul

cat. # 32439 (ea.)

Derivatized Form:

2,4-dichlorophenyl acetic acid methyl ester (DCAA methyl ester)

200 μ g/mL in hexane, 1mL/ampul

cat. # 32050 (ea.)

Herbicide Lab Performance Check Mix

dinoseb methyl ether	4 μ g/mL
DCAA methyl ester	500
4,4'-dibromo-octafluorobiphenyl	250
3,5-dichlorobenzoic acid methyl ester	600
4-nitroanisole	1,600

In methyl *tert*-butyl ether, 1mL/ampul

cat. # 32063 (ea.)

Herbicide Mix #1 (7 components)

Free Acid Form:

2,4-D	dicamba
2,4-DB	dichlorprop
2,4,5-T	dinoseb
2,4,5-TP	

200 μ g/mL each in methanol, 1mL/ampul

cat. # 32054 (ea.)

Derivatized Form:

2,4-D methyl ester	dicamba methyl ester
2,4-DB methyl ester	dichlorprop methyl ester
2,4,5-T methyl ester	dinoseb methyl ester
2,4,5-TP methyl ester	

200 μ g/mL each in hexane, 1mL/ampul

cat. # 32055 (ea.)

Method 515, 515.4 (Chlorinated Acid Herbicides)
cont'd

Herbicide Mix #2

Free Acid Form:

dalapon

2,000 μ g/mL in methanol, 1mL/ampul

cat. # 32056 (ea.)

Derivatized Form:

dalapon methyl ester

2,000 μ g/mL in hexane, 1mL/ampul

cat. # 32057 (ea.)

Herbicide Mix #4 (8 components)

Free Acid Form:

acifluorfen

3,5-dichlorobenzoic acid

bentazon

4-nitrophenol

chloramben

pentachlorophenol

DCPA diacid

picloram

200 μ g/mL each in methanol, 1mL/ampul

cat. # 32061 (ea.)

Derivatized Form:

acifluorfen methyl ester

3,5-dichlorobenzoic acid methyl ester

bentazon methyl ester

4-nitroanisole

chloramben methyl ester

pentachloroanisole

DCPA (Dacthal)

picloram methyl ester

200 μ g/mL each in hexane, 1mL/ampul

cat. # 32062 (ea.)

515.4 Calibration Mix (16 components)

acifluorfen (Blazer)	50 μ g/mL	3,5-dichlorobenzoic acid	50
bentazon	100	dichlorprop	100
chloramben	50	dinoseb	100
2,4-D	100	pentachlorophenol	10
dalapon	100	picloram	50
2,4-DB	100	quinclorac	50
DCPA diacid	50	2,4,5-T	25
(tetrachloroterephthalic acid)	50	2,4,5-TP (Silvex)	25
dicamba	50		
In acetone, 1mL/ampul			
		cat. # 32443 (ea.)	

515.4 Methylated Chlorinated Acids Mix (16 components)

acifluorfen methyl ester	50 μ g/mL	dichlorprop methyl ester	100
bentazon methyl ester	100	dinoseb methyl ether	100
chloramben methyl ester	50	pentachloroanisole	10
dalapon methyl ester	100	picloram methyl ester	50
2,4-D methyl ester	100	quinclorac methyl ester	50
2,4-DB methyl ester	100	2,4,5-T methyl ester	25
DCPA (Dacthal)	100	2,4,5-TP (Silvex) methyl ester	25
dicamba methyl ester	50		
3,5-dichlorobenzoic acid methyl ester	50		
In methyl <i>tert</i> -butyl ether, 1mL/ampul			
		cat. # 32444 (ea.)	

also available

Additional chlorinated acid herbicides mixes:

see Method 555, page 419.

and Method 8321, page 440.

500 Series Methods

Method 521 (Nitrosamines)

Nitrosamine Calibration Mix, Method 521 (7 components)

N-nitrosodiemethylamine	N-nitrosomethylmethyamine
N-nitrosodimethylamine	N-nitrosopiperidine
N-nitrosodi- <i>n</i> -butylamine	N-nitrosopyrrolidine
N-nitrosodi- <i>n</i> -propylamine	
1,000 μ g/mL each in methylene chloride, 1mL/ampul	
cat. # 31898 (ea.)	

N-Nitrosodimethylamine-d6

N-nitrosodimethylamine-d6	α,α,α -trifluorotoluene
1,000 μ g/mL in methylene chloride, 1mL/ampul	2,500 μ g/mL each in P&T methanol, 1mL/ampul

cat. # 33910 (ea.)

N-Nitrosodi-*n*-propylamine-d14

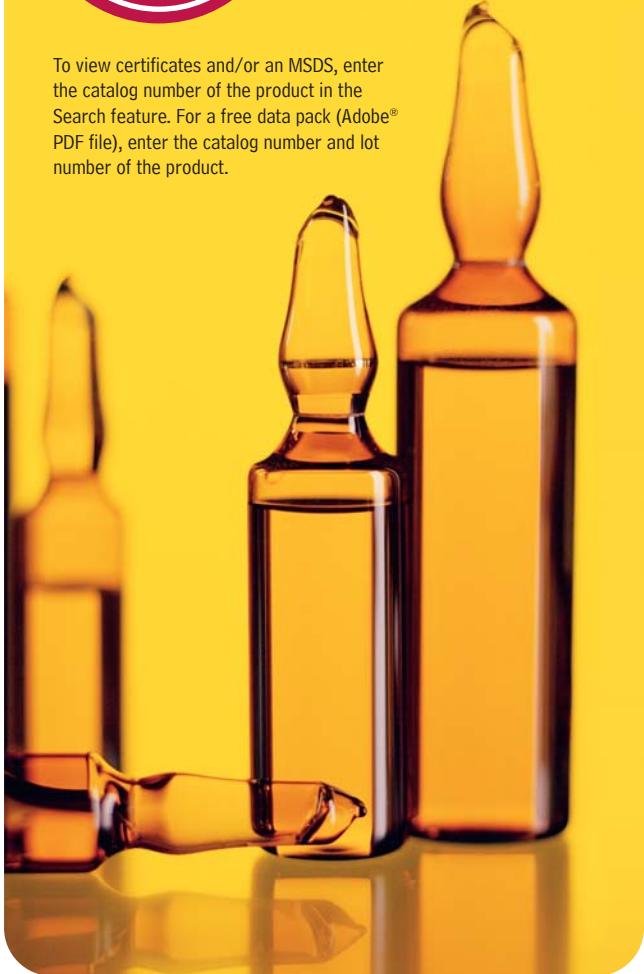
N-nitrosodi- <i>n</i> -propylamine-d14	1,2-dichlorobenzene-d4
1,000 μ g/mL in methylene chloride, 1mL/ampul	2,000 μ g/mL in P&T methanol, 1mL/ampul

cat. # 33911 (ea.)

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Method 524.1, 524.2 (Volatile Organics)

524 Internal Standard/Surrogate Mix

4-bromofluorobenzene	fluorobenzene
1,2-dichlorobenzene-d4	
2,000 μ g/mL each in P&T methanol, 1mL/ampul	cat. # 30201 (ea.)

Surrogate Standard

4-bromofluorobenzene	α,α,α -trifluorotoluene
2,500 μ g/mL each in P&T methanol, 1mL/ampul	cat. # 30484 (ea.)

524.2 Surrogate Standard

1-bromo-4-fluorobenzene	1,2-dichlorobenzene-d4
2,000 μ g/mL in P&T methanol, 1mL/ampul	cat. # 30607 (ea.)

PFTBA (MS Tuning Compound)

perfluorotributylamine (PFTBA)	
Neat, 1mL/ampul	cat. # 30482 (ea.)
Neat, 1g	cat. # 33027 (ea.)

No data pack available.

Volatiles MegaMix® with Gases (60 components)

benzene	2,2-dichloropropane
bromobenzene	1,1-dichloropropene
bromochloromethane	<i>cis</i> -1,3-dichloropropene
bromodichloromethane	<i>trans</i> -1,3-dichloropropene
bromoform	ethylbenzene
bromomethane (methyl bromide)	hexachloro-1,3-butadiene
<i>n</i> -butylbenzene	(hexachlorobutadiene)
<i>sec</i> -butylbenzene	isopropylbenzene (cumene)
<i>tert</i> -butylbenzene	4-isopropyltoluene (<i>p</i> -cymene)
carbon tetrachloride	methylene chloride (dichloromethane)
chlorobenzene	naphthalene
chloroethane (ethyl chloride)	<i>n</i> -propylbenzene
chloroform	styrene
chloromethane (methyl chloride)	1,1,1,2-tetrachloroethane
2-chlorotoluene	1,1,2,2-tetrachloroethane
4-chlorotoluene	tetrachloroethene
dibromochloromethane	toluene
1,2-dibromo-3-chloropropane (DBCP)	1,2,3-trichlorobenzene
1,2-dibromoethane (EDB)	1,2,4-trichlorobenzene
dibromomethane	1,1,1-trichloroethane
1,2-dichlorobenzene	1,1,2-trichloroethane
1,3-dichlorobenzene	trichloroethene
1,4-dichlorobenzene	trichlorofluoromethane (CFC-11)
dichlorodifluoromethane (CFC-12)	1,2,3-trichloropropane
1,1-dichloroethane	1,2,4-trimethylbenzene
1,2-dichloroethane	1,3,5-trimethylbenzene
1,1-dichloroethene	vinyl chloride
<i>cis</i> -1,2-dichloroethene	<i>m</i> -xylene
<i>trans</i> -1,2-dichloroethene	<i>o</i> -xylene
1,2-dichloropropane	<i>p</i> -xylene
1,3-dichloropropane	

200 μ g/mL each in P&T methanol, 1mL/ampul
cat. # 30603 (ea.)

Method 524.1, 524.2 (Volatile Organics) cont'd

Drinking Water VOA MegaMix®, 524.2 Rev. 4.1 (73 components)

acrylonitrile	<i>trans</i> -1,3-dichloropropene
allyl chloride	diethyl ether (ethyl ether)
benzene	ethylbenzene
bromobenzene	ethyl methacrylate
bromoform	hexachloro-1,3-butadiene
<i>n</i> -butylbenzene	hexachloroethane
<i>sec</i> -butylbenzene	iodomethane (methyl iodide)
<i>tert</i> -butylbenzene	isopropylbenzene (cumene)
carbon disulfide	4-isopropyltoluene (<i>p</i> -cymene)
carbon tetrachloride	methacrylonitrile
chloroacetonitrile	methyl acrylate
chlorobenzene	methyl <i>tert</i> -butyl ether (MTBE)
1-chlorobutane	methylene chloride (dichloromethane)
chlorodibromomethane	methyl methacrylate
(dibromochloromethane)	naphthalene
chloroform	nitrobenzene
2-chlorotoluene	2-nitropropane
4-chlorotoluene	pentachloroethane
1,2-dibromo-3-chloropropane (DBCP)	propionitrile (ethylcyanide)
1,2-dibromoethane	<i>n</i> -propylbenzene
(ethylene dibromide)	styrene
dibromomethane	1,1,1,2-tetrachloroethane
1,2-dichlorobenzene	1,1,2,2-tetrachloroethane
1,3-dichlorobenzene	tetrachloroethene
1,4-dichlorobenzene	tetrahydrofuran
<i>trans</i> -1,4-dichloro-2-butene	toluene
1,1-dichloroethane	1,2,3-trichlorobenzene
1,2-dichloroethane	1,2,4-trichlorobenzene
1,1-dichloroethene	1,1,1-trichloroethane
<i>cis</i> -1,2-dichloroethene	1,1,2-trichloroethane
<i>trans</i> -1,2-dichloroethene	trichloroethene
1,2-dichloropropane	1,2,3-trichloropropane
1,3-dichloropropane	1,2,4-trimethylbenzene
2,2-dichloropropane	1,3,5-trimethylbenzene
1,1-dichloropropene	<i>m</i> -xylene
<i>cis</i> -1,3-dichloropropene	<i>o</i> -xylene
	<i>p</i> -xylene

2,000µg/mL each in P&T methanol, 1mL/ampul
 cat. # 30601 (ea.)

502.2 Calibration Mix #1 (gases)

bromomethane	dichlorodifluoromethane (CFC-12)
chloroethane	trichlorofluoromethane (CFC-11)
chloromethane	vinyl chloride
200µg/mL each in P&T methanol, 1mL/ampul	
	cat. # 30439 (ea.)
2,000µg/mL each in P&T methanol, 1mL/ampul	
	cat. # 30042 (ea.)

Ketones Mix, 524.2 Rev. 4.1 (5 components)

acetone	2-hexanone
2-butanone (MEK)	4-methyl-2-pentanone (MIBK)
1,1-dichloro-2-propanone	
5,000µg/mL each in 90% P&T methanol:10% water, 1mL/ampul	
	cat. # 30602 (ea.)



also available

SPE Cartridges and Disks
 See pages 356 and 361 for details.

Oxygenates Standard

diisopropyl ether (DIPE)	2,000µg/mL
ethyl- <i>tert</i> -butyl ether (ETBE)	2,000
<i>tert</i> -amyl ethyl ether (TAE)	2,000
<i>tert</i> -amyl methyl ether (TAME)	2,000
<i>tert</i> -butyl alcohol (TBA)	10,000
In P&T methanol, 1mL/ampul	
	cat. # 30619 (ea.)

cat. # 30619 (ea.)

524 Calibration Mix #7 (12 components)

Note: Due to compound interactions, this mixture is a two ampul set.

Ampul 1:

acetone	4-methyl-2-pentanone (MIBK)
2-butanone (MEK)	tetrahydrofuran
2-hexanone	

Ampul 2:

acrylonitrile	methyl methacrylate
allyl chloride	nitrobenzene
ethyl methacrylate	pentachloroethane
methyl acrylate	

2,000µg/mL each in P&T methanol, 1mL/ampul
 cat. # 30202 (ea.)

524 Calibration Mix #8 (12 components)

carbon disulfide	hexachloroethane
chloroacetonitrile	iodomethane (methyl iodide)
1-chlorobutane	methacrylonitrile
<i>trans</i> -1,4-dichloro-2-butene	methyl <i>tert</i> -butyl ether
1,1-dichloroethane	2-nitropropane
1,1-dichloroethene	diethyl ether
<i>cis</i> -1,2-dichloroethene	propionitrile
<i>trans</i> -1,2-dichloroethene	
1,2-dichloropropane	
1,3-dichloropropane	
2,2-dichloropropane	
1,1-dichloropropene	
<i>cis</i> -1,3-dichloropropene	

2,000µg/mL each in P&T methanol, 1mL/ampul
 cat. # 30203 (ea.)



524 Rev. 4.0 Volatile Organics Kit (2,000µg/mL)

30201: 524 Internal Standard/Surrogate Mix	
30042: 502.2 Calibration Mix #1	
30043: 502.2 Calibration Mix #2	
30044: 502.2 Calibration Mix #3	
30045: 502.2 Calibration Mix #4	
30046: 502.2 Calibration Mix #5	
30047: 502.2 Calibration Mix #6	
30202: 524 Calibration Mix #7	
30203: 524 Calibration Mix #8	

Contains 1mL each of these mixtures.

cat. # 30204 (kit)



524 Rev. 4.0 VOA Kit #2 (2,000µg/mL)

30042: 502.2 Calibration Mix #1	
30431: 502.2 MegaMix	
30202: 524 Calibration Mix #7	
30203: 524 Calibration Mix #8	
30201: 524 Surrogate/Internal Standard Mix	

Contains 1mL each of these mixtures.

cat. # 30447 (kit)



Note: For a listing of additional individual VOA surrogate and internal standards, see page 423.

did you know?

We have more than 2,000 pure, characterized, neat compounds in our inventory! If you do not see the EXACT mixture you need listed on any of these pages, contact us for a custom standard.

500 Series Methods

Method 525, 525.1, 525.2 (Semivolatile Organics)

Method 525.2 Internal Standard Mix

acenaphthene-d10 phenanthrene-d10
 chrysene-d12
 1,000 μ g/mL each in acetone, 1mL/ampul
 cat. # 31825 (ea.)

Method 525.2 Surrogate Standard Mix

2-nitro-*m*-xylene pyrene-d10
 perylene-d12 triphenylphosphate
 1,000 μ g/mL each in acetone, 1mL/ampul
 cat. # 31826 (ea.)

Method 525.2 Herbicide Analytes

Volume is 1mL/ampul. Concentration is μ g/mL.

Compound	Solvent	Conc.	cat.# (ea.)	price
acetochlor	M	100	33208	
alachlor	M	100	33207	
metolachlor	M	100	33209	

M=methanol

Method 525.2 Herbicide Mix

acetochlor metolachlor
 alachlor
 100 μ g/mL in methanol, 1mL/ampul
 cat. # 33211 (ea.)

**Method 525.2 Semivolatile Mix (revised)** (28 components)

acenaphthylene	di- <i>n</i> -butylphthalate
anthracene	2,4-dinitrotoluene
benzo(a)anthracene	2,6-dinitrotoluene
benzo(a)pyrene	di- <i>n</i> -octylphthalate
benzo(b)fluoranthene	fluoranthene
benzo(ghi)perylene	fluorene
benzo(k)fluoranthene	hexachlorobenzene
benzylbutylphthalate	hexachlorocyclopentadiene
bis(2-ethylhexyl)adipate	indeno(1,2,3- <i>cd</i>)pyrene
bis(2-ethylhexyl)phthalate	isophorone
chrysene	naphthalene
dibenzo(a,h)anthracene	pentachlorophenol*
diethylphthalate	phenanthrene
dimethylphthalate	pyrene

1,000 μ g/mL each in acetone, 1mL/ampul
 cat. # 31899 (ea.)

*pentachlorophenol at 4,000 μ g/mL.

Method 525.2 PCB Congener Mix (8 components)

2-chlorobiphenyl (BZ#1)
 2,3-dichlorobiphenyl (BZ#5)
 2,4,5-trichlorobiphenyl (BZ#29)
 2,2',4,4'-tetrachlorobiphenyl (BZ#47)
 2,2',3,4,6-pentachlorobiphenyl (BZ#98)
 2,2',4,4',5,6-hexachlorobiphenyl (BZ#154)
 2,2',3,3',4,4'-heptachlorobiphenyl (BZ#171)
 2,2',3,3',4,5',6,6'-octachlorobiphenyl (BZ#200)
 200 μ g/mL each in acetone, 1mL/ampul
 cat. # 32420 (ea.)

Organochlorine Pesticide Mix AB # 3 (20 components)

aldrin	dieleadrin
α -BHC	endosulfan I
β -BHC	endosulfan II
δ -BHC	endosulfan sulfate
γ -BHC (lindane)	endrin
α -chlordane	endrin aldehyde
γ -chlordane	endrin ketone
4,4'-DDD	heptachlor
4,4'-DDE	heptachlor epoxide (isomer B)
4,4'-DDT	methoxychlor

2,000 μ g/mL each in hexane:toluene (1:1), 1mL/ampul
 cat. # 32415 (ea.)

Organonitrogen Pesticide Mix #1 (Rev), Method 525.2

(37 components)

alachlor	molinate
ametryn	napropamide (Devrinol)
atraton	norflurazon
atrazine	pebulate
bromacil	prometon
butachlor	prometryne
butylate	pronamide (propyzamide)
chlorpropham	propachlor
cyanazine (Bladex)	propazine
cycloate	simazine
diphenamid	simetryn
EPTC	tebuthiuron
etridiazole (Terrazole)	terbacil
fenarimol	terbutryn
fluridone (Sonar)	triadimenfon
hexazinone (Velpar)	tricyclazole (Beam)
metolachlor	trifluralin
metribuzin	vernolate
MGK-264	

500 μ g/mL each in acetone, 1mL/ampul
 cat. # 33012 (ea.)

Organophosphorus Pesticide Mix #1 (Rev), Method 525.2

(7 components)

chlorpyrifos (Dursban)	methyl paraoxon (parathion methyl-O-analog)
dichlorvos (DDVP)	mevinphos (phosdrin)
disulfoton sulfone	stirofos (tetrachlorvinphos)
ethoprop (ethoprophos)	

500 μ g/mL each in acetone, 1mL/ampul
 cat. # 33013 (ea.)

Method 525.2 Nitrogen/Phosphorus Pesticide Mix #2

(6 components)

carboxin	fenamiphos
diazinon	merphos
disulfoton	terbufos

1,000 μ g/mL each in acetone, 1mL/ampul
 cat. # 32423 (ea.)



also available

Try our CLPesticides columns for these applications.

See pages 80-82 for details.

also available

See pages 408-409 for 502.2 MegaMix® and 502.2 calibration mixes.

Method 525, 525.1, 525.2 (Semivolatile Organics)
cont'd

Organochlorine Pesticide Mix #2 (Rev), Method 525.2

(8 components)

chlorobenzilate	heptachlor epoxide (isomer A)
chloroneb	<i>trans</i> -nonachlor
chlorothalonil	<i>cis</i> -permethrin
DCPA (Dacthal)	<i>trans</i> -permethrin
500 μ g/mL each in acetone, 1mL/ampul	
	cat. # 33011 (ea.)

Method 525.2 Fortification Recovery Standard

p-terphenyl-d14

1,000 μ g/mL in methylene chloride, 1mL/ampul	
	cat. # 31828 (ea.)

Method 525.2 GC/MS Performance Check Mix

4,4'-DDT

DFTPP (decafluorotriphenylphosphine)	
endrin	

1,000 μ g/mL each in acetone, 1mL/ampul

cat. # 31827 (ea.)

Method 526 (Semivolatile Organics)

Internal Standard Mix, EPA 526

acenaphthene-d10	phenanthrene-d10
chrysene-d12	
500 μ g/mL each in acetone, 1mL/ampul	

cat. # 31692 (ea.)

Surrogate Standard Mix, EPA 526

2-nitro- <i>m</i> -xylene	triphenylphosphate
500 μ g/mL each in acetone, 1mL/ampul	

cat. # 31693 (ea.)

Semivolatile Calibration Mix, EPA 526 (11 components)

acetochlor	fonofos
cyanazine	nitrobenzene
diazinon	prometon
2,4-dichlorophenol	terbufos
1,2-diphenylhydrazine	2,4,6-trichlorophenol
disulfoton	
200 μ g/mL each in ethyl acetate, 1mL/ampul	

cat. # 31691 (ea.)

Antifoam Agent for Purge & Trap Samples

Foam generated as purge gas passes through a sample can enter the analytical trap, and possibly into the GC column. Our silica-containing antifoam agent is effective over a wide pH range, and will not conflict with chromatography of target analytes.

Neat, 1mL/ampul

cat. # 31822 (ea.)

No data pack available.

Method 527 (Pesticides & Flame Retardants-GC/MS)

Internal Standard, Method 527

acenaphthene-d10	phenanthrene-d10
chrysene-d12	
500 μ g/mL each in acetone, 1mL/ampul	cat. # 33010 (ea.)

Method 525.2 Internal Standard Mix

acenaphthene-d10	phenanthrene-d10
chrysene-d12	
1,000 μ g/mL each in acetone, 1mL/ampul	cat. # 31825 (ea.)

Surrogate Standard, Method 527

1,3-dimethyl-2-nitrobenzene	triphenylphosphate
perylene-d12	
500 μ g/mL each in acetone, 1mL/ampul	cat. # 33009 (ea.)

Method 525.2 Surrogate Standard Mix

2-nitro- <i>m</i> -xylene	pyrene-d10
perylene-d12	triphenylphosphate
1,000 μ g/mL each in acetone, 1mL/ampul	cat. # 31826 (ea.)

PBDE Mix

2,2',4,4',5-pentabromodiphenyl ether (BDE-99)	
2,2',4,4',5,5'-hexabromobiphenyl	
2,2',4,4',5,5'-hexabromodiphenyl ether (BDE-153)	
2,2',4,4',6-pentabromodiphenyl ether (BDE-100)	
2,2',4,4'-tetrabromodiphenyl ether (BDE-47)	
50 μ g/mL each in isoctane:ethyl acetate (4:1), 1mL/ampul	

cat. # 33098 (ea.)

Pesticides Mix #1, Method 527 (16 components)

atrazine	mirex
bifenthrin	nitrofen
esbiol (Bioallethrin, S-cyclopentyl isomer)	norflurazon
bromacil	oxychlordane
esfenvalerate	prometryne
fenvvalorate	propazine
hexazinone	thiobencarb
kepone	vinclozolin
500 μ g/mL each in ethyl acetate, 1mL/ampul	

cat. # 33007 (ea.)

Pesticides Mix #2, Method 527

chloropyrifos (Dursban)	parathion
dimethoate	terbufos sulfone
malathion	
500 μ g/mL each in ethyl acetate, 1mL/ampul	

cat. # 33008 (ea.)

free data

Available on Our Website: Lot Certificates, Data Packs, and MSDSs

For complete information detailing manufacturing and testing for Restek inventoried reference standards, visit our website at www.restek.com/datapacks. To view certificates and/or an MSDS, enter the catalog number of the product in the Search feature. For a free data pack (Adobe® PDF file), enter the catalog number and lot number of the product.

500 Series Methods

Method 528 (Phenols)

Internal Standard Mix, EPA 528

3-nitro-o-xylene	1,000 μ g/mL
2,3,4,5-tetrachlorophenol	2,000
In methylene chloride, 1mL/ampul	

cat. # 31696 (ea.)

Surrogate Standard Mix, EPA 528

2-chlorophenol-d4	1,000 μ g/mL
2,4-dimethylphenol-3,5,6-d3	1,000
2,4,6-tribromophenol	2,000

In methanol, 1mL/ampul

cat. # 31697 (ea.)

Phenol Calibration Mix, EPA 528 (12 components)

4-chloro-3-methylphenol	2-methyl-4,6-dinitrophenol
2-chlorophenol	2-nitrophenol
<i>o</i> -cresol	4-nitrophenol
2,4-dichlorophenol	pentachlorophenol
2,4-dimethylphenol	phenol
2,4-dinitrophenol	2,4,6-trichlorophenol
2,000 μ g/mL each in methylene chloride, 1mL/ampul	
	cat. # 31694 (ea.)

Phenols Fortification Mix, EPA 528 (12 components)

4-chloro-3-methylphenol	100 μ g/mL	2-methyl-4,6-dinitrophenol	500
2-chlorophenol	100	2-nitrophenol	100
<i>o</i> -cresol	100	4-nitrophenol	500
2,4-dichlorophenol	100	pentachlorophenol	500
2,4-dimethylphenol	100	phenol	100
2,4-dinitrophenol	500	2,4,6-trichlorophenol	100

In methanol, 1mL/ampul

cat. # 31695 (ea.)

Method 529 (Nitroaromatics & Nitramines)**529 Internal Standard Mix**

3,4-dinitrotoluene	
2,000 μ g/mL in ethyl acetate, 1mL/ampul	cat. # 33901 (ea.) inquire

529 Surrogate Standard #1

2-nitromesitylene	
2,000 μ g/mL in methanol, 1mL/ampul	cat. # 33902 (ea.)

529 Surrogate Standard #2

1,2,4-trimethyl-5-nitrobenzene	
2,000 μ g/mL in methanol, 1mL/ampul	cat. # 33903 (ea.)

529 Surrogate Standard #3

nitrobenzene-d5	
2,000 μ g/mL in methylene chloride, 1mL/ampul	cat. # 33904 (ea.)

Nitroaromatics and Nitramine Explosives in Drinking Water

(14 components)

3,5-dinitroaniline	2-nitrotoluene
1,3-dinitrobenzene	3-nitrotoluene
2-amino-4,6-dinitrotoluene	4-nitrotoluene
4-amino-2,6-dinitrotoluene	RDX
2,4-dinitrotoluene	tetryl
2,6-dinitrotoluene	1,3,5-trinitrobenzene
nitrobenzene	2,4,6-trinitrotoluene
1,000 μ g/mL each in acetonitrile, 1mL/ampul	cat. # 33900 (ea.) inquire

free data**Available on Our Website: Lot Certificates, Data Packs, and MSDSs**

For complete information detailing manufacturing and testing for Restek inventoried reference standards, visit our website at www.restek.com/datapacks. To view certificates and/or an MSDS, enter the catalog number of the product in the Search feature. For a free data pack (Adobe® PDF file), enter the catalog number and lot number of the product.

**did you know?**

We have more than 2,000 pure, characterized, neat compounds in our inventory! If you do not see the EXACT mixture you need listed on any of these pages, contact us for a custom standard.

Method 531.1, 531.2 (Carbamates)

Internal Standard

4-bromo-3,5-dimethylphenyl-N-methylcarbamate (BDMC)
 100 μ g/mL in methanol, 1mL/ampul
 cat. # 32274 (ea.)

531.1 Performance Check Mix

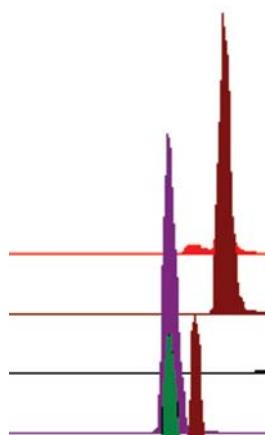
aldicarb sulfoxide	100 μ g/mL	3-hydroxycarbofuran	2
BDMC	10	methiocarb	
In methanol, 1mL/ampul			
cat. # 32275 (ea.)			

531.1 Carbamate Pesticide Calibration Mixture (10 components)

aldicarb	3-hydroxycarbofuran
aldicarb sulfone	methiocarb
aldicarb sulfoxide	methomyl
carbaryl (Sevin)	oxamyl
carbofuran	propoxur (Baygon)
100 μ g/mL each in methanol, 1mL/ampul	
cat. # 32273 (ea.)	

531.2 Carbamate Pesticide Calibration Mixture (11 components)

aldicarb	methiocarb
aldicarb sulfone	methomyl
aldicarb sulfoxide	1-naphthol
carbaryl (Sevin)	oxamyl
carbofuran	propoxur (Baygon)
3-hydroxycarbofuran	
100 μ g/mL in acetonitrile, 1mL/ampul	
cat. # 32435 (ea.)	



also available

See the LC Applications section for carbamate pesticides chromatograms page 507.

Method 532 (Phenylurea Pesticides)

Phenylurea Surrogate Mixture

carbazole monuron
 500 μ g/mL each in methanol:acetonitrile (50:50), 1mL/ampul
 cat. # 32433 (ea.)

Phenylurea Pesticide Mixture (8 components)

diflubenzuron	propanil
diuron	siduron
fluometuron	tebuthiuron
linuron	thidiazuron
200 μ g/mL each in acetonitrile:acetone (90:10), 1mL/ampul	
cat. # 32434 (ea.)	

Method 535 (Chloroacetanilide Herbicide Degradates)

Method 535 Internal Standard

butachlor ESA sodium salt
 100 μ g/mL in methanol, 1mL/ampul
 cat. # 33202 (ea.)



Method 535 Surrogate Standard

dimethachlor ESA sodium salt
 100 μ g/mL in methanol, 1mL/ampul
 cat. # 33203 (ea.)



Method 535 Individual Compounds

Volume is 1mL/ampul. Concentration is μ g/mL.

Compound	Solvent	Conc.	cat.# (ea.)	DICCO
acetochlor ESA sodium salt	M	100	33092	
acetochlor OA	M	100	33094	
alachlor ESA sodium salt	M	100	33096	
alachlor OA	M	100	33099	
metolachlor ESA sodium salt	M	100	33200	
metolachlor OA	M	100	33201	

M=methanol

Method 547 (Glyphosate)

Glyphosate Standard

glyphosate
 1,000 μ g/mL in DI water, 1mL/ampul
 cat. # 32426 (ea.)

1,000 μ g/mL in DI water, 5mL/ampul
 cat. # 32427 (ea.)

AMPA (glyphosate metabolite)

aminomethyl phosphonic acid (AMPA)
 100 μ g/mL in DI water, 1mL/ampul
 cat. # 32428 (ea.)

Method 549.2 (Paraquat/Diquat)

Paraquat & Diquat Calibration Mix

diquat dibromide paraquat dichloride
 1,000 μ g/mL each in water, 1mL/ampul
 cat. # 32437 (ea.)

Ultra Quat Reagent Solution

Use with Ultra Quat HPLC column. Dilute to 1 liter water, per instructions.

In water, 20mL/bottle
 cat. # 32441 (ea.)

500 Series Methods

Method 551.1 (Chlorinated Pesticides & Herbicides)

551.1 Internal Standard

1-bromo-4-fluorobenzene

1,000 μ g/mL in acetone, 1mL/ampul

cat. # 31854 (ea.)

551.1 Surrogate Standard

decafluorobiphenyl

1,000 μ g/mL in acetone, 1mL/ampul

cat. # 31855 (ea.)

Method 551.1 Pesticide/Herbicide Mix (16 components)

alachlor	heptachlor		
atrazine	heptachlor epoxide (isomer B)		
bromacil	hexachlorobenzene		
cyanazine (Bladex)	hexachlorocyclopentadiene		
endrin	methoxychlor		
endrin aldehyde	metolachlor		
endrin ketone	simazine		
γ -BHC (lindane)	trifluralin		
1,000 μ g/mL each in acetone, 1mL/ampul			
cat. # 32438 (ea.)			

Method 551.1 MTBE Lab Performance Check Mix

(7 components)

alachlor	83 μ g/mL	endrin	30
γ -BHC (lindane)	0.2	hexachlorocyclopentadiene	20
bromacil	83	trichloroethylene	30
bromodichloromethane	30		

In methyl *tert*-butyl ether, 1mL/ampul

cat. # 32440 (ea.)

Disinfection By-Product and Chlorinated Solvents Mix

(19 components)

bromochloroacetonitrile	dichloroacetonitrile		
bromodichloromethane	1,1-dichloro-2-propane		
bromoform	tetrachloroethylene		
carbon tetrachloride	trichloroacetonitrile		
chloroform	1,1,1-trichloroethane		
chloropicrin	1,1,2-trichloroethane		
dibromoacetonitrile	trichloroethylene		
dibromochloromethane	1,2,3-trichloropropane		
1,2-dibromo-3-chloropropane (DBCP)	1,1,1-trichloro-2-propanone		
1,2-dibromoethane (EDB)			
2,000 μ g/mL each in acetone, 1mL/ampul			
cat. # 30615 (ea.)			

Chloral Hydrate

chloral hydrate

1,000 μ g/mL in acetonitrile, 1mL/ampul

cat. # 30609 (ea.)

free data**Available on Our Website: Lot Certificates, Data Packs, and MSDSs**For complete information detailing manufacturing and testing for Restek inventoried reference standards, visit our website at www.restek.com/datapacks.

To view certificates and/or an MSDS, enter the catalog number of the product in the Search feature. For a free data pack (Adobe® PDF file), enter the catalog number and lot number of the product.

Method 551.1 (Chlorinated Pesticides & Herbicides)*cont'd***Disinfection By-Product Mix** (7 components)

bromochloroacetonitrile	1,1-dichloro-2-propanone
chloropicrin	trichloroacetonitrile
dibromoacetonitrile	1,1,1-trichloro-2-propanone
dichloroacetonitrile	

2,000 μ g/mL each in acetone, 1mL/ampul

cat. # 30616 (ea.)

Laboratory Performance Check Solution/ Pentane Extract

(7 components)

alachlor	83 μ g/mL	endrin	30
γ -BHC	0.2	hexachlorocyclopentadiene	20
bromacil	83	trichloroethylene	30
bromodichloromethane	30		
In pentane, 1mL/ampul			
		cat. # 32442 (ea.)	

Methods 552, 552.1, 552.2, 552.3 (Haloacetic Acids and Dalapon)**Haloacetic Acid Mix** (9 components)

bromochloroacetic acid	monobromooacetic acid
bromodichloroacetic acid	monochloroacetic acid
chlorodibromooacetic acid	tribromoacetic acid
dibromoacetic acid	trichloroacetic acid
dichloroacetic acid	

1,000 μ g/mL each in methyl *tert*-butyl ether, 1mL/ampul

cat. # 31896 (ea.)

Haloacetic Acid Methyl Ester Mix (9 components)

methyl bromochloroacetate	methyl monobromoacetate
methyl bromodichloroacetate	methyl monochloroacetate
methyl chlorodibromoacetate	methyl tribromoacetate
methyl dibromoacetate	methyl trichloroacetate
methyl dichloroacetate	

1,000 μ g/mL each in methyl *tert*-butyl ether, 1mL/ampul

cat. # 31897 (ea.)

Haloacetic Acid Mix #1 (6 components)

bromochloroacetic acid	monobromooacetic acid
dibromoacetic acid	monochloroacetic acid
dichloroacetic acid	trichloroacetic acid

2,000 μ g/mL each in methyl *tert*-butyl ether, 1mL/ampul

cat. # 31644 (ea.)

Haloacetic Acid Methyl Ester Mix #1 (6 components)

methyl bromochloroacetate	methyl monobromoacetate
methyl dibromoacetate	methyl monochloroacetate
methyl dichloroacetate	methyl trichloroacetate
1,000 μ g/mL each in methyl <i>tert</i> -butyl ether, 1mL/ampul	

cat. # 31645 (ea.)

Methods 552, 552.1, 552.2, 552.3 (Haloacetic Acids and Dalapon) cont'd

Haloacetic Acid Mix #2 (9 components)

bromochloroacetic acid	400 μ g/mL	monobromoacetic acid	400
bromodichloroacetic acid	400	monochloroacetic acid	600
chlorodibromoacetic acid	1,000	tribromoacetic acid	2,000
dibromoacetic acid	200	trichloroacetic acid	200
dichloroacetic acid	600		
In methyl <i>tert</i> -butyl ether, 1mL/ampul			
		cat. # 31646 (ea.)	

Haloacetic Acid Methyl Ester Mix #2 (9 components)

methyl bromochloroacetate	400 μ g/mL	methyl dichloroacetate	600
methyl bromodichloroacetate	400	methyl monobromoacetate	400
methyl chlorodibromoacetate	1,000	methyl monochloroacetate	600
methyl dibromoacetate	200	methyl tribromoacetate	2,000
		methyl trichloroacetate	200
In methyl <i>tert</i> -butyl ether, 1mL/ampul			
		cat. # 31647 (ea.)	

Dalapon (2,2-dichloropropionic acid)

dalapon

1,000 μ g/mL in acetonitrile, 1mL/ampul

cat. # 32432 (ea.)

1,000 μ g/mL in methanol, 1mL/ampul

cat. # 32253 (ea.)

2,000 μ g/mL in methanol, 1mL/ampul

cat. # 32056 (ea.)

Dalapon Methyl Ester

dalapon methyl ester

1,000 μ g/mL in methanol, 1mL/ampul

cat. # 32254 (ea.)

2,000 μ g/mL in hexane, 1mL/ampul

cat. # 32057 (ea.)

Internal Standards and Surrogates

Volume is 1mL/ampul. Concentration is μ g/mL.

Compound	Solvent	Conc.	cat.# (ea.)	price
Internal Standard:				
1,2,3-trichloropropane	MTBE	1,000	31648	

Surrogates for Method 552, 552.1:

2,3-dichloropropionic acid	MTBE	1,000	31650
3,5-dichlorobenzoic acid	MTBE	1,000	31652
3,5-dichlorobenzoic acid methyl ester	MTBE	1,000	31649
2,3-dichloropropionic acid methyl ester	MTBE	1,000	31651

Surrogates for Method 552.2:

2-bromopropionic acid	MTBE	1,000	31653
2,3-dibromopropionic acid	MTBE	1,000	31655
methyl 2-bromopropionate	MTBE	1,000	31654
methyl-2,3-dibromopropionate	MTBE	1,000	31656

Surrogates for Method 552.3:

2-bromobutanoic acid	MTBE	2,000	31881
2-bromobutyrate	MTBE	2,000	31882

MTBE = methyl *tert*-butyl ether

Method 555 (Chlorinated Acids)

Chlorinated Acids by HPLC, Mix A (8 components)

acifluorfen (Blazer)	dicamba
bentazon	diclorprop
chloramben	picloram
2,4-D	2,4,5-TP (Silvex)
1,000 μ g/mL each in acetonitrile, 1mL/ampul	
	cat. # 32431 (ea.)

Chlorinated Acids by HPLC, Mix B (8 components)

2,4-DB	MCPP (mecoprop)
3,5-dichlorobenzoic acid	4-nitrophenol
dinoseb	pentachlorophenol
MCPA	2,4,5-T
1,000 μ g/mL each in acetonitrile, 1mL/ampul	
	cat. # 32430 (ea.)

Chlorinated Acid Herbicide Mix

2,4-dichlorophenoxyacetic acid (2,4-D)	2,4,5-TP (Silvex)
1,000 μ g/mL each in acetonitrile, 1mL/ampul	
	cat. # 32429 (ea.)

Drinking Water Odor Standard

Unpleasant odor in drinking water is associated with the growth and decay of microorganisms. The threshold value for these compounds is low (10ppt) and purge and trap analyses usually are used to quantify them.

(+/-)-geosmin 2-methyisoborneol

100 μ g/mL in P&T methanol, 1mL/ampul	cat. # 30608 (ea.)
-------------------------------------------	--------------------

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600 Series Methods

600 Series Methods - US EPA Clean Water Act (CWA)

US EPA Method No.	Compound Class	US EPA Method No.	Compound Class
601	Purgeable Hydrocarbons	609	Nitroaromatics/Isophorone
602	Purgeable Aromatics	610	Polycyclic Aromatic Hydrocarbons (PAHs)
603	Acrolein/Acrylonitrile	611	Haloethers
604	Phenols	612	Chlorinated Hydrocarbons
605	Benzidine/3,3'-Dichlorobenzidine	615	Chlorinated Acid Herbicides
606	Phthalate Esters	624	Purgeable Halocarbons
607	Nitrosamines	625	Semivolatiles
608	Organochlorine Pesticides and PCBs		

Method 601 (Purgeable Hydrocarbons)

VOA Purgeable Halocarbon Mix #1 (23 components)

bromodichloromethane	1,1-dichloroethene
bromoform	<i>trans</i> -1,2-dichloroethene
carbon tetrachloride	1,2-dichloropropane
chlorobenzene	<i>cis</i> -1,3-dichloropropene
2-chloroethyl vinyl ether	<i>trans</i> -1,3-dichloropropene
chloroform	methylene chloride
dibromochloromethane	1,1,2,2-tetrachloroethane
1,2-dichlorobenzene	tetrachloroethene
1,3-dichlorobenzene	1,1,1-trichloroethane
1,4-dichlorobenzene	1,1,2-trichloroethane
1,1-dichloroethane	trichloroethene
1,2-dichloroethane	

2,000µg/mL each in P&T methanol, 1mL/ampul
cat. # 30212 (ea.)

Method 602 (Purgeable Aromatics)

602 Purgeable Aromatics Calibration Mix (7 components)

benzene	1,4-dichlorobenzene
chlorobenzene	ethylbenzene
1,2-dichlorobenzene	toluene
1,3-dichlorobenzene	

2,000µg/mL each in P&T methanol, 1mL/ampul
cat. # 30035 (ea.)

Method 603 (Acrolein/Acrylonitrile)

Acrolein/Acrylonitrile

acrolein	acrylonitrile
2,000µg/mL each in DI water, 1mL/ampul	

cat. # 30600 (ea.)

Acrolein

10,000µg/mL in P&T methanol, 1mL/ampul	
cat. # 30499 (ea.)	

10,000µg/mL in water, 1mL/ampul	
cat. # 30478 (ea.)	

Acrylonitrile

2,000µg/mL in P&T methanol, 1mL/ampul	
cat. # 30246 (ea.)	

Method 604 (Phenols)

604 Phenols Calibration Mix (11 components)

4-chloro-3-methylphenol	2-nitrophenol
2-chlorophenol	4-nitrophenol
2,4-dichlorophenol	pentachlorophenol
2,4-dimethylphenol	phenol
2,4-dinitrophenol	2,4,6-trichlorophenol
2-methyl-4,6-dinitrophenol	
2,000µg/mL each in methanol, 1mL/ampul	
	cat. # 31029 (ea.)

Method 605 (Benzidine/3,3'-Dichlorobenzidine)

605 Benzidines Calibration Mix

benzidine	3,3'-dichlorobenzidine
2,000µg/mL each in methanol, 1mL/ampul	
cat. # 31030 (ea.)	

2,000µg/mL each in methylene chloride, 1mL/ampul	
cat. # 31834 (ea.)	

Method 606 (Phthalate Esters)

606 Phthalate Esters Calibration Mix

bis(2-ethylhexyl)phthalate	dimethyl phthalate
butyl benzyl phthalate	di- <i>n</i> -butyl phthalate
diethyl phthalate	di- <i>n</i> -octyl phthalate
2,000µg/mL each in methanol, 1mL/ampul	
cat. # 31031 (ea.)	

free data

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Method 607 (Nitrosamines)

607 Nitrosamines Calibration Mix

N-nitrosodimethylamine	N-nitrosodiphenylamine
N-nitroso-di- <i>n</i> -propylamine	
2,000 μ g/mL each in methanol, 1mL/ampul	
cat. # 31032 (ea.)	

Method 608 (Organochlorine Pesticides & PCBs)

608 Calibration Mix (16 components)

aldrin	dieldrin
α -BHC	endosulfan I
β -BHC	endosulfan II
δ -BHC	endosulfan sulfate
γ -BHC (lindane)	endrin
4,4'-DDD	endrin aldehyde
4,4'-DDE	heptachlor
4,4'-DDT	heptachlor epoxide (isomer B)
200 μ g/mL each in hexane:toluene (1:1), 1mL/ampul	
cat. # 32022 (ea.)	

Organochlorine Pesticide System Evaluation Mix

4,4'-DDT	200 μ g/mL
endrin	100 μ g/mL
In methyl <i>tert</i> -butyl ether, 1mL/ampul	
cat. # 32417 (ea.)	

608 Complete Kit

32022: 608 Calibration Mix
32006: Aroclor 1016
32007: Aroclor 1221
32008: Aroclor 1232
32009: Aroclor 1242
32010: Aroclor 1248
32011: Aroclor 1254
32012: Aroclor 1260
32005: toxaphene
32021: chlordane (technical)



Contains 1mL each of these mixtures.

cat. # 32060 (kit)

Please see page 425 for individual Aroclor, toxaphene, and chlordane information.

Method 609 (Nitroaromatics/Isophorone)

609 Nitroaromatics & Isophorone Calibration Mix

2,4-dinitrotoluene	2,6-dinitrotoluene
isophorone	nitrobenzene
2,000 μ g/mL each in hexane, 1mL/ampul	
cat. # 31033 (ea.)	

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Method 610 (Polycyclic Aromatic Hydrocarbons [PAHs])

SV Calibration Mix #5 / 610 PAH Mix (16 components)

acenaphthene	chrysene
acenaphthylene	dibenzo(a,h)anthracene
anthracene	fluoranthene
benzo(a)anthracene	fluorene
benzo(a)pyrene	indeno(1,2,3-cd)pyrene
benzo(b)fluoranthene	naphthalene
benzo(k)fluoranthene	phenanthrene
benzo(ghi)perylene	pyrene

2,000 μ g/mL each in methylene chloride, 1mL/ampul
 cat. # 31011 (ea.)

610 PAH Calibration Mix A (16 components)

For HPLC/fluorescence detection.

acenaphthene	1,000 μ g/mL	chrysene	500
acenaphthylene	1,000	dibenzo(a,h)anthracene	500
anthracene	1,000	fluoranthene	500
benzo(a)anthracene	500	fluorene	1,000
benzo(a)pyrene	500	indeno(1,2,3-cd)pyrene	500
benzo(b)fluoranthene	500	naphthalene	1,000
benzo(k)fluoranthene	500	phenanthrene	500
benzo(ghi)perylene	500	pyrene	500

In methylene chloride, 1mL/ampul
 cat. # 31264 (ea.)

610 PAH Calibration Mix B (16 components)

For HPLC/UV detection.

acenaphthene	1,000 μ g/mL	chrysene	100
acenaphthylene	2,000	dibenzo(a,h)anthracene	200
anthracene	100	fluoranthene	200
benzo(a)anthracene	100	fluorene	200
benzo(a)pyrene	100	indeno(1,2,3-cd)pyrene	100
benzo(b)fluoranthene	200	naphthalene	1,000
benzo(k)fluoranthene	100	phenanthrene	100
benzo(ghi)perylene	200	pyrene	100

In methylene chloride:methanol (1:1), 1mL/ampul
 cat. # 31455 (ea.)

Method 611 (Haloethers)

611 Haloethers Calibration Mix

bis(2-chloroethoxy)methane	4-bromophenyl phenyl ether
bis(2-chloroethyl)ether	4-chlorophenyl phenyl ether
bis(2-chloroisopropyl)ether	
2,000 μ g/mL each in acetone, 1mL/ampul	

cat. # 31034 (ea.)

Method 612 (Chlorinated Hydrocarbons)

612 Chlorinated Hydrocarbons Calibration Mix (9 components)

2-chloronaphthalene	hexachlorobutadiene
1,2-dichlorobenzene	hexachlorocyclopentadiene
1,3-dichlorobenzene	hexachloroethane
1,4-dichlorobenzene	1,2,4-trichlorobenzene
hexachlorobenzene	

2,000 μ g/mL each in isoctane, 1mL/ampul
 cat. # 31035 (ea.)

600 Series Methods

Method 615 (Chlorinated Acid Herbicides)

Herbicide Surrogate**Free Acid Form:**

2,4-dichlorophenylacetic acid (DCAA)

200 μ g/mL in methanol, 1mL/ampul

cat. # 32049 (ea.)

1,000 μ g/mL in acetone, 1mL/ampul

cat. # 32439 (ea.)

Derivatized Form:

2,4-dichlorophenyl acetic acid methyl ester (DCAA methyl ester)

200 μ g/mL in hexane, 1mL/ampul

cat. # 32050 (ea.)

Herbicide Mix #1 (7 components)**Free Acid Form:**

2,4-D

dicamba

2,4-DB

dichlorprop

2,4,5-T

dinoseb

2,4,5-TP

200 μ g/mL each in methanol, 1mL/ampul

cat. # 32054 (ea.)

Derivatized Form:

2,4-D methyl ester

dicamba methyl ester

2,4-DB methyl ester

dichlorprop methyl ester

2,4,5-T methyl ester

dinoseb methyl ether

2,4,5-TP methyl ester

200 μ g/mL each in hexane, 1mL/ampul

cat. # 32055 (ea.)

Herbicide Mix #2**Free Acid Form:**

dalapon

2,000 μ g/mL in methanol, 1mL/ampul

cat. # 32056 (ea.)

Derivatized Form:

dalapon methyl ester

2,000 μ g/mL in hexane, 1mL/ampul

cat. # 32057 (ea.)

Herbicide Mix #3**Free Acid Form:**

MCPP

MCPP

20,000 μ g/mL each in methanol, 1mL/ampul

cat. # 32058 (ea.)

Derivatized Form:

MCPP methyl ester

MCPP methyl ester

20,000 μ g/mL each in hexane, 1mL/ampul

cat. # 32059 (ea.)

also available

Additional chlorinated acid herbicides mixes:

see Method 555, page 419

and Method 8321, page 440

Method 624 (Purgeable Halocarbons)

Volatiles MegaMix®, EPA Method 624 (26 components)

benzene	1,1-dichloroethene
bromodichloromethane	<i>trans</i> -1,2-dichloroethene
bromoform	1,2-dichloropropane
carbon tetrachloride	<i>cis</i> -1,3-dichloropropene
chlorobenzene	<i>trans</i> -1,3-dichloropropene
2-chloroethyl vinyl ether	ethylbenzene
chloroform	methylene chloride
dibromochloromethane	1,1,2,2-tetrachloroethane
1,2-dichlorobenzene	tetrachloroethene
1,3-dichlorobenzene	toluene
1,4-dichlorobenzene	1,1,1-trichloroethane
1,1-dichloroethane	1,1,2-trichloroethane
1,2-dichloroethane	trichloroethene
2,000 μ g/mL each in P&T methanol, 1mL/ampul	
	cat. # 30497 (ea.)

624 Internal Standard Mix

bromochloromethane	1,4-dichlorobutane
2-bromo-1-chloropropane	
1,500 μ g/mL each in P&T methanol, 1mL/ampul	cat. # 30023 (ea.)

624 Surrogate Standard Mix

4-bromofluorobenzene	pentafluorobenzene
fluorobenzene	
2,000 μ g/mL each in P&T methanol, 1mL/ampul	cat. # 30243 (ea.)

Surrogate Standard

4-bromofluorobenzene	α,α,α -trifluorotoluene
2,500 μ g/mL each in P&T methanol, 1mL/ampul	cat. # 30484 (ea.)

624 Calibration Mix #1 (gases)

bromomethane	trichlorofluoromethane (CFC-11)
chloroethane	vinyl chloride
chloromethane	
2,000 μ g/mL each in P&T methanol, 1mL/ampul	cat. # 30020 (ea.)

624 Calibration Mix #2 (12 components)

benzene	1,1-dichloroethene
carbon tetrachloride	1,2-dichloropropane
chlorobenzene	methylene chloride
2-chloroethyl vinyl ether	tetrachloroethene
dibromochloromethane	1,1,2-trichloroethane
1,1-dichloroethane	trichloroethene
2,000 μ g/mL each in P&T methanol, 1mL/ampul	cat. # 30021 (ea.)

624 Calibration Mix #3 (14 components)

bromodichloromethane	<i>trans</i> -1,2-dichloroethene
bromoform	<i>cis</i> -1,3-dichloropropene
chloroform	<i>trans</i> -1,3-dichloropropene
1,2-dichlorobenzene	ethylbenzene
1,3-dichlorobenzene	1,1,2,2-tetrachloroethane
1,4-dichlorobenzene	toluene
1,2-dichloroethane	1,1,1-trichloroethane
2,000 μ g/mL each in P&T methanol, 1mL/ampul	cat. # 30022 (ea.)

Method 624 (Purgeable Halocarbons) cont'd

624 Complete Kit

30020: 624 Calibration Mix #1
 30021: 624 Calibration Mix #2
 30022: 624 Calibration Mix #3
 30023: 624 Internal Standard Mix
 30243: 624 Surrogate Standard Mix

Contains 1mL each of these mixtures.

cat. # 30244 (kit)



624 Kit

30020: 624 Calibration Mix #1
 30021: 624 Calibration Mix #2
 30022: 624 Calibration Mix #3
 30023: 624 Internal Standard Mix

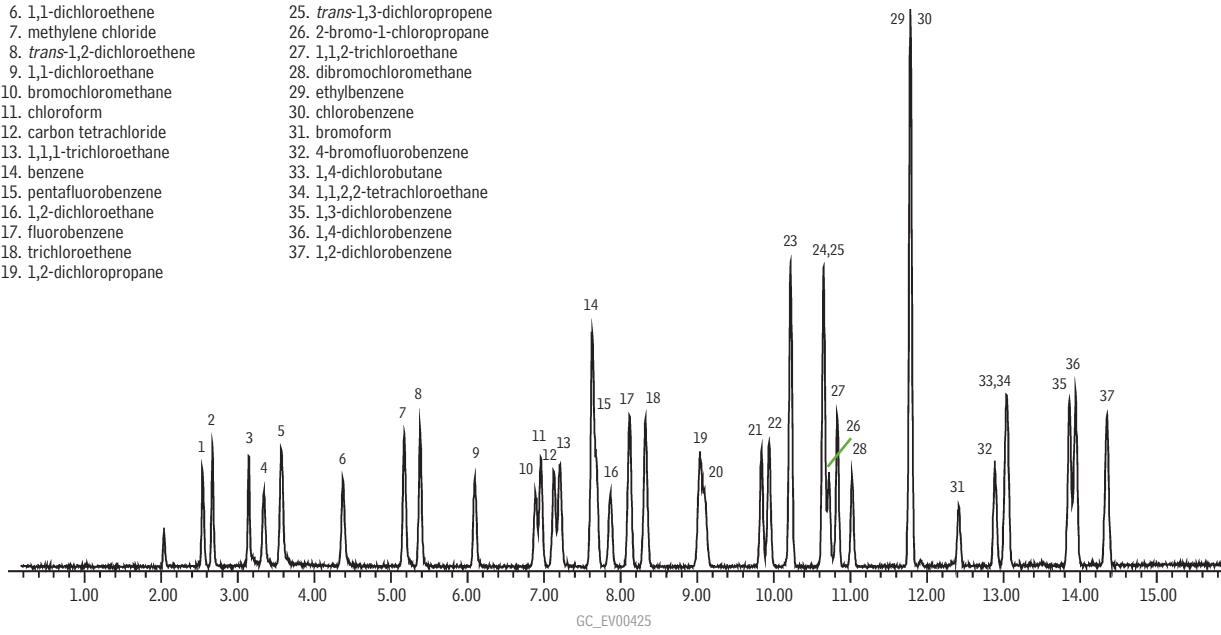
Contains 1mL each of these mixtures.

cat. # 30055 (kit)



EPA Method 624 on an Rtx®-VMS column.

- | | |
|-------------------------------------|---------------------------------------|
| 1. chloromethane | 20. bromodichloromethane |
| 2. vinyl chloride | 21. 2-chloroethyl vinyl ether |
| 3. bromomethane | 22. <i>cis</i> -1,3-dichloropropene |
| 4. chloroethane | 23. toluene |
| 5. trichlorofluoromethane | 24. tetrachloroethene |
| 6. 1,1-dichloroethene | 25. <i>trans</i> -1,3-dichloropropene |
| 7. methylene chloride | 26. 2-bromo-1-chloropropane |
| 8. <i>trans</i> -1,2-dichloroethene | 27. 1,1,2-trichloroethane |
| 9. 1,1-dichloroethane | 28. dibromochloromethane |
| 10. bromochloromethane | 29. ethylbenzene |
| 11. chloroform | 30. chlorobenzene |
| 12. carbon tetrachloride | 31. bromoform |
| 13. 1,1,1-trichloroethane | 32. 4-bromofluorobenzene |
| 14. benzene | 33. 1,4-dichlorobutane |
| 15. pentafluorobenzene | 34. 1,1,2-tetrachloroethane |
| 16. 1,2-dichloroethane | 35. 1,3-dichlorobenzene |
| 17. fluorobenzene | 36. 1,4-dichlorobenzene |
| 18. trichloroethene | 37. 1,2-dichlorobenzene |
| 19. 1,2-dichloropropane | |



Column: Rtx®-VMS, 30m, 0.25mm ID, 1.40 μ m (cat#19915)
 Conc.: 20 ppb in 5mL of RO water
 Concentrator: Tekmar LSC-3000 Purge and Trap
 Trap: Vocarb 3000 (type K)
 Purge: 11 min. @ 40mL/min. (ambient temperature)
 Dry purge: 1 min. @ 40mL/min. (MCS bypassed using SilcoSteel® tubing)
 Desorb preheat: 245°C
 Desorb: 250°C for 2 min., Flow 10mL/min.
 Bake: 260°C for 8 min.

Individual VOA Surrogate and Internal Standards for EPA Methods

Volume is 1mL/ampul. Concentration is μ g/mL.

Compound	Solvent	Conc.	cat.# (ea.)	price
benzene-d6	PTM	2,000	30025	
2-bromochlorobenzene	PTM	2,000	30228	
4-bromochlorobenzene	PTM	2,000	30230	
bromochloromethane	PTM	2,000	30225	
2-bromo-1-chloropropane	PTM	2,000	30226	
4-bromofluorobenzene	PTM	2,000	30026	
chlorobenzene-d5	PTM	2,000	30223	
1-chloro-2-fluorobenzene	PTM	2,000	30040	
1,2-dichlorobenzene-d4	PTM	2,000	30049	
1,4-dichlorobutane	PTM	2,000	30227	
1,2-dichloroethane-d4	PTM	2,000	30027	
1,4-difluorobenzene	PTM	2,000	30032	
ethylbenzene-d5	PTM	2,000	30028	
ethylbenzene-d10	PTM	2,000	30029	
fluorobenzene	PTM	2,000	30030	
pentafluorobenzene	PTM	2,000	30031	
toluene-d8	PTM	2,000	30224	
α,α,α -trifluorotoluene	PTM	2,000	30048	

PTM = Purge & trap grade methanol

Our Rtx®-VMS capillary GC column is optimized for EPA Method 624!

See page 90 for more information.

GC Interface: 1:10 split at injection port. 1mm ID liner.
 GC: Agilent 6890
 GC: Oven temp.: 40°C (hold 4 min.) to 95°C @ 24°C/min. (hold 3 min.), to 210°C @ 40°C/min. (hold 6 min.)
 Carrier gas: helium @ ~1mL/min. constant flow
 Adjust dichlorodifluoromethane to a retention time of 2.54 min. @ 40°C
 Detector: Agilent 5973 MSD
 Scan range: 25-300amu

600 Series Methods

Method 625 (Semivolatiles)

Semivolatiles MegaMix®, EPA Method 625 (54 components)

acenaphthene	di-n-butylphthalate
acenaphthylene	4,6-dinitro-2-methylphenol
anthracene	2,4-dinitrophenol
benzo(a)anthracene	2,4-dinitrotoluene
benzo(a)pyrene	2,6-dinitrotoluene
benzo(b)fluoranthene	di-n-octylphthalate
benzo(ghi)perylene	diphenylamine*
benzo(k)fluoranthene	fluoranthene
benzyl butyl phthalate	fluorene
bis(2-chloroethoxy)methane	hexachlorobenzene
bis(2-chloroethyl)ether	hexachloro-1,3-butadiene
bis(2-chloroisopropyl)ether	hexachlorocyclopentadiene*
bis(2-ethylhexyl)phthalate	hexachloroethane
4-bromophenyl phenyl ether	indeno(1,2,3-cd)pyrene
4-chloro-3-methylphenol	isophorone
2-chloronaphthalene	naphthalene
2-chlorophenol	nitrobenzene
4-chlorophenyl phenyl ether	2-nitrophenol
chrysene	4-nitrophenol
dibenzo(a,h)anthracene	N-nitrosodimethylamine*
1,2-dichlorobenzene	N-nitroso-di-n-propylamine
1,3-dichlorobenzene	pentachlorophenol
1,4-dichlorobenzene	phenanthrene
2,4-dichlorophenol	phenol
diethylphthalate	pyrene
2,4-dimethylphenol	1,2,4-trichlorobenzene
dimethylphthalate	2,4,6-trichlorophenol

1,000 μ g/mL each in methylene chloride, 1mL/ampul
cat. # 31829 (ea.)

*Listed as an "additional compound" in Method 625 (listed compound N-nitrosodiphenylamine decomposes to MegaMix component diphenylamine). The six other "additional compounds" are components in other Restek reference mixes used for Method 625: benzidine is included in cat. # 31030 (page 420); β -BHC, δ -BHC, endosulfan I, endosulfan II, endrin are in cat. # 32291 (page 428) and cat. # 32415 (page 429).

625 Kit

Because most laboratories do not routinely analyze pesticides, PCBs, toxaphene, and chlordane in their calibration mixtures for Method 625, these mixtures are not included in the 625 Kit. They may be purchased separately or in the 608 Complete Kit (cat. # 32060, page 421).

31029: 604 Phenols Mix
 31030: 605 Benzidines Mix
 31031: 606 Phthalate Esters Mix
 31032: 607 Nitrosamines Mix
 31033: 609 Nitroaromatics/Isophorone Mix
 31011: 610 PAH Mix (SV Calibration Mix #5)
 31034: 611 Haloethers Mix
 31035: 612 Chlorinated Hydrocarbons Mix

Contains 1mL each of these mixtures.
cat. # 31036 (kit)



Kit components described on pages 420–421.

Individual Semivolatile Surrogate and Internal Standards for EPA Methods

Volume is 1mL/ampul. Concentration is μ g/mL.

Compound	Solvent	Conc.	cat.# (ea.)	price
anthracene-d10	D	2,000	31037	
decafluorobiphenyl	D	2,000	31041	
decafluorobiphenyl	A	1,000	31855	
4,4'-dibromobiphenyl	D	2,000	31039	
4,4'-dibromoctafluorobiphenyl	D	2,000	31040	
2-fluorobiphenyl	D	2,000	31091	
1-fluoronaphthalene	D	2,000	31092	
2-fluorophenol	D	2,000	31047	
naphthalene-d8	D	2,000	31043	
nitrobenzene-d5	D	2,000	31044	
pentafluorophenol	D	2,000	31048	
phenanthrene-d10	D	2,000	31045	
phenol-d6	D	2,000	31049	
pyridine-d5	D	2,000	31046	
p-terphenyl-d14	D	1,000	31828	
2,4,6-tribromophenol	M	1,000	31401	

D = methylene chloride

M = methanol

SV Internal Standard Mix

acenaphthene-d10	naphthalene-d8
chrysene-d12	perylene-d12
1,4-dichlorobenzene-d4	phenanthrene-d10
2,000 μ g/mL each in methylene chloride, 1mL/ampul cat. # 31206 (ea.)	

4,000 μ g/mL each in methylene chloride, 1mL/ampul
cat. # 31006 (ea.)

Antifoam Agent for Purge & Trap Samples

Foam generated as purge gas passes through a sample can enter the analytical trap, and possibly into the GC column. Our silica-containing antifoam agent is effective over a wide pH range, and will not conflict with chromatography of target analytes.

Neat, 1mL/ampul

cat. # 31822 (ea.)

No data pack available.

**also available**

Try Restek's RxI®-5Sil MS columns for EPA Methods 625 and 8270.

Guaranteed for low GC/MS bleed, excellent phenol response, and the resolution needed to quantify critical pairs and structural isomers.

See page 78 for more information.

Tuning Mixtures

VOA Tuning Compound

4-bromofluorobenzene

5,000 μ g/mL in P&T methanol, 1mL/ampul

cat. # 30003 (ea.)

SV Tuning Compound

decafluorotriphenylphosphine (DFTPP)

2,500 μ g/mL in methylene chloride, 1mL/ampul

cat. # 31001 (ea.)

PFTBA (MS Tuning Compound)

perfluorotributylamine (PFTBA)

Neat, 1mL/ampul

cat. # 30482 (ea.)

Neat, 1g

cat. # 33027 (ea.)

No data pack available.

GC/MS Tuning Mixture

benzidine

DFTPP

4,4'-DDT

pentachlorophenol

1,000 μ g/mL each in methylene chloride, 1mL/ampul

cat. # 31615 (ea.)

Technical Chlordane, Toxaphene Solutions

Volume is 1mL/ampul. Concentration is μ g/mL.

Compound	Solvent	Conc.	cat.# (ea.)	price
chlordane (technical)	H	1,000	32021	
chlordane (technical)	I	5,000	32072	
chlordane (technical)	M	2,000	32016	
toxaphene	H	1,000	32005	
toxaphene	I	5,000	32071	
toxaphene	M	2,000	32015	

H = hexane

I = isoctane

M = methanol

also available

For a complete listing of solutions of individual environmental compounds, please see **pages 399-404**.

Aroclor Solutions

Volume is 1mL/ampul. Concentration is μ g/mL unless otherwise noted.

Compound	Solvent	Conc.	cat.# (ea.)	price
Aroclor 1016	H	1,000	32006	
Aroclor 1016	I	200	32064	
Aroclor 1016	TO	50mg/kg	32075	
Aroclor 1016	TO	500mg/kg	32076	
Aroclor 1221	H	1,000	32007	
Aroclor 1221	I	200	32065	
Aroclor 1221	TO	50mg/kg	32077	
Aroclor 1221	TO	500mg/kg	32078	
Aroclor 1232	H	1,000	32008	
Aroclor 1232	I	200	32066	
Aroclor 1232	TO	50mg/kg	32079	
Aroclor 1232	TO	500mg/kg	32080	
Aroclor 1242	H	1,000	32009	
Aroclor 1242	I	200	32067	
Aroclor 1242	TO	50mg/kg	32081	
Aroclor 1242	TO	500mg/kg	32082	
Aroclor 1248	H	1,000	32010	
Aroclor 1248	I	200	32068	
Aroclor 1248	TO	50mg/kg	32083	
Aroclor 1248	TO	500mg/kg	32084	
Aroclor 1254	H	1,000	32011	
Aroclor 1254	I	200	32069	
Aroclor 1254	TO	50mg/kg	32085	
Aroclor 1254	TO	500mg/kg	32086	
Aroclor 1260	H	1,000	32012	
Aroclor 1260	I	200	32070	
Aroclor 1260	TO	50mg/kg	32087	
Aroclor 1260	TO	500mg/kg	32088	
Aroclor 1262	H	1,000	32409	
Aroclor 1268	H	1,000	32410	
Aroclor 1016/1260	H	1,000	32039	
Aroclor 1016/1260	I	200	32299	
Aroclor 1016/1260	A	400	32456	

A = acetone

H = hexane

I = isoctane

TO = transformer oil (PCB-free)



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8000 Series Methods

8000 Series Methods - Resource Conservation and Recovery Act (RCRA)

US EPA Method No.	Compound Class	US EPA Method No.	Compound Class
418.1	Total Recoverable Petroleum Hydrocarbons (TRPH)	8095	Explosives by GC
1311	Toxicity Characteristics Leaching Procedure (TCLP)	8100	Polycyclic Aromatic Hydrocarbons
1664	Oil & Grease	8140, 8141	Organophosphorus Pesticides
3500	Organic Extraction Surrogates	8150, 8151, 8151A	Chlorinated Acid Herbicides
8010	Halogenated Volatile Organics	8240	Volatile Organic Compounds (VOC)
8011	1,2-Dibromoethane, 1,2-Dibromo-3-Chloropropane	8260, 8260A, 8260B	Volatile Organic Compounds (VOC)
8020	Aromatic Volatile Organics	8270D, 8270C	Semivolatile Organic Compounds
8021	Volatile Organics	8310	Polycyclic Aromatic Hydrocarbons (PAHs)
8040	Phenols	8315	Aldehydes/Ketones-DNPH by HPLC
8061A	Phthalate Esters	8321	Chlorinated Acids by HPLC
8080, 8081	Chlorinated Pesticides	8330	Nitroaromatics and Nitramines by HPLC
8082, 8082A	PCBs		

Method 418.1 (Total Recoverable Petroleum Hydrocarbons [TRPH])

418.1 Calibration Mix

chlorobenzene	25.0% (v/v)	isoctane	37.5%
n-hexadecane	37.5%		
1mL/ampul			

cat. # 30080 (ea.)

Method 1311 (Toxicity Characteristics Leaching Procedure [TCLP])

TCLP VOA Mix (11 components)

benzene	1,2-dichloroethane
2-butanol (MEK)	1,1-dichloroethene
carbon tetrachloride	tetrachloroethene
chlorobenzene	trichloroethene
chloroform	vinyl chloride
1,4-dichlorobenzene	
2,000µg/mL each in P&T methanol:water (90:10), 1mL/ampul	
cat. # 30024 (ea.)	

TCLP Acid Mix

2-methylphenol	pentachlorophenol
3-methylphenol	2,4,5-trichlorophenol
4-methylphenol	2,4,6-trichlorophenol
2,000µg/mL each in methanol, 1mL/ampul	
cat. # 31027 (ea.)	

TCLP B/N Mix (7 components)

1,4-dichlorobenzene	hexachloroethane
2,4-dinitrotoluene	nitrobenzene
hexachlorobenzene	pyridine
hexachlorobutadiene	
2,000µg/mL each in acetone, 1mL/ampul	
cat. # 31028 (ea.)	

TCLP Pesticide Mix

γ-BHC (lindane)	heptachlor epoxide (isomer B)
endrin	methoxychlor
heptachlor	
2,000µg/mL each in methanol, 1mL/ampul	
cat. # 32013 (ea.)	

Method 1311 (Toxicity Characteristics Leaching Procedure [TCLP]) cont'd

TCLP Herbicide Mix

2,4-D (free acid)	Silvex (free acid)
2,000µg/mL each in methanol, 1mL/ampul	cat. # 32014 (ea.)

TCLP Toxaphene Mix

toxaphene	
2,000µg/mL in methanol, 1mL/ampul	cat. # 32015 (ea.)

TCLP Chlordane Mix

chlordane (technical)	
2,000µg/mL in methanol, 1mL/ampul	cat. # 32016 (ea.)

Method 1664 (Oil & Grease)

1664 Oil & Grease Mix

hexadecane	stearic acid
4,000µg/mL each in acetone, 5mL/ampul	cat. # 31457 (ea.)

See page 361 for Resprep Oil & Grease SPE Disks.

Method 3500 (Organic Extraction Surrogates)

High-Concentration Surrogates and Matrix Spike Mixtures for SW-846

- Highest concentrations commercially available—reduces cost per sample extract.
- Convenient 1mL and 5mL packaging.

See Method 8270, pages 435-438.

did you know?

Restek reference materials include a silanized vial for sample transfer.

Method 8010 (Halogenated Volatile Organics)

Note: Method 8010 does not specify internal standards to be used. The analyst must select appropriate internal standards based on the particular samples being analyzed. Potential internal standards are listed on page 423.

624 Internal Standard Mix

bromochloromethane	1,4-dichlorobutane
2-bromo-1-chloropropane	
1,500 μ g/mL each in P&T methanol, 1mL/ampul cat. # 30023 (ea.)	

502.2 Calibration Mix #1 (gases)

bromomethane	dichlorodifluoromethane (CFC-12)
chloroethane	trichlorofluoromethane (CFC-11)
chloromethane	vinyl chloride
200 μ g/mL each in P&T methanol, 1mL/ampul cat. # 30439 (ea.)	
2,000 μ g/mL each in P&T methanol, 1mL/ampul cat. # 30042 (ea.)	

8010A Calibration Mix #2 (15 components)

benzyl chloride	<i>trans</i> -1,2-dichloroethene
bromodichloromethane	<i>cis</i> -1,3-dichloropropene
bromoform	<i>trans</i> -1,3-dichloropropene
carbon tetrachloride	methylene chloride
chlorobenzene	tetrachloroethene
1,2-dichlorobenzene	trichloroethene
1,3-dichlorobenzene	1,2,3-trichloropropane
1,1-dichloroethene	
2,000 μ g/mL each in P&T methanol, 1mL/ampul cat. # 30056 (ea.)	

8010A Calibration Mix #3 (13 components)

bromobenzene	1,2-dichloroethane
2-chloroethyl vinyl ether	1,2-dichloropropane
chloroform	1,1,1,2-tetrachloroethane
dibromochloromethane	1,1,2,2-tetrachloroethane
dibromomethane	1,1,1-trichloroethane
1,4-dichlorobenzene	1,1,2-trichloroethane
1,1-dichloroethane	
2,000 μ g/mL each in P&T methanol, 1mL/ampul cat. # 30057 (ea.)	

8010B Calibration Mix #4

allyl chloride	1,2-dibromoethane
1-chlorohexane	<i>cis</i> -1,4-dichloro-2-butene
4-chlorotoluene	<i>trans</i> -1,4-dichloro-2-butene
1,2-dibromo-3-chloropropane	

2,000 μ g/mL each in P&T methanol, 1mL/ampul

cat. # 30058 (ea.)

BTEX Standard

benzene	<i>m</i> -xylene
ethylbenzene	<i>o</i> -xylene
toluene	<i>p</i> -xylene
200 μ g/mL each in P&T methanol, 1mL/ampul cat. # 30051 (ea.)	
2,000 μ g/mL each in P&T methanol, 1mL/ampul cat. # 30213 (ea.)	
2,000 μ g/mL each in P&T methanol (<i>m</i> -xylene and <i>p</i> -xylene at 1,000 μ g/mL), 1mL/ampul cat. # 30488 (ea.)	



To analyze compounds listed in Methods 8010 and 8020 concurrently, add BTEX Standard to the calibration curve mix (see above).

Method 8010 (Halogenated Volatile Organics) cont'd

BTEX Gas Mix

benzene	<i>m</i> -xylene
ethylbenzene	<i>o</i> -xylene
toluene	<i>p</i> -xylene

Cylinder Construction: Cylinder Fitting:

aluminum
CGA-180 outlet

Spectra 104L Cylinders:

Size: 8 x 24 cm.
Volume/Pressure:
104 liters of gas
@ 1,800psi
Weight: 1.5 lbs./0.7 kg



Scotty 110L Cylinders (Pi-marked Cylinders for EU Regulations):

Size: 8.3 x 29.5 cm.
Volume/Pressure:
110 liters of gas
@ 1,800psi
Weight: 2.2 lbs./1 kg
US DOT Specs: 3AL2216



1ppm in nitrogen, 104 liters @ 1,800psi
cat. # 34414 (ea.)

100ppb in nitrogen, 104 liters @ 1,800psi
cat. # 34428 (ea.)

1ppm in nitrogen, 110 liters @ 1,800psi (Pi-marked Cylinder)
cat. # 34414-PI (ea.)

100ppb in nitrogen, 110 liters @ 1,800psi (Pi-marked Cylinder)
cat. # 34428-PI (ea.)

Requires a high-purity VOC single-stage regulator. See page 386.
No data pack available.

Method 8011 (1,2-Dibromoethane, 1,2-Dibromo-3-chloropropane)

8011 Calibration Mix—EDB/DBCP

1,2-dibromo-3-chloropropane (DBCP)	
1,2-dibromoethane (EDB)	
2,000 μ g/mL each in P&T methanol, 1mL/ampul cat. # 30062 (ea.)	

Method 8020 (Aromatic Volatile Organics)

Internal and Surrogate Standards

Volume is 1mL/ampul. Concentration is μ g/mL.

Compound	Solvent	Conc.	cat.# (ea.)	PRICE
4-bromofluorobenzene	PTM	2,000	30026	
1,4-difluorobenzene	PTM	2,000	30032	
fluorobenzene	PTM	2,000	30030	
α,α,α -trifluorotoluene	PTM	2,000	30048	

PTM = Purge & trap grade methanol

8020A Calibration Mix (10 components)

benzene	ethylbenzene
chlorobenzene	toluene
1,2-dichlorobenzene	<i>m</i> -xylene
1,3-dichlorobenzene	<i>o</i> -xylene
1,4-dichlorobenzene	<i>p</i> -xylene
2,000 μ g/mL each in P&T methanol, 1mL/ampul cat. # 30222 (ea.)	



8000 Series Methods

Method 8021 (Volatile Organics)

502.2 Internal Standard Mix #2

2-bromo-1-chloropropane fluorobenzene
 2,000 μ g/mL each in P&T methanol, 1mL/ampul
 cat. # 30041 (ea.)

8021 Surrogate Mix

2-bromochlorobenzene 1,4-dichlorobutane
 1,500 μ g/mL each in P&T methanol, 1mL/ampul
 cat. # 30086 (ea.)

8021/502.2 Surrogate Mix #1

1-bromo-2-chloroethane fluorobenzene
 1-chloro-3-fluorobenzene
 2,000 μ g/mL each in P&T methanol, 1mL/ampul
 cat. # 30463 (ea.)

8021/502.2 Surrogate Mix #2

1-bromo-2-chloroethane 1-chloro-3-fluorobenzene
 4-bromochlorobenzene fluorobenzene
 2,000 μ g/mL each in P&T methanol, 1mL/ampul
 cat. # 30464 (ea.)

Method 8040 (Phenols)

8040 Surrogate Mix

2-fluorophenol 2,4,6-tribromophenol
 2,000 μ g/mL each in isopropanol, 1mL/ampul
 cat. # 31090 (ea.)

8040 Phenols Mix #1 (9 components)

4-chloro-3-methylphenol 4-nitrophenol
 2,4-dichlorophenol pentachlorophenol
 2-methyl-4,6-dinitrophenol phenol
 3-methylphenol 2,4,6-trichlorophenol
 2-nitrophenol
 2,000 μ g/mL each in isopropanol, 1mL/ampul
 cat. # 31088 (ea.)

8040 Phenols Mix #2 (9 components)

sec-butyl-4,6-dinitrophenol (dinoseb) 2-methylphenol
 2-chlorophenol 4-methylphenol
 2,6-dichlorophenol 2,3,4,6-tetrachlorophenol
 2,4-dimethylphenol 2,4,5-trichlorophenol
 2,4-dinitrophenol
 2,000 μ g/mL each in isopropanol, 1mL/ampul
 cat. # 31089 (ea.)

Method 8061A (Phthalate Esters)

8061A Matrix Spike Solution

benzyl butyl phthalate bis(2-ethylhexyl)phthalate
 2,000 μ g/mL each in acetone, 1mL/ampul
 cat. # 31846 (ea.)

Benzyl Benzoate (Internal Standard)

5,000 μ g/mL in hexane, 1mL/ampul
 cat. # 31847 (ea.)

Method 8061A (Phthalate Esters) cont'd**8061A Surrogate Standard**

dibenzyl phthalate diphenyl phthalate
 diphenyl isophthalate
 500 μ g/mL each in acetone, 1mL/ampul
 cat. # 31848 (ea.)

EPA 8061A Phthalate Esters Mixture (15 components)

benzyl butyl phthalate di-*n*-hexyl phthalate
 bis(2-*n*-butyloxyethyl)phthalate dimethylphthalate
 bis(2-ethoxyethyl)phthalate di-nonyl phthalate
 bis(2-ethylhexyl)phthalate (dioctyl)
 bis(2-methoxyethyl)phthalate di-*n*-octyl phthalate
 bis(4-methyl-2-pentyl)phthalate dipentylphthalate
 di-*n*-butylphthalate phthalic acid dicyclohexyl ester
 diethylphthalate phthalic acid diisobutyl ester
 1,000 μ g/mL each in hexane:acetone (80:20), 1mL/ampul
 cat. # 33227 (ea.)

NEW!**EPA 8061A Hexyl 2-Ethylhexyl Phthalate Standard**

hexyl 2-ethylhexyl phthalate
 1,000 μ g/mL in hexane:acetone (80:20), 1mL/ampul
 cat. # 33228 (ea.)

NEW!**EPA 8061A Phthalate Esters Kit**

33227: EPA 8061A Phthalate Esters Mixture
 33228: EPA 8061A Hexyl 2-Ethylhexyl Phthalate Standard
 Contains 1mL each of these mixtures.
 cat. # 33229 (kit)

NEW!

Method 8080, 8081 (Chlorinated Pesticides)

Organochlorine Pesticide Mix AB #1 (20 components)

aldrin dieldrin
 α -BHC endosulfan I
 β -BHC endosulfan II
 δ -BHC endosulfan sulfate
 γ -BHC (lindane) endrin
 α -chlordane endrin aldehyde
 γ -chlordane endrin ketone
 4,4'-DDD heptachlor
 4,4'-DDE heptachlor epoxide (isomer B)
 4,4'-DDT methoxychlor
 200 μ g/mL each in hexane:toluene (1:1), 1mL/ampul
 cat. # 32291 (ea.)

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Method 8080, 8081 (Chlorinated Pesticides) cont'd

Organochlorine Pesticide Mix AB #2 (20 components)

aldrin	8 μ g/mL	dieldrin	16
α -BHC	8	endosulfan I	8
β -BHC	8	endosulfan II	16
δ -BHC	8	endosulfan sulfate	16
γ -BHC (lindane)	8	endrin	16
α -chlordane	8	endrin aldehyde	16
γ -chlordane	8	endrin ketone	16
4,4'-DDD	16	heptachlor	8
4,4'-DDE	16	heptachlor epoxide (isomer B)	8
4,4'-DDT	16	methoxychlor	80

In hexane:toluene (1:1), 1mL/ampul

cat. # 32292 (ea.)

Organochlorine Pesticide Mix AB # 3 (20 components)

aldrin	dieldrin
α -BHC	endosulfan I
β -BHC	endosulfan II
δ -BHC	endosulfan sulfate
γ -BHC (lindane)	endrin
α -chlordane	endrin aldehyde
γ -chlordane	endrin ketone
4,4'-DDD	heptachlor
4,4'-DDE	heptachlor epoxide (isomer B)
4,4'-DDT	methoxychlor

2,000 μ g/mL each in hexane:toluene (1:1), 1mL/ampul

cat. # 32415 (ea.)

Pesticide Surrogate Mix

decachlorobiphenyl 2,4,5,6-tetrachloro-*m*-xylene

200 μ g/mL each in acetone, 1mL/ampul

cat. # 32000 (ea.)

200 μ g/mL each in acetone, 5mL/ampul

cat. # 32457 (ea.)

NEW!

Pesticide Surrogate Mix

decachlorobiphenyl 200 μ g/mL 2,4,5,6-tetrachloro-*m*-xylene 100

In acetone, 1mL/ampul

cat. # 32453 (ea.)

Method 8082, 8082A (PCBs)

PCB Congener Mix, Method 8082A (19 components)

2-chlorobiphenyl (BZ #1)
2,2-dichlorobiphenyl (BZ #5)
2,2',5-trichlorobiphenyl (BZ #18)
2,4',5-trichlorobiphenyl (BZ #31)
2,2',3,5-tetrachlorobiphenyl (BZ #44)
2,2',5,5'-tetrachlorobiphenyl (BZ #52)
2,3',4,4'-tetrachlorobiphenyl (BZ #66)
2,2',3,4,5'-pentachlorobiphenyl (BZ #87)
2,2',4,5,5'-pentachlorobiphenyl (BZ #101)
2,3,3',4,6-pentachlorobiphenyl (BZ #110)
2,2',3,4,4',5'-hexachlorobiphenyl (BZ #138)
2,2',3,4,5,5'-hexachlorobiphenyl (BZ #141)
2,2',3,5,5,6-hexachlorobiphenyl (BZ #151)
2,2',4,4',5,5'-hexachlorobiphenyl (BZ #153)
2,2',3,3',4,4',5-heptachlorobiphenyl (BZ #170)
2,2',3,4,4',5,5'-heptachlorobiphenyl (BZ #180)
2,2',3,4,4',5,6-heptachlorobiphenyl (BZ #183)
2,2',3,4,5,6-heptachlorobiphenyl (BZ #187)
2,2',3,3',4,4',5,5',6-nonachlorobiphenyl (BZ #206)

100 μ g/mL each in isoctane, 1mL/ampul

cat. # 32416 (ea.)

Method 8095 (Explosives by GC)

These materials support nitroaromatic, nitramine, and nitroester analyses by GC/ECD (Method 8095).^{1,2} Compounds listed are explosives, manufacturing intermediates, or degradation products. Method 8095 mixtures contain the components at concentration ratios appropriate for ECD.

8095 Surrogate

3,4-dinitrotoluene

1,000 μ g/mL in methanol, 1mL/ampul

cat. # 31452 (ea.) enquire

8095 Surrogate

2-methyl-4-nitroaniline

1,000 μ g/mL in methanol, 1mL/ampul

cat. # 31612 (ea.) enquire

8095 Matrix Spike Mix A (10 components)

2-amino-4,6-dinitrotoluene	HMX*
4-amino-2,6-dinitrotoluene	RDX
1,3-dinitrobenzene	tetryl
2,4-dinitrotoluene	1,3,5-trinitrobenzene
2,6-dinitrotoluene	2,4,6-trinitrotoluene
200 μ g/mL each in acetonitrile (*HMX at 2,000 μ g/mL), 1mL/ampul	
	cat. # 31609 (ea.) enquire

8095 Matrix Spike Mix B (7 components)

3,5-dinitroaniline*	3-nitrotoluene
nitrobenzene	4-nitrotoluene
nitroglycerine	PETN
2-nitrotoluene	
1,000 μ g/mL each in acetonitrile (*3,5-dinitroaniline at 200 μ g/mL), 1mL/ampul	
	cat. # 31610 (ea.) enquire

8095 Calibration Mix A (10 components)

2-amino-4,6-dinitrotoluene	HMX
4-amino-2,6-dinitrotoluene	RDX
1,3-dinitrobenzene	tetryl
2,4-dinitrotoluene	1,3,5-trinitrobenzene
2,6-dinitrotoluene	2,4,6-trinitrotoluene
1,000 μ g/mL each in acetonitrile, 1mL/ampul	
	cat. # 31607 (ea.) enquire

8095 Calibration Mix B (7 components)

3,5-dinitroaniline*	3-nitrotoluene
nitrobenzene	4-nitrotoluene
nitroglycerine	PETN
2-nitrotoluene	
5,000 μ g/mL each in acetonitrile (*3,5-dinitroaniline at 1,000 μ g/mL), 1mL/ampul	
	cat. # 31608 (ea.) enquire

References (Not available from Restek)

¹US Environmental Protection Agency. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods. SW-846, Proposed Draft Update IVB*, Office of Solid Waste, Washington, DC, 1999.

²M. E. Walsh, T. Ranney, J. Chromatogr. Sci., Vol. 36, pp. 406-416, August 1998.

also available

Method 8095 single-component explosives solutions. See next page.

8000 Series Methods

Method 8095 (Explosives by GC) cont'd

Single-Component Explosives SolutionsVolume is 1mL/ampul. Concentration is $\mu\text{g}/\text{mL}$.

Compound	Solvent	Conc.	cat.# (ea.)	price
2-amino-4,6-dinitrotoluene	ACN	1,000	31670	enquire
4-amino-2,6-dinitrotoluene	ACN	1,000	31671	enquire
ammonium picrate	ACN	2,000	31890	enquire
3,5-dinitroaniline	ACN	1,000	31661	enquire
1,3-dinitrobenzene	ACN	1,000	31662	enquire
1,4-dinitrobenzene	ACN	2,000	33205	enquire
2,4-dinitrotoluene	ACN	1,000	31663	enquire
2,6-dinitrotoluene	ACN	1,000	31664	enquire
EGDN	M	1,000	31601	enquire
HMX	ACN	1,000	31665	enquire
nitrobenzene	ACN	1,000	31657	enquire
nitroglycerin	M	1,000	31498	enquire
nitroguanidine	M	1,000	31602	enquire
2-nitrotoluene	ACN	1,000	31659	enquire
3-nitrotoluene	ACN	1,000	31660	enquire
4-nitrotoluene	ACN	1,000	31658	enquire
PETN (pentaerythritol tetranitrate)	M	1,000	31600	enquire
picric acid	M	1,000	31499	enquire
propylene glycol dinitrate (PGDN)	M	1,000	31821	enquire
RDX	ACN	1,000	31666	enquire
tetryl	ACN	1,000	31667	enquire
1,3,5-trinitrobenzene	ACN	1,000	31668	enquire
2,4,6-trinitrotoluene	ACN	1,000	31669	enquire

ACN = acetonitrile

M = methanol

Method 8100 (Polycyclic Aromatic Hydrocarbons)

PAH Supplement Mix for Method 8100 (8 components)

benzo(j)fluoranthene	dibenzo(a,e)pyrene
dibeno(a,h)acridine	dibenzo(a,h)pyrene
dibenzo(a,i)acridine	dibenzo(a,i)pyrene
7H-dibenzo(c,g)carbazole	3-methylcholanthrene
1,000 $\mu\text{g}/\text{mL}$ each in methylene chloride, 1mL/ampul	
	cat. # 31857 (ea.)

SV Calibration Mix #5 / 610 PAH Mix (16 components)

acenaphthene	chrysene
acenaphthylene	dibenzo(a,h)anthracene
anthracene	fluoranthene
benzo(a)anthracene	fluorene
benzo(a)pyrene	indeno(1,2,3-cd)pyrene
benzo(b)fluoranthene	naphthalene
benzo(k)fluoranthene	phenanthrene
benzo(ghi)perylene	pyrene
2,000 $\mu\text{g}/\text{mL}$ each in methylene chloride, 1mL/ampul	
	cat. # 31011 (ea.)

**also available**

Our 30m, 0.32mm ID, 0.50 μm Rtx®-OPPesticides column provides fast analyses, low bleed, and better resolution than alternative choices.

See page 79 for details.

**Methods 8140, 8141 (Organophosphorus Pesticides)**

The preparation of accurate and stable OP pesticide standards is complicated by their sensitivity to light, pH, heat, and water. Restek has spent many years researching OP pesticide mixtures. Based on this research, our procedures include:

- Solvents are assayed to ensure low water content.
- Reference mixtures are packaged in deactivated amber ampules, under an inert atmosphere.
- Purity is determined by a combination of GC/FID, GC/FPD, GC/NPD, DSC, or HPLC/UV.

8140/8141 Internal Standards & Surrogates**NPD Detector:**

Internal Standard: 1-bromo-2-nitrobenzene (cat.# 32279)

Surrogate: 4-chloro-3-nitrobenzotrifluoride (cat.# 32282)

1,000 $\mu\text{g}/\text{mL}$ in acetone, 1mL/ampul

cat. # 32279 (ea.)

1,000 $\mu\text{g}/\text{mL}$ in acetone, 1mL/ampul

cat. # 32282 (ea.)

FPD Detector:

Internal Standard: none recommended

Surrogate: tributylphosphate (cat.# 32280) and triphenylphosphate (cat.# 32281)

1,000 $\mu\text{g}/\text{mL}$ in acetone, 1mL/ampul

cat. # 32280 (ea.)

1,000 $\mu\text{g}/\text{mL}$ in acetone, 1mL/ampul

cat. # 32281 (ea.)

8140/8141 OP Pesticide Calibration Mix A (20 components)

azinphos methyl	fenthion
bolstar (sulprofos)	merphos
chlorpyrifos	methyl parathion
coumaphos	mevinphos
demeton, O & S	naled
diazinon	phorate
dichlorvos	ronnel
disulfoton	stirofos
ethoprop	tokuthion (prothiofos)
fensulfothion	trichloronate
200 $\mu\text{g}/\text{mL}$ each in hexane:acetone (95:5), 1mL/ampul	
	cat. # 32277 (ea.)

8141 OP Pesticide Calibration Mix B (7 components)

dimethoate	parathion
EPN	sulfotep
malathion	TEPP
monocrotophos	
200 $\mu\text{g}/\text{mL}$ each in hexane:acetone (95:5), 1mL/ampul	
	cat. # 32278 (ea.)



Restek OPP standards are stable for at least 12 months.

also available

Additional nitrogen/phosphorus pesticide mixes are listed on page 414.

Method 8150, 8151, 8151A (Chlorinated Acid Herbicides)

Herbicide Internal Standard

4,4'-dibromo octafluorobiphenyl	
250 μ g/mL in hexane, 1mL/ampul	
cat. # 32053 (ea.)	
2,000 μ g/mL in methylene chloride, 1mL/ampul	
cat. # 31040 (ea.)	
2,000 μ g/mL in methyl <i>tert</i> -butyl ether, 1mL/ampul	
cat. # 31856 (ea.)	

Herbicide Surrogate

Free Acid Form:	
2,4-dichlorophenylacetic acid (DCAA)	
200 μ g/mL in methanol, 1mL/ampul	
cat. # 32049 (ea.)	
1,000 μ g/mL in acetone, 1mL/ampul	
cat. # 32439 (ea.)	

Derivatized Form:

2,4-dichlorophenyl acetic acid methyl ester (DCAA methyl ester)	
200 μ g/mL in hexane, 1mL/ampul	
cat. # 32050 (ea.)	

Herbicide Mix #1 (7 components)

Free Acid Form:	
2,4-D	dicamba
2,4-DB	dichlorprop
2,4,5-T	
2,4,5-TP	dinoseb
200 μ g/mL each in methanol, 1mL/ampul	
cat. # 32054 (ea.)	
Derivatized Form:	
2,4-D methyl ester	dicamba methyl ester
2,4-DB methyl ester	dichlorprop methyl ester
2,4,5-T methyl ester	
2,4,5-TP methyl ester	dinoseb methyl ether
200 μ g/mL each in hexane, 1mL/ampul	
cat. # 32055 (ea.)	

Herbicide Mix #2

Free Acid Form:	
dalapon	
1,000 μ g/mL in acetonitrile, 1mL/ampul	
cat. # 32432 (ea.)	
1,000 μ g/mL in methanol, 1mL/ampul	
cat. # 32253 (ea.)	
2,000 μ g/mL in methanol, 1mL/ampul	
cat. # 32056 (ea.)	

Derivatized Form:

dalapon methyl ester	
2,000 μ g/mL in hexane, 1mL/ampul	
cat. # 32057 (ea.)	
1,000 μ g/mL in methanol, 1mL/ampul	
cat. # 32254 (ea.)	

did you know?

We have more than 2,000 pure, characterized, neat compounds in our inventory! If you do not see the EXACT mixture you need listed on any of these pages, contact us for a custom standard.

Herbicide Mix #3

Free Acid Form:	
MCPA	MCPP
20,000 μ g/mL each in methanol, 1mL/ampul	
cat. # 32058 (ea.)	

Derivatized Form:	
MCPA methyl ester	MCPP methyl ester
20,000 μ g/mL each in hexane, 1mL/ampul	
cat. # 32059 (ea.)	

MCPA

1,000 μ g/mL in methanol, 1mL/ampul	
cat. # 32269 (ea.)	

MCPP

1,000 μ g/mL in methanol, 1mL/ampul	
cat. # 32271 (ea.)	

Herbicide Mix #4 (8 components)

Free Acid Form:	
acifluorfen	3,5-dichlorobenzoic acid
bentazon	4-nitrophenol
chloramben	pentachlorophenol
DCPA diacid	picloram
200 μ g/mL each in methanol, 1mL/ampul	
cat. # 32061 (ea.)	

Derivatized Form:

acifluorfen methyl ester	3,5-dichlorobenzoic acid methyl ester
bentazon methyl ester	4-nitroanisole
chloramben methyl ester	pentachloroanisole
DCPA (Dacthal)	picloram methyl ester
200 μ g/mL each in hexane, 1mL/ampul	
cat. # 32062 (ea.)	

Picloram

1,000 μ g/mL in methanol, 1mL/ampul	
cat. # 32265 (ea.)	

3,5-Dichlorobenzoic Acid Surrogate Standard

3,5-dichlorobenzoic acid	
1,000 μ g/mL in methyl <i>tert</i> -butyl ether, 1mL/ampul	
cat. # 31652 (ea.)	

3,5-Dichlorobenzoic Acid Methyl Ester Surrogate Standard

3,5-dichlorobenzoic acid methyl ester	
1,000 μ g/mL in methyl <i>tert</i> -butyl ether, 1mL/ampul	
cat. # 31649 (ea.)	
1,000 μ g/mL in methanol, 1mL/ampul	
cat. # 32264 (ea.)	

also available

Additional chlorinated acid herbicides mixes:

see Method 555, page 419
 and Method 8321, page 440



8000 Series Methods

Method 8240 (Volatile Organic Compounds [VOC])

502.2 Calibration Mix #1 (gases)

bromomethane	dichlorodifluoromethane (CFC-12)
chloroethane	trichlorofluoromethane (CFC-11)
chloromethane	vinyl chloride
200 μ g/mL each in P&T methanol, 1mL/ampul	
cat. # 30439 (ea.)	
2,000 μ g/mL each in P&T methanol, 1mL/ampul	
cat. # 30042 (ea.)	

VOA Calibration Mix #1 (ketones)

acetone	2-hexanone
2-butanon (MEK)	4-methyl-2-pentanone (MIBK)
5,000 μ g/mL each in P&T methanol:water (90:10), 1mL/ampul	
cat. # 30006 (ea.)	

VOA Purgeable Halocarbon Mix #1 (23 components)

bromodichloromethane	1,1-dichloroethene
bromoform	trans-1,2-dichloroethene
carbon tetrachloride	1,2-dichloropropane
chlorobenzene	cis-1,3-dichloropropene
2-chloroethyl vinyl ether	trans-1,3-dichloropropene
chloroform	methylene chloride
dibromochemicalmethane	1,1,2,2-tetrachloroethane
1,2-dichlorobenzene	tetrachloroethene
1,3-dichlorobenzene	1,1,1-trichloroethane
1,4-dichlorobenzene	1,1,2-trichloroethane
1,1-dichloroethane	trichloroethene
1,2-dichloroethane	
2,000 μ g/mL each in P&T methanol, 1mL/ampul	
cat. # 30212 (ea.)	

8240 Volatiles Mix #1A (12 components)

allyl chloride	trans-1,4-dichloro-2-butene
benzyl chloride	1,4-dioxane
1,2-dibromo-3-chloropropane	iodomethane
1,2-dibromoethane	pentachloroethane
dibromomethane	1,1,1,2-tetrachloroethane
cis-1,4-dichloro-2-butene	1,2,3-trichloropropane
2,000 μ g/mL each in P&T methanol, 1mL/ampul	
cat. # 30217 (ea.)	

8240 Volatiles Mix #2A

carbon disulfide	pyridine
2-picoline	
2,000 μ g/mL each in P&T methanol, 1mL/ampul	
cat. # 30218 (ea.)	

restek innovation!**Xylene-Free, Highly-Purified Chloroprene Standard**

The R&D chemists at Restek developed a novel procedure that produces a pure, quantitative chloroprene solution specially stabilized in purge & trap-grade methanol. The entire procedure is performed under carefully monitored conditions to prevent any contamination or polymerization of the highly reactive, neat chloroprene. The final solution is specially stabilized, allowing analysts to make dilutions for working standards in unmodified purge & trap-grade methanol.

Note: Because chloroprene is not analyzed by many laboratories, it is not included in our 8240 VOA mixes. Chloroprene is included in our 8260B MegaMix® Calibration Mix. Refer to page 433.

8240 Nitriles Mix (7 components)

acrylonitrile	methyl methacrylate
ethyl methacrylate	propionitrile
malononitrile	styrene
methacrylonitrile	
2,000 μ g/mL each in P&T methanol, 1mL/ampul	
cat. # 30215 (ea.)	

8240 Alcohols Mix

allyl alcohol	isobutyl alcohol
2-chloroethanol	propargyl alcohol
ethanol	
2,000 μ g/mL each in P&T methanol, 1mL/ampul	
cat. # 30214 (ea.)	

Glycols Standard

ethylene glycol	propylene glycol
50,000 μ g/mL each in DI water, 1mL/ampul	
cat. # 30471 (ea.)	

BTEX Standard

benzene	<i>m</i> -xylene
ethylbenzene	<i>o</i> -xylene
toluene	<i>p</i> -xylene
200 μ g/mL each in P&T methanol, 1mL/ampul	
cat. # 30051 (ea.)	
2,000 μ g/mL each in P&T methanol, 1mL/ampul	
cat. # 30213 (ea.)	
2,000 μ g/mL each in P&T methanol (<i>m</i> -xylene and <i>p</i> -xylene at 1,000 μ g/mL), 1mL/ampul	
cat. # 30488 (ea.)	

BTEX Gas Mix

benzene	<i>m</i> -xylene
ethylbenzene	<i>o</i> -xylene
toluene	<i>p</i> -xylene

Cylinder Construction:

aluminum
CGA-180 outlet

Cylinder Fitting:**Spectra 104L Cylinders:**

Size: 8 x 24 cm.
Volume/Pressure:
104 liters of gas
@ 1,800psi
Weight: 1.5 lbs./0.7 kg

**Scotty 110L Cylinders
(Pi-marked Cylinders
for EU Regulations):**

Size: 8.3 x 29.5 cm.
Volume/Pressure:
110 liters of gas
@ 1,800psi
Weight: 2.2 lbs./1 kg
US DOT Specs: 3AL2216



1ppm in nitrogen, 104 liters @ 1,800psi
cat. # 34414 (ea.)

100ppb in nitrogen, 104 liters @ 1,800psi
cat. # 34428 (ea.)

1ppm in nitrogen, 110 liters @ 1,800psi (Pi-marked Cylinder)
cat. # 34414-PI (ea.)

100ppb in nitrogen, 110 liters @ 1,800psi (Pi-marked Cylinder)
cat. # 34428-PI (ea.)

Requires a high-purity VOC single-stage regulator. See page 386.
No data pack available.

Method 8260, 8260A, 8260B (Volatile Organic Compounds [VOC])

8260A Internal Standard Mix

chlorobenzene-d5	fluorobenzene
1,4-dichlorobenzene-d4	
2,500 μ g/mL each in P&T methanol, 1mL/ampul	
cat. # 30241 (ea.)	

8260 Internal Standard Mix

chlorobenzene-d5	1,4-difluorobenzene
1,4-dichlorobenzene-d4	pentafluorobenzene
2,500 μ g/mL each in P&T methanol, 1mL/ampul	
cat. # 30074 (ea.)	

8260A Surrogate Mix

4-bromofluorobenzene	1,2-dichloroethane-d4
dibromofluoromethane	toluene-d8
2,500 μ g/mL each in P&T methanol, 1mL/ampul	
cat. # 30240 (ea.)	

8260 Surrogate Mix

4-bromofluorobenzene	toluene-d8
dibromofluoromethane	
2,500 μ g/mL each in P&T methanol, 1mL/ampul	
cat. # 30073 (ea.)	

8260B Matrix Spike Mix

benzene	toluene
chlorobenzene	trichloroethylene
1,1-dichloroethene	
2,500 μ g/mL each in P&T methanol, 1mL/ampul	
cat. # 30479 (ea.)	

8240/8260 System Performance Check Mix

bromoform	1,1-dichloroethane
chlorobenzene	1,1,2,2-tetrachloroethane
chloromethane	
2,000 μ g/mL each in P&T methanol, 1mL/ampul	
cat. # 30075 (ea.)	

4-Bromofluorobenzene

2,500 μ g/mL in P&T methanol, 1mL/ampul	
cat. # 30067 (ea.)	
10,000 μ g/mL in P&T methanol, 1mL/ampul	
cat. # 30082 (ea.)	

1,4-Dioxane-d8

2,000 μ g/mL in P&T methanol, 1mL/ampul	
cat. # 30614 (ea.)	

PFTBA (MS Tuning Compound)

perfluorotributylamine (PFTBA)

Neat, 1mL/ampul	
cat. # 30482 (ea.)	
Neat, 1g	
cat. # 33027 (ea.)	

No data pack available.

8260B MegaMix® Calibration Mix (76 components)

acetone	<i>trans</i> -1,3-dichloropropene
acrylonitrile	diethyl ether (ethyl ether)
allyl chloride	1,4-dioxane
benzene	ethylbenzene
bromobenzene	ethyl methacrylate
bromochloromethane	hexachloro-1,3-butadiene
bromodichloromethane	iodomethane
bromoform	isobutyl alcohol
<i>n</i> -butylbenzene	isopropylbenzene (cumene)
<i>sec</i> -butylbenzene	4-isopropyl toluene (<i>p</i> -cymene)
<i>tert</i> -butylbenzene	methacrylonitrile
carbon disulfide	methyl acrylate
carbon tetrachloride	methyl methacrylate
chlorobenzene	methylene chloride (dichloromethane)
2-chloroethanol	naphthalene
chloroform	nitrobenzene
chloroprene	2-nitropropane
2-chlorotoluene	pentachloroethane
4-chlorotoluene	propionitrile
dibromochloromethane	<i>n</i> -propylbenzene
1,2-dibromo-3-chloropropane (DBCP)	styrene
1,2-dibromoethane (EDB)	1,1,1,2-tetrachloroethane
dibromomethane	1,1,2,2-tetrachloroethane
1,2-dichlorobenzene	tetrachloroethene
1,3-dichlorobenzene	tetrahydrofuran
1,4-dichlorobenzene	toluene
<i>cis</i> -1,4-dichloro-2-butene	1,2,3-trichlorobenzene
<i>trans</i> -1,4-dichloro-2-butene	1,2,4-trichlorobenzene
1,1-dichloroethane	1,1,1-trichloroethane
1,2-dichloroethane	1,1,2-trichloroethane
1,1-dichloroethene	trichloroethene
<i>cis</i> -1,2-dichloroethene	1,2,3-trichloropropane
<i>trans</i> -1,2-dichloroethene	1,1,2-trichlorotrifluoroethane (CFC-113)
1,2-dichloropropane	1,2,4-trimethylbenzene
1,3-dichloropropane	1,3,5-trimethylbenzene
2,2-dichloropropane	<i>m</i> -xylene
1,1-dichloropropene	<i>o</i> -xylene
<i>cis</i> -1,3-dichloropropene	<i>p</i> -xylene

2,000 μ g/mL each in P&T methanol, 1mL/ampul
 cat. # 30633 (ea.)

2-Chloroethyl Vinyl Ether

2,000 μ g/mL in P&T methanol, 1mL/ampul
 cat. # 30265 (ea.)



8260B MegaMix® Calibration Mix Kit

30633: 8260B MegaMix
 30265: 2-chloroethyl vinyl ether

Contains 1mL each of these mixtures.
 cat. # 30475 (kit)

8240/8260 Calibration Check Mix

chloroform	ethylbenzene
1,1-dichloroethene	toluene
1,2-dichloropropane	vinyl chloride
2,000 μ g/mL each in P&T methanol, 1mL/ampul	
cat. # 30427 (ea.)	

502.2 Calibration Mix #1 (gases)

bromomethane	dichlorodifluoromethane (CFC-12)
chloroethane	trichlorofluoromethane (CFC-11)
chloromethane	vinyl chloride
200 μ g/mL each in P&T methanol, 1mL/ampul	
cat. # 30439 (ea.)	
2,000 μ g/mL each in P&T methanol, 1mL/ampul	
cat. # 30042 (ea.)	

8000 Series Methods

Method 8260, 8260A, 8260B (Volatile Organic Compounds [VOC]) cont'd

VOA Calibration Mix #1 (ketones)

acetone	2-hexanone
2-butaneone (MEK)	4-methyl-2-pentanone (MIBK)
5,000 μ g/mL each in P&T methanol:water (90:10), 1mL/ampul	

cat. # 30006 (ea.)

8260B Acetate Mix

vinyl acetate	<i>n</i> -propyl acetate
ethyl acetate	<i>n</i> -butyl acetate
isopropyl acetate	

2,000 μ g/mL each in P&T methanol, 1mL/ampul
cat. # 30477 (ea.)

8260B Acetate Mix (Revised) (7 components)

<i>n</i> -amyl acetate	methyl acetate
butyl acetate	propyl acetate
ethyl acetate	vinyl acetate
isopropyl acetate	

2,000 μ g/mL each in P&T methanol, 1mL/ampul
cat. # 30489 (ea.)

California Oxygenates Mix

diisopropyl ether (DIPE)	2,000 μ g/mL	<i>tert</i> -butyl alcohol	10,000
ethyl- <i>tert</i> -butyl ether (ETBE)	2,000	methyl <i>tert</i> -butyl ether (MTBE)	2,000
<i>tert</i> -amyl methyl ether (TAME)	2,000		

In P&T methanol, 1mL/ampul
cat. # 30465 (ea.)

Oxygenates

<i>tert</i> -amyl ethyl ether (TAAE)	2,000 μ g/mL	diisopropyl ether (DIPE)	2,000
<i>tert</i> -amyl methyl ether (TAME)	2,000	ethyl- <i>tert</i> -butyl ether (ETBE)	2,000
<i>tert</i> -butyl alcohol (TBA)	10,000	methyl <i>tert</i> -butyl ether (MTBE)	2,000

In P&T methanol, 1mL/ampul
cat. # 30626 (ea.)

Single-Component Oxygenates SolutionsVolume is 1mL/ampul. Concentration is μ g/mL.

Compound	Solvent	Conc.	cat.# (ea.)	price
ethanol	W	10,000	30466	
methanol	W	10,000	30467	
<i>tert</i> -amyl alcohol	PTM	10,000	30631	
ethanol	PTM	2,000	30288	
methyl <i>tert</i> -butyl ether (MTBE)	PTM	2,000	30402	
<i>tert</i> -amyl ethyl ether (TAAE)	PTM	2,000	30617	
diisopropyl ether (DIPE)	PTM	2,000	30627	
ethyl- <i>tert</i> -butyl ether (ETBE)	PTM	2,000	30628	
<i>tert</i> -amyl methyl ether (TAME)	PTM	2,000	30629	
<i>tert</i> -butanol-d9	PTM	20,000	30618	
<i>tert</i> -butanol	PTM	50,000	30470	

PTM = purge & trap grade methanol

W = DI water

**also available**

Our Rtx®-VMS column is your best choice for EPA Method 8260.

- Fastest cycle times for VOCs.
- Tuned selectivity for VOCs.
- Excellent separation of gases.

See page 90 for more information.

Acrolein

10,000 μ g/mL in P&T methanol, 1mL/ampul	cat. # 30499 (ea.)
10,000 μ g/mL in water, 1mL/ampul	cat. # 30478 (ea.)

1,2-Dichlorotetrafluoroethane (CFC-114)

2,000 μ g/mL in P&T methanol, 1mL/ampul	cat. # 30476 (ea.)
---------------------------------------------	--------------------

Chloroprene

5,000 μ g/mL in P&T methanol, 1mL/ampul	cat. # 30238 (ea.)
---------------------------------------------	--------------------

Vinyl Acetate

2,000 μ g/mL in P&T methanol, 1mL/ampul	cat. # 30216 (ea.)
---------------------------------------------	--------------------

8260A Volatile Organics Kit (2,000 μ g/mL)

Changes in this revision of the method include modification of the recommended internal standard and surrogate solutions.

30042: 502.2 Calibration Mix #1
30043: 502.2 Calibration Mix #2
30044: 502.2 Calibration Mix #3
30045: 502.2 Calibration Mix #4
30046: 502.2 Calibration Mix #5
30047: 502.2 Calibration Mix #6
30067: 4-bromofluorobenzene (2,500 μ g/mL)
30240: 8260A Surrogate Mix (2,500 μ g/mL)
30241: 8260A Internal Standard Mix (2,500 μ g/mL)
30075: 8240/8260 System Performance Check Mix
30005: VOA Matrix Spike Mix (2,500 μ g/mL)

Contains 1mL each of these mixtures.
cat. # 30242 (kit)

Components are listed on pages 408, 409, 433, and 442.

**8260 Volatile Organics Kit (2,000 μ g/mL)**

30042: 502.2 Calibration Mix #1
30043: 502.2 Calibration Mix #2
30044: 502.2 Calibration Mix #3
30045: 502.2 Calibration Mix #4
30046: 502.2 Calibration Mix #5
30047: 502.2 Calibration Mix #6
30067: 4-bromofluorobenzene (2,500 μ g/mL)
30073: 8260 Surrogate Mix (2,500 μ g/mL)
30074: 8260 Internal Standard Mix (2,500 μ g/mL)
30075: 8240/8260 System Performance Check Mix
30005: VOA Matrix Spike Mix (2,500 μ g/mL)

Contains 1mL each of these mixtures.
cat. # 30076 (kit)

Components are listed on pages 408, 409, 433, and 442.

**free data****Available on Our Website: Lot Certificates, Data Packs, and MSDSs**For complete information detailing manufacturing and testing for Restek inventoried reference standards, visit our website at www.restek.com/datapacks. To view certificates and/or an MSDS, enter the catalog number of the product in the Search feature. For a free data pack (Adobe® PDF file), enter the catalog number and lot number of the product.

Method 8270D, 8270C (Semivolatile Organic Compounds)

SV Internal Standard Mix

acenaphthene-d10	naphthalene-d8
chrysene-d12	perylene-d12
1,4-dichlorobenzene-d4	phenanthrene-d10
2,000 μ g/mL each in methylene chloride, 1mL/ampul	
cat. # 31206 (ea.)	
4,000 μ g/mL each in methylene chloride, 1mL/ampul	
cat. # 31006 (ea.)	

Revised SV Internal Standard Mix (7 components)

acenaphthene-d10	naphthalene-d8
chrysene-d12	perylene-d12
1,4-dichlorobenzene-d4	phenanthrene-d10
1,4-dioxane-d8	
2,000 μ g/mL each in methylene chloride, 1mL/ampul	
cat. # 31885 (ea.)	
4,000 μ g/mL each in methylene chloride, 1mL/ampul	
cat. # 31886 (ea.)	

B/N Surrogate Mix (4/89 SOW)

2-fluorobiphenyl	p-terphenyl-d14
nitrobenzene-d5	
1,000 μ g/mL each in methylene chloride, 1mL/ampul	
cat. # 31024 (ea.)	
5,000 μ g/mL each in methylene chloride, 1mL/ampul	
cat. # 31062 (ea.)	
5,000 μ g/mL each in methylene chloride, 5mL/ampul	
cat. # 31084 (ea.)	
5,000 μ g/mL each in methylene chloride, 10mL/ampul	
cat. # 33028 (ea.)	

Revised B/N Surrogate Mix

2-fluorobiphenyl	p-terphenyl-d14
nitrobenzene-d5	pyrene-d10
1,000 μ g/mL each in methylene chloride, 1mL/ampul	
cat. # 31887 (ea.)	
5,000 μ g/mL each in methylene chloride, 1mL/ampul	
cat. # 31888 (ea.)	
5,000 μ g/mL each in methylene chloride, 5mL/ampul	
cat. # 31889 (ea.)	

Acid Surrogate Mix (4/89 SOW)

2-fluorophenol	2,4,6-tribromophenol
phenol-d6	
2,000 μ g/mL each in methanol, 1mL/ampul	
cat. # 31025 (ea.)	
10,000 μ g/mL each in methanol, 1mL/ampul	
cat. # 31063 (ea.)	
10,000 μ g/mL each in methanol, 5mL/ampul	
cat. # 31087 (ea.)	
10,000 μ g/mL each in methanol, 10mL/ampul	
cat. # 33029 (ea.)	

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B/N Matrix Spike Mix

acenaphthene	N-nitroso-di-n-propylamine
1,4-dichlorobenzene	pyrene
2,4-dinitrotoluene	1,2,4-trichlorobenzene
1,000 μ g/mL each in methanol, 1mL/ampul	
cat. # 31004 (ea.)	
5,000 μ g/mL each in methanol, 1mL/ampul	
cat. # 31074 (ea.)	
5,000 μ g/mL each in methanol, 5mL/ampul	
cat. # 31084 (ea.)	
5,000 μ g/mL each in methanol, 10mL/ampul	
cat. # 33030 (ea.)	

Acid Matrix Spike Mix

4-chloro-3-methylphenol	pentachlorophenol
2-chlorophenol	phenol
4-nitrophenol	
2,000 μ g/mL each in methanol, 1mL/ampul	
cat. # 31014 (ea.)	
10,000 μ g/mL each in methanol, 1mL/ampul	
cat. # 31061 (ea.)	
10,000 μ g/mL each in methanol, 5mL/ampul	
cat. # 31071 (ea.)	
10,000 μ g/mL each in methanol, 10mL/ampul	
cat. # 33031 (ea.)	

GC/MS Tuning Mixture

benzidine	DFTPP
4,4'-DDT	pentachlorophenol
1,000 μ g/mL each in methylene chloride, 1mL/ampul	
cat. # 31615 (ea.)	

SV Tuning Compound

decafluorotriphenylphosphine (DFTPP)	
2,500 μ g/mL in methylene chloride, 1mL/ampul	
cat. # 31001 (ea.)	

PFTBA (MS Tuning Compound)

perfluorotributylamine (PFTBA)	
Neat, 1mL/ampul	
cat. # 30482 (ea.)	
Neat, 1g	
cat. # 33027 (ea.)	

No data pack available.



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8000 Series Methods



Method 8270D, 8270C (Semivolatile Organic Compounds) cont'd

8270 B/N Calibration Check Mix (7 components)

acenaphthene	diphenylamine
benzo(a)pyrene	fluoranthene
1,4-dichlorobenzene	hexachlorobutadiene
di-n-octyl phthalate	
2,000µg/mL each in methylene chloride, 1mL/ampul	
cat. # 31616 (ea.)	

8270 MegaMix® (76 components)

acenaphthene	4,6-dinitro-2-methylphenol
acenaphthylene	2,4-dinitrophenol
aniline	2,4-dinitrotoluene
anthracene	2,6-dinitrotoluene
azobenzene ¹	di-n-octyl phthalate
benzo(a)anthracene	diphenylamine ²
benzo(a)pyrene	fluoranthene
benzo(b)fluoranthene	fluorene
benzo(ghi)perylene	hexachlorobenzene
benzo(k)fluoranthene	hexachlorobutadiene
benzyl alcohol	hexachlorocyclopentadiene
benzyl butyl phthalate	hexachloroethane
bis(2-chloroethoxy)methane	indeno(1,2,3-cd)pyrene
bis(2-chloroethyl)ether	isophorone
bis(2-chloroisopropyl)ether	1-methylnaphthalene
bis(2-ethylhexyl)adipate	2-methylnaphthalene
bis(2-ethylhexyl)phthalate	2-methylphenol
4-bromophenyl phenyl ether	3-methylphenol
carbazole	4-methylphenol
4-chloroaniline	naphthalene
4-chloro-3-methylphenol	2-nitroaniline
2-chloronaphthalene	3-nitroaniline
2-chlorophenol	4-nitroaniline
4-chlorophenyl phenyl ether	nitrobenzene
chrysene	2-nitrophenol
dibenzo(<i>a,h</i>)anthracene	4-nitrophenol
dibenzofuran	N-nitrosodimethylamine
1,2-dichlorobenzene	N-nitroso-di-n-propylamine
1,3-dichlorobenzene	pentachlorophenol
1,4-dichlorobenzene	phenanthrene
2,4-dichlorophenol	phenol
diethyl phthalate	pyrene
2,4-dimethylphenol	pyridine
dimethyl phthalate	2,3,4,6-tetrachlorophenol
di-n-butyl phthalate	2,3,5,6-tetrachlorophenol
1,2-dinitrobenzene	1,2,4-trichlorobenzene
1,3-dinitrobenzene	2,4,5-trichlorophenol
1,4-dinitrobenzene	2,4,6-trichlorophenol

8270 Acid Calibration Check Mix

4-chloro-3-methylphenol	pentachlorophenol
2,4-dichlorophenol	phenol
2-nitrophenol	2,4,6-trichlorophenol
2,000µg/mL each in methylene chloride, 1mL/ampul	
cat. # 31617 (ea.)	

SV System Performance Check Mix (SPCC)

2,4-dinitrophenol	4-nitrophenol
hexachlorocyclopentadiene	N-nitroso-di-n-propylamine
2,000µg/mL each in methylene chloride, 1mL/ampul	
cat. # 31689 (ea.)	

605 Benzidines Calibration Mix

benzidine	3,3'-dichlorobenzidine
2,000µg/mL each in methanol, 1mL/ampul	
cat. # 31030 (ea.)	
2,000µg/mL each in methylene chloride, 1mL/ampul	
cat. # 31834 (ea.)	

8270 Benzidines Mix

benzidine	3,3'-dimethylbenzidine
3,3'-dichlorobenzidine	
2,000µg/mL each in methanol, 1mL/ampul	
cat. # 31688 (ea.)	
2,000µg/mL each in methylene chloride, 1mL/ampul	
cat. # 31852 (ea.)	



also available

Our Rxi®-5Sil MS columns provide high response for 2,4-dinitrophenol, show excellent peak shape of pyridine, and produce outstanding resolution of PAHs.

See page 88.

*3-methylphenol and 4-methylphenol concentration is 500µg/mL.

¹1,2-diphenylhydrazine (8270-listed analyte) decomposes to azobenzene (mix component) in the injector.

²N-nitrosodiphenylamine (8270-listed analyte) decomposes to diphenylamine (mix component) in the injector.

8270 Matrix Spike Mix (76 components)

same list as 8270 MegaMix above

200µg/mL each in methanol:methylene chloride (80:20), 5mL/ampul**	
cat. # 31687 (ea.)	

200µg/mL each in methanol:methylene chloride (80:20), 10mL/ampul**	
cat. # 33073 (ea.)	

**3-methylphenol and 4-methylphenol concentration is 100µg/mL.



8270 MegaMix® and 8270 Matrix Spike Mix include 3-methylphenol and 4-methylphenol at $\frac{1}{2}$ x concentration of other components.

Method 8270D, 8270C (Semivolatile Organic Compounds) cont'd

8270/Appendix IX Kit

31850: 8270 MegaMix
 31834: 605 Benzidines Calibration Mix
 31625: Appendix IX Mix #1
 31806: Appendix IX Mix #2

Contains 1mL each of these mixtures.

cat. # 31815 (kit)



Benzoic Acid

2,000 μ g/mL in methylene chloride, 1mL/ampul
 cat. # 31879 (ea.)

Appendix IX Mix #1 (18 components)

2-acetylaminofluorene	N-nitrosodibutylamine
4-aminobiphenyl	N-nitrosodiethylamine
p-dimethylaminoazobenzene	N-nitrosomethylethylamine
3,3'-dimethylbenzidine	N-nitrosomorpholine
α,α' -dimethylphenethylamine (free base)	N-nitrosopiperidine
methaprylene (free base)	N-nitrosopyrrolidine
1-naphthylamine	1,4-phenylenediamine
2-naphthylamine	2-picoline
5-nitro-o-toluidine	o-toluidine

2,000 μ g/mL each in methylene chloride, 1mL/ampul
 cat. # 31625 (ea.)

Appendix IX Mix #2 (32 components)

acetophenone	hexachloropropene
Aramite	isodrin
atrazine	isosafrole (<i>cis</i> & <i>trans</i>)
benzaldehyde	kepone
biphenyl	3-methylcholanthrene
ϵ -caprolactam	methyl methanesulfonate
chlorobenzilate	1,4-naphthoquinone
1-chloronaphthalene	4-nitroquinoline-N-oxide
diallate	pentachlorobenzene
dibenzo(a,j)acridine	pentachloroethane
2,6-dichlorophenol	pentachloronitrobenzene
7,12-dimethylbenz(a)anthracene	phenacetin
1,4-dioxane	pronamide
diphenyl ether	safrole
ethyl methacrylate	1,2,4,5-tetrachlorobenzene
ethyl methanesulfonate	1,3,5-trinitrobenzene

1,000 μ g/mL each in methylene chloride, 1mL/ampul
 cat. # 31806 (ea.) enquire

Organophosphorus Pesticide Mix, 8270/Appendix IX

(9 components)

dimethoate	parathion (ethyl parathion)
disulfoton	phorate
famphur	sulfotep
methyl parathion	zinophos (thionazine)

2,000 μ g/mL in methylene chloride, 1mL/ampul
 cat. # 32419 (ea.)

Organochlorine Pesticide Mix AB # 3 (20 components)

aldrin	dieldrin
α -BHC	endosulfan I
β -BHC	endosulfan II
δ -BHC	endosulfan sulfate
γ -BHC (lindane)	endrin
α -chlordane	endrin aldehyde
γ -chlordane	endrin ketone
4,4'-DDD	heptachlor
4,4'-DDE	heptachlor epoxide (isomer B)
4,4'-DDT	methoxychlor

2,000 μ g/mL each in hexane:toluene (1:1), 1mL/ampul
 cat. # 32415 (ea.)

8270 Calibration Mix #1 (19 components)

benzoic acid	3-methylphenol
4-chloro-3-methylphenol	4-methylphenol
2-chlorophenol	2-nitrophenol
2,4-dichlorophenol	4-nitrophenol
2,6-dichlorophenol	pentachlorophenol
2,4-dimethylphenol	phenol
4,6-dinitro-2-methylphenol	2,3,4,6-tetrachlorophenol
2,4-dinitrophenol	2,4,5-trichlorophenol
dinoseb	2,4,6-trichlorophenol
2-methylphenol	

2,000 μ g/mL each in methylene chloride, 1mL/ampul
 cat. # 31618 (ea.)

8270 Calibration Mix #2 (11 components)

aniline	3-nitroaniline
benzidine	4-nitroaniline
4-chloroaniline	N-nitrosodimethylamine
3,3'-dichlorobenzidine	N-nitrosodi-n-propylamine
diphenylamine*	pyridine
2-nitroaniline	

2,000 μ g/mL each in methylene chloride:methanol (85:15), 1mL/ampul
 cat. # 31619 (ea.)

*N-nitrosodiphenylamine (8270-listed analyte) decomposes to diphenylamine (mix component) in the injector.

8270 Calibration Mix #3 (23 components)

Aramite	hexachlorobenzene
bis(2-chloroethyl)ether	hexachlorobutadiene
bis(2-chloroethoxy)methane	hexachlorocyclopentadiene
bis(2-chloroisopropyl)ether	hexachloroethane
4-bromophenyl phenyl ether	hexachloropropene
chlorobenzilate	isodrin
2-chloronaphthalene	kepone
4-chlorophenyl phenyl ether	pentachlorobenzene
1,2-dichlorobenzene	pentachloronitrobenzene
1,3-dichlorobenzene	1,2,4,5-tetrachlorobenzene
1,4-dichlorobenzene	1,2,4-trichlorobenzene
1,3-dinitrobenzene	

2,000 μ g/mL each in methylene chloride, 1mL/ampul
 cat. # 31620 (ea.)

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8000 Series Methods

Method 8270D, 8270C (Semivolatile Organic Compounds) cont'd

8270 Calibration Mix #4 (22 components)

acetophenone	2,6-dinitrotoluene
azobenzene*	ethyl methanesulfonate
benzyl alcohol	isophorone
bis(2-ethylhexyl)phthalate	isosafrole (<i>cis</i> & <i>trans</i>)
butyl benzyl phthalate	methyl methanesulfonate
dibenzofuran	1,4-naphthoquinone
diethyl phthalate	nitrobenzene
dimethyl phthalate	4-nitroquinoline-1-oxide
di-n-butyl phthalate	phenacetin
di-n-octyl phthalate	safrole
2,4-dinitrotoluene	1,3,5-trinitrobenzene

2,000µg/mL each in methylene chloride, 1mL/ampul
cat. # 31621 (ea.) enquire

*1,2-diphenylhydrazine (8270-listed analyte) decomposes to azobenzene (mix component) in the injector.

8270 Calibration Mix #5 (19 components)

acenaphthene	fluoranthene
acenaphthylene	fluorene
anthracene	ideno(1,2,3-cd)pyrene
benzo(a)anthracene	3-methylcholanthrene
benzo(a)pyrene	1-methylnaphthalene
benzo(b)fluoranthene	2-methylnaphthalene
benzo(ghi)perylene	naphthalene
benzo(k)fluoranthene	phenanthrene
chrysene	pyrene
dibenzo(a,h)anthracene	

2,000µg/mL each in methylene chloride, 1mL/ampul
cat. # 31622 (ea.)

8270 Calibration Mix #6 (10 components)

diallate (<i>cis</i> & <i>trans</i>)	parathion
dimethoate	phorate
disulfoton	pronamide
famphur	thionazine (zinophos)
methyl parathion	0,0,0-triethyl phosphorothioate

2,000µg/mL each in methylene chloride, 1mL/ampul
cat. # 31623 (ea.)

Aramite

2,000µg/mL in hexane, 1mL/ampul
cat. # 31624 (ea.)

605 Benzidines Calibration Mix

benzidine	3,3'-dichlorobenzidine
-----------	------------------------

2,000µg/mL each in methanol, 1mL/ampul
cat. # 31030 (ea.)

2,000µg/mL each in methylene chloride, 1mL/ampul
cat. # 31834 (ea.)

free data**Available on Our Website: Lot Certificates, Data Packs, and MSDSs**

For complete information detailing manufacturing and testing for Restek inventoried reference standards, visit our website at www.restek.com/datapacks. To view certificates and/or an MSDS, enter the catalog number of the product in the Search feature. For a free data pack (Adobe® PDF file), enter the catalog number and lot number of the product.

8270/Appendix IX Calibration Kit (2,000µg/mL)

31618: 8270 Calibration Mix #1
31619: 8270 Calibration Mix #2
31620: 8270 Calibration Mix #3
31621: 8270 Calibration Mix #4
31622: 8270 Calibration Mix #5
31623: 8270 Calibration Mix #6
31625: Appendix IX Mix #1

Contains 1mL each of these mixtures.

cat. # 31627 (kit)

8270 Calibration Kit (2,000µg/mL)

31618: 8270 Calibration Mix #1
31619: 8270 Calibration Mix #2
31620: 8270 Calibration Mix #3
31621: 8270 Calibration Mix #4
31622: 8270 Calibration Mix #5

Contains 1mL each of these mixtures.

cat. # 31626 (kit)

Aroclor Solutions

Volume is 1mL/ampul. Concentration is µg/mL unless otherwise noted.

Compound	Solvent	Conc.	cat.# (ea.)	price
Aroclor 1016	H	1,000	32006	
Aroclor 1016	I	200	32064	
Aroclor 1016	TO	50mg/kg	32075	
Aroclor 1016	TO	500mg/kg	32076	
Aroclor 1221	H	1,000	32007	
Aroclor 1221	I	200	32065	
Aroclor 1221	TO	50mg/kg	32077	
Aroclor 1221	TO	500mg/kg	32078	
Aroclor 1232	H	1,000	32008	
Aroclor 1232	I	200	32066	
Aroclor 1232	TO	50mg/kg	32079	
Aroclor 1232	TO	500mg/kg	32080	
Aroclor 1242	H	1,000	32009	
Aroclor 1242	I	200	32067	
Aroclor 1242	TO	50mg/kg	32081	
Aroclor 1242	TO	500mg/kg	32082	
Aroclor 1248	H	1,000	32010	
Aroclor 1248	I	200	32068	
Aroclor 1248	TO	50mg/kg	32083	
Aroclor 1248	TO	500mg/kg	32084	
Aroclor 1254	H	1,000	32011	
Aroclor 1254	I	200	32069	
Aroclor 1254	TO	50mg/kg	32085	
Aroclor 1254	TO	500mg/kg	32086	
Aroclor 1260	H	1,000	32012	
Aroclor 1260	I	200	32070	
Aroclor 1260	TO	50mg/kg	32087	
Aroclor 1260	TO	500mg/kg	32088	
Aroclor 1262	H	1,000	32409	
Aroclor 1268	H	1,000	32410	
Aroclor 1016/1260	H	1,000	32039	
Aroclor 1016/1260	I	200	32299	
Aroclor 1016/1260	A	400	32456	

A = acetone

H = hexane

I = isoctane

TO = transformer oil (PCB-free)

Method 8310 (Polycyclic Aromatic Hydrocarbons [PAHs])

EPA Method 8310 PAH Mixture (18 components)

acenaphthene	dibenzo(a,h)anthracene
acenaphthylene	fluoranthene
anthracene	fluorene
benzo(a)anthracene	indeno(1,2,3-cd)pyrene
benzo(a)pyrene	1-methylnaphthalene
benzo(b)fluoranthene	2-methylnaphthalene
benzo(ghi)perylene	naphthalene
benzo(k)fluoranthene	phenanthrene
chrysene	pyrene

500µg/mL each in acetonitrile, 1mL/ampul

cat. # 31841 (ea.)

EPA Method 8310 Surrogate Standard

decafluorobiphenyl

1,000µg/mL in acetonitrile, 1mL/ampul

cat. # 31842 (ea.)

EPA Method 8310 Quality Control Check (18 components)

acenaphthene	100µg/mL	dibenzo(a,h)anthracene	10
acenaphthylene	100	fluoranthene	10
anthracene	100	fluorene	100
benzo(a)anthracene	10	indeno(1,2,3-cd)pyrene	10
benzo(a)pyrene	10	1-methylnaphthalene	100
benzo(b)fluoranthene	10	2-methylnaphthalene	100
benzo(ghi)perylene	10	naphthalene	100
benzo(k)fluoranthene	5	phenanthrene	100
chrysene	10	pyrene	10

In acetonitrile, 1mL/ampul

cat. # 31843 (ea.)

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Method 8315 (Aldehydes/Ketones-DNPH by HPLC)

Aldehyde-Ketone-DNPH TO-11A Calibration Mix

(15 components)

acetaldehyde-DNPH	hexaldehyde-DNPH
acetone-DNPH	isovaleraldehyde-DNPH
acrolein-DNPH	propionaldehyde-DNPH
benzaldehyde-DNPH	<i>m</i> -tolualdehyde-DNPH
<i>n</i> -butyraldehyde-DNPH	<i>o</i> -tolualdehyde-DNPH
crotonaldehyde-DNPH	<i>p</i> -tolualdehyde-DNPH
2,5-dimethylbenzaldehyde-DNPH	valeraldehyde-DNPH
formaldehyde-DNPH	

15µg/mL* each in acetonitrile, 1mL/ampul

cat. # 31808 (ea.)

*Concentration calculated as aldehyde.

Formaldehyde-DNPH Mix

formaldehyde-DNPH

500µg/mL* in acetonitrile, 1mL/ampul

cat. # 31837 (ea.)

*Concentration calculated as aldehyde.

CARB 1004 Aldehyde/Ketone-DNPH Calibration Standard

(13 components)

acetaldehyde-2,4-DNPH	hexaldehyde-2,4-DNPH
acetone-2,4-DNPH	methacrolein-2,4-DNPH
acrolein-2,4-DNPH	methyl ethyl ketone-2,4-DNPH
benzaldehyde-2,4-DNPH	propionaldehyde-2,4-DNPH
<i>n</i> -butyraldehyde-2,4-DNPH	<i>m</i> -tolualdehyde-2,4-DNPH
crotonaldehyde-2,4-DNPH	valeraldehyde-2,4-DNPH
formaldehyde-2,4-DNPH	

3µg/mL each in acetonitrile, 1mL/ampul

cat. # 33093 (ea.)

DNPH Reference Materials

Volume is 1mL/ampul. Concentration is µg/mL.

Compound	Solvent	Conc.	cat.# (ea.)	price
acetaldehyde-2,4-DNPH	ACN	100	33074	
acetone-2,4-DNPH	ACN	100	33075	
acrolein-2,4-DNPH	ACN	100	33076	
benzaldehyde-2,4-DNPH	ACN	100	33077	
2-butanone-2,4-DNPH	ACN	100	33078	
<i>n</i> -butyraldehyde-2,4-DNPH	ACN	100	33079	
crotonaldehyde-2,4-DNPH	ACN	100	33080	
2,5-dimethylbenzaldehyde-2,4-DNPH	ACN	100	33081	
formaldehyde-2,4-DNPH	ACN	100	33082	
glycolaldehyde-2,4-DNPH	ACN	100	33091	
hexaldehyde-2,4-DNPH	ACN	100	33083	
isobutyraldehyde-2,4-DNPH	ACN	100	33084	
isovaleraldehyde-2,4-DNPH	ACN	100	33085	
methacrolein-2,4-DNPH	ACN	100	33095	
propionaldehyde-2,4-DNPH	ACN	100	33086	
<i>m</i> -tolualdehyde-2,4-DNPH	ACN	100	33088	
<i>o</i> -tolualdehyde-2,4-DNPH	ACN	100	33087	
<i>p</i> -tolualdehyde-2,4-DNPH	ACN	100	33089	
valeraldehyde-2,4-DNPH	ACN	100	33090	

ACN = acetonitrile

8000 Series Methods

Method 8321 (Chlorinated Acids by HPLC)

Chlorinated Acids by HPLC, Mix A (8 components)

acifluorfen (Blazer)	dicamba
bentazon	dichlorprop
chloramben	picloram
2,4-D	2,4,5-TP (Silvex)
1,000µg/mL each in acetonitrile, 1mL/ampul	
cat. # 32431 (ea.)	

Chlorinated Acids by HPLC, Mix B (8 components)

2,4-DB	MCPP (mecoprop)
3,5-dichlorobenzoic acid	4-nitrophenol
dinoseb	pentachlorophenol
MCPP	2,4,5-T
1,000µg/mL each in acetonitrile, 1mL/ampul	
cat. # 32430 (ea.)	

Chlorinated Acid Herbicide Mix

2,4-dichlorophenoxyacetic acid (2,4-D)	
2,4,5-TP (Silvex)	
1,000µg/mL each in acetonitrile, 1mL/ampul	
cat. # 32429 (ea.)	

Dalapon (2,2-dichloropropionic acid)

1,000µg/mL in acetonitrile, 1mL/ampul	
cat. # 32432 (ea.)	
1,000µg/mL in methanol, 1mL/ampul	
cat. # 32253 (ea.)	

2,000µg/mL in methanol, 1mL/ampul	
cat. # 32056 (ea.)	

Method 8330

(Nitroaromatics and Nitramines by HPLC)

EPA Method 8330 is used to measure explosives residues in water and soil samples, using HPLC with UV detection. Target analytes are nitroaromatic and nitramine explosives and their degradation products.

8330 Internal Standards

3,4-dinitrotoluene	
1,000µg/mL in methanol, 1mL/ampul	

cat. # 31452 (ea.) inquire

1,4-dinitrobenzene	
2,000µg/mL in acetonitrile, 1mL/ampul	

cat. # 33205 (ea.) inquire

8330 Surrogate

1,2-dinitrobenzene	
1,000µg/mL in methanol, 1mL/ampul	

cat. # 31453 (ea.) inquire

Method 8330

(Nitroaromatics and Nitramines by HPLC) cont'd

Nitroaromatics and Nitramine Explosives by HPLC, EPA**8330B** (17 components)

2-amino-4,6-dinitrotoluene	2-nitrotoluene
4-amino-2,6-dinitrotoluene	3-nitrotoluene
3,5-dinitroaniline	4-nitrotoluene
1,3-dinitrobenzene	PETN
2,4-dinitrotoluene	RDX
2,6-dinitrotoluene	tetryl
HMX	1,3,5-trinitrobenzene
nitrobenzene	2,4,6-trinitrotoluene
nitroglycerin	
1,000µg/mL each in acetonitrile, 1mL/ampul	
cat. # 33204 (ea.)	inquire

Nitroaromatics and Nitramine Explosives by HPLC

(14 components)

1,3-dinitrobenzene	2-nitrotoluene
2-amino-4,6-dinitrotoluene	3-nitrotoluene
4-amino-2,6-dinitrotoluene	4-nitrotoluene
2,4-dinitrotoluene	RDX
2,6-dinitrotoluene	tetryl
HMX	1,3,5-trinitrobenzene
nitrobenzene	2,4,6-trinitrotoluene
1,000µg/mL each in acetonitrile, 1mL/ampul	
cat. # 33905 (ea.)	inquire

8330 Calibration Mix #1 (7 components)

1,3-dinitrobenzene	RDX
2,4-dinitrotoluene	1,3,5-trinitrobenzene
HMX	2,4,6-trinitrotoluene
nitrobenzene	
1,000µg/mL each in acetonitrile, 1mL/ampul	
cat. # 31450 (ea.)	inquire

8330 Calibration Mix #2 (7 components)

2-amino-4,6-dinitrotoluene	3-nitrotoluene
4-amino-2,6-dinitrotoluene	4-nitrotoluene
2,6-dinitrotoluene	tetryl
2-nitrotoluene	
1,000µg/mL each in acetonitrile, 1mL/ampul	
cat. # 31451 (ea.)	inquire

did you know?

When you order reference materials for Method 8330, be aware that obtaining pure, neat compounds for standards can be very difficult. Some of these commercial-grade materials contain desensitizing agents such as beeswax, water, or other manufacturing by-products. Many are shipped wet and must be carefully dried before preparation. To ensure the highest quality standards, Restek chemists use multiple analytical techniques including GC, HPLC, GC/MS, or DSC to verify raw material purity. All compounds are 98% pure or higher.

also available

See page 425 for chlordane and toxaphene reference materials.

Method 8330 (Nitroaromatics and Nitramines by HPLC) cont'd

Single-Component Explosives Solutions

Volume is 1mL/ampul. Concentration is $\mu\text{g}/\text{mL}$.

Compound	Solvent	Conc.	cat.# (ea.)	price
2-amino-4,6-dinitrotoluene	ACN	1,000	31670	enquire
4-amino-2,6-dinitrotoluene	ACN	1,000	31671	enquire
ammonium picrate	ACN	2,000	31890	enquire
3,5-dinitroaniline	ACN	1,000	31661	enquire
1,3-dinitrobenzene	ACN	1,000	31662	enquire
1,4-dinitrobenzene	ACN	2,000	33205	enquire
2,4-dinitrotoluene	ACN	1,000	31663	enquire
2,6-dinitrotoluene	ACN	1,000	31664	enquire
EGDN	M	1,000	31601	enquire
HMX	ACN	1,000	31665	enquire
nitrobenzene	ACN	1,000	31657	enquire
nitroglycerin	M	1,000	31498	enquire
nitroguanidine	M	1,000	31602	enquire
2-nitrotoluene	ACN	1,000	31659	enquire
3-nitrotoluene	ACN	1,000	31660	enquire
4-nitrotoluene	ACN	1,000	31658	enquire
PETN (pentaerythritol tetranitrate)	M	1,000	31600	enquire
picric acid	M	1,000	31499	enquire
propylene glycol dinitrate (PGDN)	M	1,000	31821	enquire
RDX	ACN	1,000	31666	enquire
tetryl	ACN	1,000	31667	enquire
1,3,5-trinitrobenzene	ACN	1,000	31668	enquire
2,4,6-trinitrotoluene	ACN	1,000	31669	enquire

ACN=acetonitrile

M = methanol

8330 Nitroaromatics Kit (1,000 $\mu\text{g}/\text{mL}$)

31450: 8330 Calibration Mix #1

31451: 8330 Calibration Mix #2

31452: 8330 Internal Standard Mix

31453: 8330 Surrogate Mix

Contains 1mL each of these mixtures.

cat. # 31454 (kit) inquire



also available

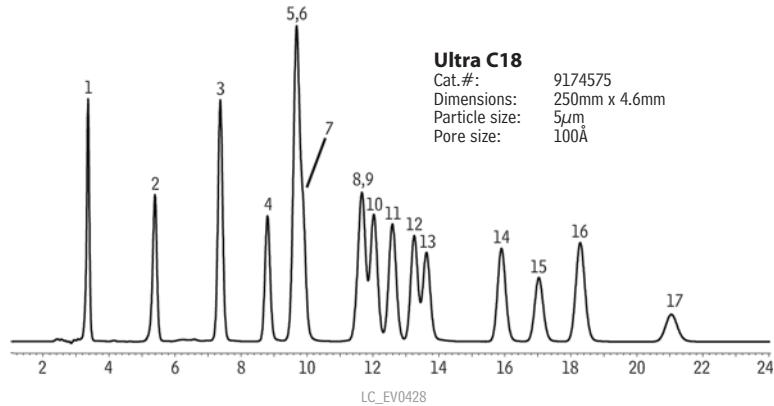
Ultra C18 HPLC columns, page 314

Pinnacle® II Biphenyl HPLC columns, page 309

also available

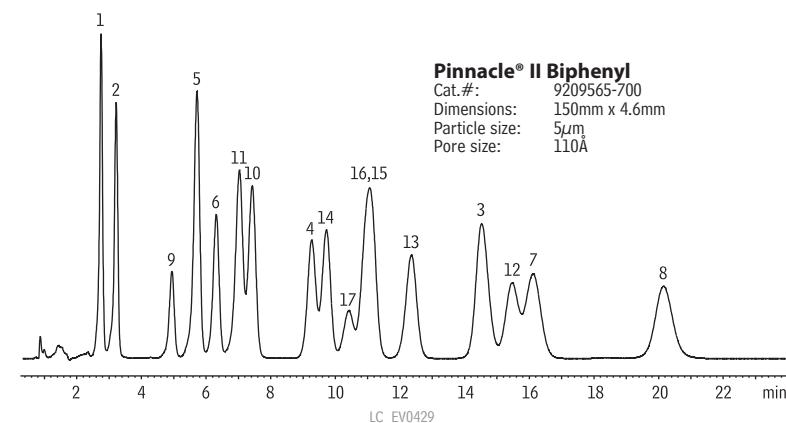
See materials for GC Method 8095 on pages 429-430.

EPA 8330B analytes resolve well on the Ultra C18 column and Pinnacle® II Biphenyl column; differing selectivities allow true confirmational analysis.



Peak List

- 1. HMX
- 2. RDX
- 3. 1,3,5-TNB
- 4. 1,3-DNB
- 5. 3,5-DNA
- 6. NB
- 7. tetryl
- 8. 2,4,6-TNT
- 9. NG
- 10. 2-A-4,6-DNT
- 11. 4-A-2,6-DNT
- 12. 2,4-DNT
- 13. 2,6-DNT
- 14. 2-NT
- 15. 4-NT
- 16. 3-NT
- 17. PETN



Sample: 50 $\mu\text{g}/\text{mL}$ each compound diluted in acetonitrile
 8330 Calibration Mix #1 (cat. # 31450)
 8330 Calibration Mix #2 (cat. # 31451)
 PETN Standard (cat. # 31600)
 3,5-dinitroaniline Reference Mix (cat. # 31661)
 Nitroglycerin Standard (cat. # 31498)
 10 μL

Inj.:

Conditions:

- Mobile phase: water:methanol (44:56 v/v)
- Flow: 1.0mL/min.
- Temp.: 30°C
- Det.: UV detection @ 210nm

free literature

For more information, download our *Trace-Level Explosives Analysis by HPLC* applications note from www.restek.com. lit. cat.# 59361A

EPA Superfund Contract Lab Program (CLP)

US EPA Method No.	Compound Class	US EPA Method No.	Compound Class
SOM01.1 .....	.Volatile	SOM01.1 .....	.Semivolatiles
04.2 and 04.1 .....	.Volatile	03.2 OLC .....	.Semivolatiles
10/92 SOW .....	.Volatile	04.2 and 04.1 SOW .....	.Semivolatiles
3/90 SOW .....	.Volatile	4/89 and 3/90 SOW .....	.Semivolatiles
03.2 OLC .....	.Volatile	SOM01.1, 04.1, 3/90, 4/89 and 2/88 SOW .....	.Pesticides, Aroclor PCBs

SOM01.1 (Volatile), QA Mixes

SOM01.1 VOA Non-Ketone Deuterated Monitoring Compounds (11 components)

benzene-d6	1,2-dichloropropane-d6
chloroethane-d5	1,3-dichloropropene-d4*
chloroform-d	1,1,2,2-tetrachloroethane-d2
1,2-dichlorobenzene-d4	toluene-d8
1,2-dichloroethane-d4	v vinyl chloride-d3
1,1-dichloroethene-d2	
500µg/mL each in deuterated methanol (MeOD), 1mL/ampul	
cat. # 30624 (ea.)	
1,000µg/mL each in deuterated methanol (MeOD), 1mL/ampul	
cat. # 30635 (ea.)	

*Mix of *cis* and *trans* isomers. Exact proportions will be reported on the data sheet.

SOM01.1 VOA Ketone Deuterated Monitoring Compounds

2-butanone-d5	2-hexanone-d5
500µg/mL each in deuterium oxide (D:O), 1mL/ampul	
cat. # 30625 (ea.)	

1,000µg/mL each in deuterium oxide (D:O), 1mL/ampul	
cat. # 30636 (ea.)	

SOM01.1 VOA DMC Kit

30624: Non-Ketones	
30625: Ketones	
500µg/mL. 1mL each of these mixtures.	
cat. # 30630 (kit)	

1,000µg/mL. 1mL each of these mixtures.	
cat. # 30637 (kit)	

04.2, 04.1, and 10/92 SOW (Volatile), QA Mixes

CLP 04.1 VOA Internal Standard/SMC Spike Mix

bromochloromethane	1,2-dichloroethane-d4
4-bromofluorobenzene	1,4-difluorobenzene
chlorobenzene-d5	toluene-d8
2,500µg/mL each in P&T methanol, 1mL/ampul	
cat. # 30457 (ea.)	

VOA Internal Standard Mix

bromochloromethane	chlorobenzene-d5
1,4-difluorobenzene	
2,500µg/mL each in P&T methanol, 1mL/ampul	
cat. # 30011 (ea.)	

04.2, 04.1, and 10/92 SOW (Volatiles), QA Mixes cont'd

L/C VOA Lab Control Sample #2

vinyl chloride
 2,500 μ g/mL in P&T methanol, 1mL/ampul
 cat. # 30093 (ea.)

L/C VOA Internal Standard Mix

chlorobenzene-d5 1,4-difluorobenzene
 1,4-dichlorobenzene-d4
 2,500 μ g/mL each in P&T methanol, 1mL/ampul
 cat. # 30091 (ea.)

04.2 and 04.1 (Volatiles), Calibration Mixes

CLP 04.1 VOA CAL2000 MegaMix® (40 components)

benzene	<i>trans</i> -1,3-dichloropropene
bromodichloromethane	ethylbenzene
bromoform	isopropylbenzene
carbon disulfide	methyl acetate
carbon tetrachloride	methyl <i>tert</i> -butyl ether (MTBE)
chlorobenzene	methylcyclohexane
chloroform	methylene chloride
cyclohexane	styrene
dibromochloromethane	1,1,2,2-tetrachloroethane
1,2-dibromo-3-chloropropane (DBCP)	tetrachloroethene
1,2-dibromoethane	toluene
1,2-dichlorobenzene	1,2,4-trichlorobenzene
1,3-dichlorobenzene	1,1,1-trichloroethane
1,4-dichlorobenzene	1,1,2-trichloroethane
1,1-dichloroethane	trichloroethene
1,2-dichloroethane	1,1,2-trichloro-1,2,2-trifluoroethane (CFC-113)
1,1-dichloroethene	<i>m</i> -xylene
<i>cis</i> -1,2-dichloroethene	<i>o</i> -xylene
<i>trans</i> -1,2-dichloroethene	<i>p</i> -xylene
1,2-dichloropropane	
<i>cis</i> -1,3-dichloropropene	

2,000 μ g/mL each in P&T methanol, 1mL/ampul
 cat. # 30456 (ea.)

502.2 Calibration Mix #1 (gases)

bromomethane	dichlorodifluoromethane (CFC-12)
chloroethane	trichlorofluoromethane (CFC-11)
chloromethane	vinyl chloride

200 μ g/mL each in P&T methanol, 1mL/ampul
 cat. # 30439 (ea.)

2,000 μ g/mL each in P&T methanol, 1mL/ampul
 cat. # 30042 (ea.)

VOA Calibration Mix #1 (ketones)

acetone	2-hexanone
2-butanone (MEK)	4-methyl-2-pentanone (MIBK)

5,000 μ g/mL each in P&T methanol:water (90:10), 1mL/ampul
 cat. # 30006 (ea.)

CLP 04.1 VOA Kit #3

30006: VOA Calibration Mix #1 (ketones)
 30042: 502.2 Calibration Mix #1 (gases)
 30456: CLP 04.1 VOA CAL2000 MegaMix
 Contains 1mL each of these mixtures.
 cat. # 30460 (kit)

3/90 SOW (Volatiles), Calibration Mixes

CLP VOA CAL2000 MegaMix® (28 components)

benzene	<i>cis</i> -1,3-dichloropropene
bromodichloromethane	<i>trans</i> -1,3-dichloropropene
bromoform	ethylbenzene
carbon disulfide	methylene chloride
carbon tetrachloride	styrene
chlorobenzene	1,1,2,2-tetrachloroethane
chloroform	tetrachloroethene
dibromochloromethane	toluene
1,1-dichloroethane	1,1,1-trichloroethane
1,2-dichloroethane	1,1,2-trichloroethane
1,1-dichloroethene	trichloroethene
<i>cis</i> -1,2-dichloroethene	<i>m</i> -xylene
<i>trans</i> -1,2-dichloroethene	<i>o</i> -xylene
1,2-dichloropropane	<i>p</i> -xylene

2,000 μ g/mL each in P&T methanol, 1mL/ampul
 cat. # 30632 (ea.)

Vinyl Acetate

2,000 μ g/mL in P&T methanol, 1mL/ampul
 cat. # 30216 (ea.)

CLP VOA CAL2000 MegaMix® Kit

30632: CLP VOA CAL2000 MegaMix
 30216: vinyl acetate
 Contains 1mL each of these mixtures.
 cat. # 30438 (kit)



VOA Calibration Mix #2 (7 components)

benzene	vinyl acetate
carbon disulfide	<i>o</i> -xylene
ethylbenzene	<i>p</i> -xylene
toluene	

2,000 μ g/mL each in P&T methanol, 1mL/ampul
 cat. # 30007 (ea.)

VOA Calibration Mix #3 (10 components)

carbon tetrachloride	1,2-dichloropropane
chlorobenzene	methylene chloride
chloroform	1,1,2-trichloroethane
1,1-dichloroethane	trichloroethene
1,1-dichloroethene	<i>m</i> -xylene

2,000 μ g/mL each in P&T methanol, 1mL/ampul
 cat. # 30008 (ea.)

VOA Calibration Mix #4 (12 components)

bromodichloromethane	<i>cis</i> -1,3-dichloropropene
bromoform	<i>trans</i> -1,3-dichloropropene
dibromochloromethane	styrene
1,2-dichloroethane	1,1,2,2-tetrachloroethane
<i>cis</i> -1,2-dichloroethene	tetrachloroethene
<i>trans</i> -1,2-dichloroethene	1,1,1-trichloroethane

2,000 μ g/mL each in P&T methanol, 1mL/ampul
 cat. # 30009 (ea.)

VOA Calibration Mix #5 (gases)

bromomethane	chloromethane
chloroethane	vinyl chloride

2,000 μ g/mL each in P&T methanol, 1mL/ampul
 cat. # 30010 (ea.)

CLP VOA Calibration Kit #2

30006: VOA Calibration Mix #1 (ketones)
 30010: VOA Calibration Mix #5 (gases)
 30632: CLP VOA CAL2000 MegaMix
 30216: vinyl acetate
 Contains 1mL each of these mixtures.
 cat. # 30442 (kit)



OLC 03.2 (Volatiles), Calibration Mixes**OLC 03.2 VOA MegaMix® (42 components)**

benzene	<i>cis</i> -1,3-dichloropropene
bromochloromethane	<i>trans</i> -1,3-dichloropropene
bromodichloromethane	ethylbenzene
bromoform	isopropylbenzene (cumene)
carbon disulfide	methyl acetate
carbon tetrachloride	methylcyclohexane
chlorobenzene	methyl <i>tert</i> -butyl ether (MTBE)
chloroform	methylene chloride (dichloromethane)
cyclohexane	styrene
dibromochloromethane (chlorodibromomethane)	1,1,2,2-tetrachloroethane
1,2-dibromo-3-chloropropane (DBCP)	tetrachloroethene
1,2-dibromoethane (EDB)	toluene
1,2-dichlorobenzene	1,2,3-trichlorobenzene
1,3-dichlorobenzene	1,2,4-trichlorobenzene
1,4-dichlorobenzene	1,1,1-trichloroethane
1,1-dichloroethane	1,1,2-trichloroethane
1,2-dichloroethane	trichloroethene
1,1-dichloroethene	1,1,2-trichlorotrifluoroethane (CFC-113)
<i>cis</i> -1,2-dichloroethene	<i>m</i> -xylene*
<i>trans</i> -1,2-dichloroethene	<i>o</i> -xylene
1,2-dichloropropane	<i>p</i> -xylene*

2,000µg/mL each (**m*- & *p*-xylene at 1,000µg/mL) in P&T methanol, 1mL/ampul
cat. # 30492 (ea.)

L/C VOA Calibration Mix #6

bromochloromethane	1,2-dichlorobenzene
1,2-dibromo-3-chloropropane (DBCP)	1,3-dichlorobenzene
1,2-dibromoethane	1,4-dichlorobenzene
2,000µg/mL each in P&T methanol, 1mL/ampul cat. # 30090 (ea.)	

Additional VOA Calibration Mixes Required:

30006: VOA Calibration Mix #1	30009: VOA Calibration Mix #4
30007: VOA Calibration Mix #2	30010: VOA Calibration Mix #5
30008: VOA Calibration Mix #3	30003: VOA Tuning Compound

See pages 442–443 for mix compositions.

SOM01.1 (Semivolatiles), QA Mixes**SOM01.1 Deuterated Monitoring Compound Mix****w/ SIM Compounds (18 components)**

acenaphthylene-d8	fluoranthene-d10
anthracene-d10	fluorene-d10
benzo(a)pyrene-d12	2-methylnaphthalene-d10
bis(2-chloroethyl)ether-d8	4-methylphenol-d8
4-chloroaniline-d4	nitrobenzene-d5
2-chlorophenol-d4	2-nitropheno-d4
2,4-dichlorophenol-d3	4-nitropheno-d4
dimethylphthalate-d6	phenol-d5
4,6-dinitro-2-methylphenol-d	pyrene-d10
2,000µg/mL each in methylene chloride, 1mL/ampul cat. # 33918 (ea.)	

SOM01.1 Deuterated Monitoring Compound Mix**SIM Compounds**

fluoranthene-d10	2-methylnaphthalene-d10
2,000µg/mL each in methylene chloride, 1mL/ampul cat. # 33913 (ea.)	

CCME F2 Surrogate Standard

2-methylnonane	
1,000µg/mL in methylene chloride, 1mL/ampul cat. # 31870 (ea.)	

SOM01.1 (Semivolatiles), QA Mixes cont'd**SOM01.1 SVOA B/N Matrix Spike Mix**

acenaphthene	N-nitroso-di- <i>n</i> -propylamine
2,4-dinitrotoluene	pyrene
5,000µg/mL each in methanol, 1mL/ampul cat. # 33916 (ea.)	
5,000µg/mL each in methanol, 5mL/ampul cat. # 33917 (ea.)	

04.2, 04.1, 4/89, and 3/90 SOW (Semivolatiles), QA Mixes**SV Internal Standard Mix**

acenaphthene-d10	naphthalene-d8
chrysene-d12	perylene-d12
1,4-dichlorobenzene-d4	phenanthrene-d10
2,000µg/mL each in methylene chloride, 1mL/ampul cat. # 31206 (ea.)	
4,000µg/mL each in methylene chloride, 1mL/ampul cat. # 31006 (ea.)	

Revised SV Internal Standard Mix (7 components)

acenaphthene-d10	naphthalene-d8
chrysene-d12	perylene-d12
1,4-dichlorobenzene-d4	phenanthrene-d10
1,4-dioxane-d8	
2,000µg/mL each in methylene chloride, 1mL/ampul cat. # 31885 (ea.)	
4,000µg/mL each in methylene chloride, 1mL/ampul cat. # 31886 (ea.)	

Acid Surrogate Standard Mix (3/90 SOW)

2-chlorophenol-d4	phenol-d6
2-fluorophenol	2,4,6-tribromophenol
1,500µg/mL each in methanol, 1mL/ampul cat. # 31003 (ea.)	
7,500µg/mL each in methanol, 1mL/ampul cat. # 31073 (ea.)	
7,500µg/mL each in methanol, 5mL/ampul cat. # 31083 (ea.)	

Acid Surrogate Mix (4/89 SOW)

2-fluorophenol	2,4,6-tribromophenol
phenol-d6	
2,000µg/mL each in methanol, 1mL/ampul cat. # 31025 (ea.)	
10,000µg/mL each in methanol, 1mL/ampul cat. # 31063 (ea.)	
10,000µg/mL each in methanol, 5mL/ampul cat. # 31087 (ea.)	
10,000µg/mL each in methanol, 10mL/ampul cat. # 33029 (ea.)	

Revised B/N Surrogate Mix

2-fluorobiphenyl	<i>p</i> -terphenyl-d14
nitrobenzene-d5	pyrene-d10
1,000µg/mL each in methylene chloride, 1mL/ampul cat. # 31887 (ea.)	
5,000µg/mL each in methylene chloride, 1mL/ampul cat. # 31888 (ea.)	
5,000µg/mL each in methylene chloride, 5mL/ampul cat. # 31889 (ea.)	

**04.2, 04.1, 4/89, and 3/90 SOW (Semivolatiles),
 QA Mixes cont'd**

CLP 04.1 BNA Surrogate Mix (8 components)

2-chlorophenol-d4	1,500 μ g/mL	nitrobenzene-d5	1,000
1,2-dichlorobenzene-d4	1,000	phenol-d6	1,500
2-fluorobiphenyl	1,000	p-terphenyl-d14	1,000
2-fluorophenol	1,500	2,4,6-tribromophenol	1,500
In methylene chloride, 1mL/ampul			
	cat. # 31493 (ea.)		

B/N Surrogate Standard Mix (3/90 SOW)

1,2-dichlorobenzene-d4	nitrobenzene-d5
2-fluorobiphenyl	p-terphenyl-d14
1,000 μ g/mL each in methylene chloride, 1mL/ampul	
	cat. # 31002 (ea.)
5,000 μ g/mL each in methylene chloride, 1mL/ampul	
	cat. # 31072 (ea.)
5,000 μ g/mL each in methylene chloride, 5mL/ampul	
	cat. # 31082 (ea.)

B/N Surrogate Mix (4/89 SOW)

2-fluorobiphenyl	p-terphenyl-d14
nitrobenzene-d5	
1,000 μ g/mL each in methylene chloride, 1mL/ampul	
	cat. # 31024 (ea.)
5,000 μ g/mL each in methylene chloride, 1mL/ampul	
	cat. # 31062 (ea.)
5,000 μ g/mL each in methylene chloride, 5mL/ampul	
	cat. # 31086 (ea.)
5,000 μ g/mL each in methylene chloride, 10mL/ampul	
	cat. # 33028 (ea.)

Acid Matrix Spike Mix

4-chloro-3-methylphenol	pentachlorophenol
2-chlorophenol	phenol
4-nitrophenol	
1,500 μ g/mL each in methanol, 1mL/ampul	
	cat. # 31005 (ea.)
7,500 μ g/mL each in methanol, 1mL/ampul	
	cat. # 31075 (ea.)
7,500 μ g/mL each in methanol, 5mL/ampul	
	cat. # 31085 (ea.)

CLP 04.1 B/N Matrix Spike Mix

acenaphthene	N-nitroso-di-n-propylamine
2,4-dinitrotoluene	pyrene
1,000 μ g/mL each in methanol, 1mL/ampul	
	cat. # 31492 (ea.)

B/N Matrix Spike Mix

acenaphthene	N-nitroso-di-n-propylamine
1,4-dichlorobenzene	pyrene
2,4-dinitrotoluene	1,2,4-trichlorobenzene
1,000 μ g/mL each in methanol, 1mL/ampul	
	cat. # 31004 (ea.)
5,000 μ g/mL each in methanol, 1mL/ampul	
	cat. # 31074 (ea.)
5,000 μ g/mL each in methanol, 5mL/ampul	
	cat. # 31084 (ea.)
5,000 μ g/mL each in methanol, 10mL/ampul	
	cat. # 33030 (ea.)

SV Screening Mix

di-n-octyl phthalate	phenol
phenanthrene	
2,500 μ g/mL each in methylene chloride, 1mL/ampul	
	cat. # 31000 (ea.)

Low Concentration Semivolatiles, QA Mixes

L/C Acid Surrogate Mix

2-fluorophenol	1,000 μ g/mL	2,4,6-tribromophenol	3,000
phenol-d6		1,000	
In methanol, 1mL/ampul			cat. # 31207 (ea.)

L/C Acid Lab Control Sample

2-chlorophenol	2,4,6-trichlorophenol
phenol	
2,000 μ g/mL each in methanol, 1mL/ampul	
	cat. # 31212 (ea.)

L/C B/N Lab Control Sample (12 components)

For extended shelf life, 4-chloroaniline is provided as a separate solution.

Ampul 1:

benzo(a)pyrene	hexachlorethane
bis(2-chloroethyl)ether	isophorone
diethyl phthalate	naphthalene
2,4-dinitrotoluene	N-nitrosodiphenylamine
N-nitroso-di-n-propylamine	1,2,4-trichlorobenzene
hexachlorobenzene	

Ampul 2:

4-chloroaniline	1,000 μ g/mL each in methylene chloride (4-chloroaniline at 2,000 μ g/mL), 1mL/ampul
	cat. # 31241 (ea.)

SV Tuning Compound

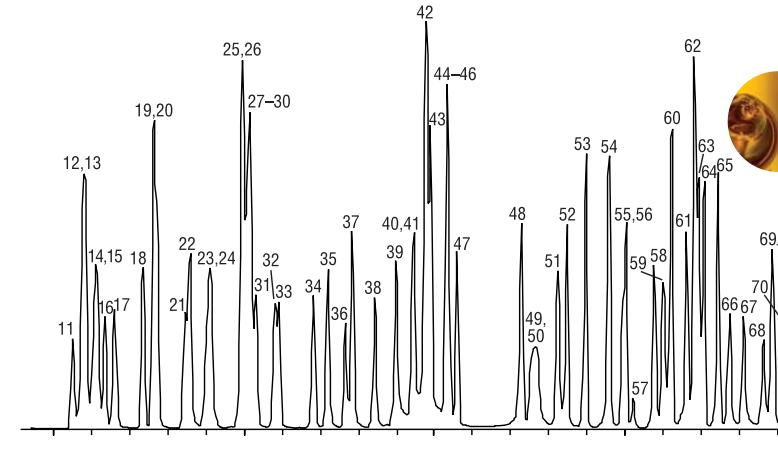
decafluorotriphenylphosphine (DFTPP)	
2,500 μ g/mL in methylene chloride, 1mL/ampul	
	cat. # 31001 (ea.)

PFTBA (MS Tuning Compound)

perfluorotributylamine (PFTBA)	
Neat, 1mL/ampul	
	cat. # 30482 (ea.)
Neat, 1g	
	cat. # 33027 (ea.)
No data pack available.	

also available

See pages 547-565 for chromatograms of semivolatiles analysis.



SOM01.1 (Semivolatiles), Calibration Mixes**SOM01.1 SVOA MegaMix® (67 components)**

acenaphthene	2,4-dinitrophenol
acenaphthylene	2,4-dinitrotoluene
acetophenone	2,6-dinitroluene
anthracene	di-n-octyl phthalate
atrazine	diphenylamine ¹
benzo(a)anthracene	fluoranthene
benzo(a)pyrene	fluorene
benzo(b)fluoranthene	hexachlorobenzene
benzo(ghi)perylene	hexachloro-1,3-butadiene (hexachlorobutadiene)
benzo(k)fluoranthene	hexachlorocyclopentadiene
benzyl butyl phthalate	hexachloroethane
biphenyl	indeno(1,2,3-cd)pyrene
bis(2-chloroethoxy)methane	isophorone
bis(2-chloroethyl)ether	2-methylnaphthalene
bis(2-chloroisopropyl)ether (2,2'-oxybis(1-chloropropane))	2-methylphenol (o-cresol)
bis(2-ethylhexyl)phthalate	3-methylphenol (m-cresol)*
4-bromophenyl-phenylether	4-methylphenol (p-cresol)*
ε-caprolactam	naphthalene
carbazole	2-nitroaniline
4-chloroaniline	3-nitroaniline
4-chloro-3-methylphenol	4-nitroaniline
2-chloronaphthalene	nitrobenzene
2-chlorophenol	2-nitrophenol
4-chlorophenyl-phenylether	4-nitrophenol
chrysene	N-nitroso-di-n-propylamine
dibenzo(a,h)anthracene	pentachlorophenol
dibenzofuran	phenanthrene
3,3'-dichlorobenzidine	phenol
2,4-dichlorophenol	pyrene
diethylphthalate	1,2,4,5-tetrachlorobenzene
2,4-dimethylphenol	2,3,4,6-tetrachlorophenol
dimethylphthalate	2,4,5-trichlorophenol
di-n-butylphthalate	2,4,6-trichlorophenol
4,6-dinitro-2-methylphenol	

1,000µg/mL each in methylene chloride, 1mL/ampul
cat. # 33019 (ea.)

*3-methylphenol and 4-methylphenol concentration is 500µg/mL.

¹ N-nitrosodiphenylamine (CLP-listed analyte) decomposes to diphenylamine (mix component) in the injector.

Benzaldehyde

2,000µg/mL in methylene chloride, 1mL/ampul
cat. # 33017 (ea.)

SOM01.1 SVOA MegaMix® Kit

33019: SOM01.1 SVOA MegaMix 1,000µg/mL

33017: Benzaldehyde 2,000µg/mL

Contains 1mL each of these mixtures.

cat. # 33005 (kit)

**04.2 and 04.1 (Semivolatiles), Calibration Mixes****CLP 04.1 B/N MegaMix® (49 components)**

acenaphthene	diethylphthalate
acenaphthylene	dimethylphthalate
acetophenone	di-n-butyl phthalate
anthracene	2,4-dinitrotoluene
atrazine	2,6-dinitrotoluene
benzo(a)anthracene	di-n-octyl phthalate
benzo(a)pyrene	diphenylamine ¹
benzo(b)fluoranthene	fluoranthene
benzo(ghi)perylene	hexachlorobenzene
benzo(k)fluoranthene	hexachloro-1,3-butadiene (hexachlorobutadiene)
benzyl butyl phthalate	hexachlorocyclopentadiene
biphenyl	hexachloroethane
bis(2-chloroethoxy)methane	indeno(1,2,3-cd)pyrene
bis(2-chloroethyl)ether	isophorone
bis(2-chloroisopropyl)ether (2,2'-oxybis(1-chloropropane))	2-methylnaphthalene
bis(2-ethylhexyl)phthalate	2-methylphenol (o-cresol)
4-bromophenyl-phenylether	3-methylphenol (m-cresol)*
ε-caprolactam	4-methylphenol (p-cresol)*
carbazole	naphthalene
4-chloroaniline	2-nitroaniline
4-chloro-3-methylphenol	3-nitroaniline
2-chloronaphthalene	nitrobenzene
2-chlorophenol	2-nitrophenol
4-chlorophenyl-phenylether	4-nitrophenol
chrysene	N-nitroso-di-n-propylamine
dibenzo(a,h)anthracene	phenanthrene
dibenzofuran	pyrene

1,000µg/mL each in methylene chloride, 1mL/ampul
cat. # 33018 (ea.)

¹ N-nitrosodiphenylamine (CLP-listed analyte) decomposes to diphenylamine (mix component) in the injector.

Benzaldehyde

2,000µg/mL in methylene chloride, 1mL/ampul
cat. # 33017 (ea.)

**CLP 04.1 B/N MegaMix® Kit**

33018: CLP 04.1 B/N MegaMix 1,000µg/mL

33017: Benzaldehyde 2,000µg/mL

Contains 1mL each of these mixtures.

cat. # 33014 (kit)

CLP 04.1 Phenols Calibration Mix (14 components)

4-chloro-3-methylphenol	4-methylphenol
2-chlorophenol	2-nitrophenol
2,4-dichlorophenol	4-nitrophenol
2,4-dimethylphenol	pentachlorophenol
2,4-dinitrophenol	phenol
2-methyl-4,6-dinitrophenol	2,4,5-trichlorophenol
2-methylphenol	2,4,6-trichlorophenol

2,000µg/mL each in methylene chloride, 1mL/ampul
cat. # 31494 (ea.)

Benzidine Mix

benzidine 3,3'-dichlorobenzidine
2,000µg/mL each in methylene chloride, 1mL/ampul

cat. # 31834 (ea.)

**also available**

See page 78 for details on our Rxⁱ-5Sil MS Capillary Columns for semivolatiles analysis.

i tech tip**CLP OLM 04.1 Semivolatiles Dilution**

Atrazine and benzaldehyde react quickly with the methanol stabilizer used in most brands and grades of methylene chloride. This reaction will prevent you from obtaining stable, working-level calibration standards. We prepare **CLP 04.1 B/N MegaMix®** and our **Benzaldehyde** standard from methylene chloride that is stabilized with amylene and is completely free of methanol. We strongly recommend screening the methylene chloride used to dilute these mixtures and confirming that it is free of methanol.

4/89 and 3/90 SOW (Semivolatiles), Calibration Mixes

SV Calibration Mix #1

benzyl alcohol	3-nitroaniline
4-chloroaniline	4-nitroaniline
2-nitroaniline	
2,000 μ g/mL each in methylene chloride, 1mL/ampul	

cat. # 31007 (ea.)

SV Calibration Mix #2 (15 components)

benzoic acid	4-methylphenol
4-chloro-3-methylphenol	2-nitrophenol
2-chlorophenol	4-nitrophenol
2,4-dichlorophenol	pentachlorophenol
2,4-dimethylphenol	phenol
2,4-dinitrophenol	2,4,5-trichlorophenol
2-methyl-4,6-dinitrophenol	2,4,6-trichlorophenol
2-methylphenol	
2,000 μ g/mL each in methylene chloride, 1mL/ampul	

cat. # 31008 (ea.)

SV Calibration Mix #3 (14 components)

bis(2-chloroethoxy)methane	4-chlorophenyl phenyl ether
bis(2-chloroethyl)ether	dimethylphthalate
bis(2-chloroisopropyl)ether	di-n-butylphthalate
bis(2-ethylhexyl)phthalate	di-n-octylphthalate
4-bromophenyl phenyl ether	N-nitrosodimethylamine
butyl benzyl phthalate	N-nitrosodi-n-propylamine
2-chloronaphthalene	N-nitrosodiphenylamine
2,000 μ g/mL each in methylene chloride, 1mL/ampul	

cat. # 31009 (ea.)

SV Calibration Mix #4 (13 components)

carbazole	hexachlorocyclopentadiene
dibenzofuran	hexachloroethane
diethyl phthalate	isophorone
2,4-dinitrotoluene	2-methylnaphthalene
2,6-dinitrotoluene	nitrobenzene
hexachlorobenzene	1,2,4-trichlorobenzene
hexachlorobutadiene	
2,000 μ g/mL each in methylene chloride, 1mL/ampul	

cat. # 31010 (ea.)

SV Calibration Mix #5 / 610 PAH Mix (16 components)

acenaphthene	chrysene
acenaphthylene	dibenzo(a,h)anthracene
anthracene	fluoranthene
benzo(a)anthracene	fluorene
benzo(a)pyrene	indeno(1,2,3-cd)pyrene
benzo(b)fluoranthene	naphthalene
benzo(k)fluoranthene	phenanthrene
benzo(ghi)perylene	pyrene
2,000 μ g/mL each in methylene chloride, 1mL/ampul	

cat. # 31011 (ea.)

SV Calibration Mix #6 (18 components)

aldrin	endosulfan I
α -BHC	endosulfan II
β -BHC	endosulfan sulfate
δ -BHC	endrin
γ -BHC (lindane)	endrin aldehyde
4,4'-DDD	endrin ketone
4,4'-DDE	heptachlor
4,4'-DDT	heptachlor epoxide (isomer B)
dieldrin	methoxychlor
2,000 μ g/mL each in toluene:hexane (1:1), 1mL/ampul	

cat. # 31012 (ea.)

did you know?

We have more than 2,000 pure, characterized, neat compounds in our inventory! If you do not see the EXACT mixture you need listed on any of these pages, contact us for a custom standard.

SV Calibration Mix #7

1,2-dichlorobenzene	1,4-dichlorobenzene
1,3-dichlorobenzene	
2,000 μ g/mL each in methylene chloride, 1mL/ampul	

cat. # 31013 (ea.)

3,3'-Dichlorobenzidine

2,000 μ g/mL in methanol, 1mL/ampul	
cat. # 31026 (ea.)	

2,000 μ g/mL in methylene chloride, 1mL/ampul

cat. # 31835 (ea.)

605 Benzidines Calibration Mix

benzidine	3,3'-dichlorobenzidine
2,000 μ g/mL each in methanol, 1mL/ampul	
cat. # 31030 (ea.)	

2,000 μ g/mL each in methylene chloride, 1mL/ampul	
cat. # 31834 (ea.)	

8270 Benzidines Mix

benzidine	3,3'-dimethylbenzidine
3,3'-dichlorobenzidine	
2,000 μ g/mL each in methanol, 1mL/ampul	
cat. # 31688 (ea.)	

2,000 μ g/mL each in methylene chloride, 1mL/ampul	
cat. # 31852 (ea.)	

CLP Semivolatile Calibration Kit #2 (without pesticides)

31007: SV Calibration Mix #1 (anilines)	
31008: SV Calibration Mix #2 (phenols)	
31009: SV Calibration Mix #3 (base neutrals)	
31010: SV Calibration Mix #4 (base neutrals)	
31011: SV Calibration Mix #5 (PAHs)	
31013: SV Calibration Mix #7 (dichlorobenzenes)	
31026: 3,3'-dichlorobenzidine	

Contains 1mL each of these mixtures.

cat. # 31462 (kit)



Semivolatile Calibration Kit #3 (with benzidine)

31007: SV Calibration Mix #1 (anilines)	
31008: SV Calibration Mix #2 (phenols)	
31009: SV Calibration Mix #3 (base neutrals)	
31010: SV Calibration Mix #4 (base neutrals)	
31011: SV Calibration Mix #5 (PAHs)	
31013: SV Calibration Mix #7 (dichlorobenzenes)	
31030: 605 Benzidines Calibration Mix (benzidine & 3,3'-dichlorobenzidine)	

Contains 1mL each of these mixtures.

cat. # 31463 (kit)



free data

Available on Our Website: Lot Certificates, Data Packs, and MSDSs

For complete information detailing manufacturing and testing for Restek inventoried reference standards, visit our website at www.restek.com/datapacks. To view certificates and/or an MSDS, enter the catalog number of the product in the Search feature. For a free data pack (Adobe® PDF file), enter the catalog number and lot number of the product.



03.2 (Semivolatiles), Calibration Mixes

OLC 03.2 SVOA Deuterated Monitoring Compounds (DMC)

(16 components)

acenaphthylene-d8	4,6-dinitro-methylphenol-d2
anthracene-d10	fluorene-d10
benzo(a)pyrene-d12	4-methylphenol-d8
4-chloroaniline-d4	nitrobenzene-d5
bis-(2-chloroethyl)ether-d8	2-nitrophenol-d4
2-chlorophenol-d4	4-nitrophenol-d4
2,4-dichlorophenol-d3	phenol-d5
dimethylphthalate-d6	pyrene-d10
2,000 μ g/mL each in methylene chloride, 1mL/ampul	
cat. # 31810 (ea.)	

OLC 03.2 SVOA MegaMix® (57 components)

acenaphthene	dimethylphthalate
acenaphthylene	di-n-butyl phthalate
acetophenone	2,4-dinitrophenol
anthracene	2,4-dinitrotoluene
atrazine	2,6-dinitrotoluene
benzaldehyde	di-n-octyl phthalate
benzo(a)anthracene	fluoranthene
benzo(a)pyrene	fluorene
benzo(b)fluoranthene	hexachlorobenzene
benzo(ghi)perylene	hexachlorobutadiene
benzo(k)fluoranthene	hexachlorocyclopentadiene
benzyl butyl phthalate	hexachloroethane
biphenyl	indeno(1,2,3-cd)pyrene
bis(2-chloroethoxy)methane	isophorone
bis(2-chloroethyl)ether	2-methylnaphthalene
bis(2-chloroisopropyl)ether	2-methylphenol
bis(2-ethylhexyl)phthalate	4-methylphenol
4-bromophenyl phenyl ether	naphthalene
ϵ -caprolactam	nitrobenzene
carbazole	2-nitrophenol
4-chloro-3-methylphenol	N-nitroso-di-n-propylamine
2-chloronaphthalene	N-nitrosodiphenylamine
2-chlorophenol	pentachlorophenol
4-chlorophenyl phenyl ether	phenanthrene
chrysene	phenol
dibenzo(a,h)anthracene	pyrene
dibenzofuran	1,2,4,5-tetrachlorobenzene
diethylphthalate	2,4,6-trichlorophenol
2,4-dimethylphenol	
1,000 μ g/mL each in methylene chloride, 1mL/ampul	
cat. # 31862 (ea.)	

Fortification Mix (7 components)

4,6-dinitro-2-methylphenol	4-nitroaniline
2,4-dinitrophenol	4-nitrophenol
2-nitroaniline	2,4,5-trichlorophenol
3-nitroaniline	
2,000 μ g/mL each in methylene chloride, 1mL/ampul	
cat. # 31813 (ea.)	

3,3'-Dichlorobenzidine

2,000 μ g/mL in methylene chloride, 1mL/ampul	
cat. # 31835 (ea.)	

Hexachlorophene

2,000 μ g/mL in methylene chloride, 1mL/ampul	
cat. # 31811 (ea.)	

did you know?

Our **Pesticide Matrix Spike Mix** (cat.# 32018, page 450) can be used as a GPC calibration verification solution.

Low Concentration Semivolatiles, Calibration Mixes

L/C Phenol Mix A

2,4-dinitrophenol*	pentachlorophenol*
2-methyl-4,6-dinitrophenol*	2,4,6-tribromophenol (SS)*
4-nitrophenol*	2,4,5-trichlorophenol*
2,000 μ g/mL each in methylene chloride, 1mL/ampul	
cat. # 31208 (ea.)	

*Must be calibrated at a level different from the other listed semivolatile compounds.

L/C Phenol Mix B (11 components)

4-chloro-3-methylphenol	4-methylphenol
2-chlorophenol	2-nitrophenol
2,4-dichlorophenol	phenol
2,4-dimethylphenol	phenol-d6 (SS)
2-fluorophenol	2,4,6-trichlorophenol
2-methylphenol	
2,000 μ g/mL each in methylene chloride, 1mL/ampul	
cat. # 31209 (ea.)	

L/C Aniline Mix A

2-nitroaniline*	4-nitroaniline*
3-nitroaniline*	
2,000 μ g/mL each in methylene chloride, 1mL/ampul	
cat. # 31210 (ea.)	

*Must be calibrated at a level different from the other listed semivolatile compounds.

L/C Aniline Mix B

4-chloroaniline	
2,000 μ g/mL in methylene chloride, 1mL/ampul	
cat. # 31211 (ea.)	

Additional Required SV Calibration Mixes:

See pages 445 and 447 for mix compositions.

31024: B/N Surrogate Mix (4/89 SOW)	
31009: SV Calibration Mix #3	
31010: SV Calibration Mix #4	
31011: SV Calibration Mix #5	
31026: 3,3'-dichlorobenzidine	
31001: SV Tuning Compound (DFTPP)	

GPC Calibration Mix

Qualitative mixture useful for determining GPC dump/collect times. The compounds are dissolved in methylene chloride at the concentrations listed.

CLP GPC Calibration Mix

bis(2-ethylhexyl) phthalate	10mg/mL	perylene	0.2
corn oil	250	sulfur	0.8
methoxychlor	2.0		
In methylene chloride, 1mL/ampul	cat. # 32019 (ea.)		
In methylene chloride, 5mL/ampul	cat. # 32023 (ea.)		

No data pack available.

Revised GPC Calibration Mix

bis(2-ethylhexyl) phthalate	5mg/mL	perylene	0.2
corn oil	250	sulfur	0.8
methoxychlor	1.0		
In methylene chloride, 1mL/ampul	cat. # 32041 (ea.)		
In methylene chloride, 5mL/ampul	cat. # 32042 (ea.)		

No data pack available.

SOM01.1 (Pesticides), QA Mixes

Pesticide Surrogate Mix

decachlorobiphenyl 2,4,5,6-tetrachloro- <i>m</i> -xylene	200 μ g/mL 100
In acetone, 1mL/ampul	
cat. # 32453 (ea.)	

Organochlorine Pesticide Resolution Check Mix

(with surrogates) (22 components)

aldrin	10 μ g/mL	endosulfan I	10
α -BHC	10	endosulfan II	20
β -BHC	10	endosulfan sulfate	20
δ -BHC	10	endrin	20
γ -BHC (lindane)	10	endrin aldehyde	20
α -chlordane	10	endrin ketone	20
γ -chlordane	10	heptachlor	10
decachlorobiphenyl (SS)	20	heptachlor epoxide (isomer B)	10
dieldrin	20	methoxychlor	100
4,4'-DDD	20	2,4,5,6-tetrachloro- <i>m</i> -xylene (SS)	10
4,4'-DDE	20		
4,4'-DDT	20		

In hexane:toluene, 1mL/ampul

cat. # 32454 (ea.)

04.2, 04.1, 03.2, 3/90, 4/89, and 2/88 SOW (Pesticides), QA Mixes

Pesticide Surrogate Mix

decachlorobiphenyl	2,4,5,6-tetrachloro- <i>m</i> -xylene
200 μ g/mL each in acetone, 1mL/ampul	
cat. # 32000 (ea.)	

2,4,5,6-Tetrachloro-*m*-xylene

200 μ g/mL in acetone, 1mL/ampul

cat. # 32027 (ea.)

200 μ g/mL in acetone, 5mL/ampul

cat. # 32028 (ea.)

Decachlorobiphenyl (BZ #209)

200 μ g/mL in acetone, 1mL/ampul

cat. # 32029 (ea.)

200 μ g/mL in acetone, 5mL/ampul

cat. # 32030 (ea.)

100 μ g/mL in isoctane, 1mL/ampul

cat. # 32289 (ea.)

Dibutylchlorendate

200 μ g/mL in acetone, 1mL/ampul

cat. # 32025 (ea.)

Florisil® Cartridge Check Standard

2,4,5-trichlorophenol

1,000 μ g/mL in acetone, 1mL/ampul

cat. # 32017 (ea.)

Organochlorine Pesticide System Evaluation Mix

4,4'-DDT	200 μ g/mL
endrin	100 μ g/mL

In methyl *tert*-butyl ether, 1mL/ampul

cat. # 32417 (ea.)

04.2, 04.1, 03.2, 3/90, 4/89, and 2/88 SOW (Pesticides), QA Mixes cont'd

Pesticide Resolution Check Mix (7 components)

γ -chlordane	1 μ g/mL	endosulfan sulfate	2
4,4'-DDE	2	endrin ketone	2
dieldrin	2	methoxychlor	10
endosulfan I	1		
		In hexane, 1mL/ampul	
		cat. # 32001 (ea.)	

Pesticide Resolution Check Mix w/Surrogates (9 components)

γ -chlordane	1 μ g/mL	endosulfan sulfate	2
4,4'-DDE	2	endrin ketone	2
decachlorobiphenyl (SS)	2	methoxychlor	10
dieldrin	2	2,4,5,6-tetrachloro- <i>m</i> -xylene (SS)	2
endosulfan I	1		
		In hexane, 1mL/ampul	
		cat. # 32073 (ea.)	

Pesticide Performance Evaluation Mix

α -BHC	1 μ g/mL	4,4'-DDT	10
β -BHC	1	endrin	5
γ -BHC (lindane)	1	methoxychlor	25
4,4'-DDT	10	2,4,5,6-tetrachloro- <i>m</i> -xylene (SS)	2
		In hexane, 1mL/ampul	
		cat. # 32002 (ea.)	

Pesticide Performance Evaluation Mix w/Surrogates

(8 components)

α -BHC	1 μ g/mL	decachlorobiphenyl (SS)	2
β -BHC	1	endrin	5
γ -BHC (lindane)	1	methoxychlor	25
4,4'-DDT	10	2,4,5,6-tetrachloro- <i>m</i> -xylene (SS)	2
		In hexane, 1mL/ampul	
		cat. # 32074 (ea.)	



Working with solutions containing decachlorobiphenyl

Decachlorobiphenyl has poor solubility in most organic solvents. The maximum concentration that can be prepared in acetone, hexane, or isoctane is 200 μ g/mL. Temperature will affect the solubility as well. Storing solutions at reduced temperatures will cause decachlorobiphenyl to precipitate.

Products containing decachlorobiphenyl must be sonicated for a minimum of 10 minutes prior to opening the ampul. Because each ultrasonic bath operates at a different energy level, 10 minutes is a guideline only. Longer sonication time will not affect product quality.

These precautions apply to working solutions prepared in your laboratory as well. The amount of compound that precipitates depends on concentration AND temperature. If you store your standards at a temperature lower than 4°C (even dilute solutions), allow extra sonication time.

CLP Pesticides Mixtures, QA Mixes

Pesticide Matrix Spike Mix

aldrin	25 μ g/mL	dieldrin	50
γ -BHC (lindane)	25	endrin	50
4,4'-DDT	50	heptachlor	25
In acetone, 1mL/ampul			
cat. # 32018 (ea.)			

Pesticide Matrix Spike Mix (2/88 SOW)

aldrin	200 μ g/mL	dieldrin	500
γ -BHC (lindane)	200	endrin	500
4,4'-DDT	500	heptachlor	200
In methanol, 1mL/ampul			
cat. # 32031 (ea.)			

Pesticide Evaluation Mix (2/88 SOW)

aldrin	4,4'-DDT	
dibutylchlorendate (SS)		endrin
100 μ g/mL each in hexane, 1mL/ampul		
cat. # 32032 (ea.)		

See complete listing of PCBs, page 452.

Low Concentration Pesticides Mixtures, QA Mixes

L/C Pesticide Lab Control Sample	(7 components)
γ -BHC (lindane)	10 μ g/mL
γ -chlordane	10
4,4'-DDE	20
dieldrin	20
In acetone, 1mL/ampul	
cat. # 32040 (ea.)	

CLP Pesticides Mixtures, Calibration Mixes

Pesticide Standard Mix A (2/88 SOW) (10 components)

aldrin	10 μ g/mL	endosulfan II	20
γ -BHC (lindane)	5	endrin aldehyde	25
4,4'-DDT	20	heptachlor	10
dieldrin	10	heptachlor epoxide (isomer B)	10
endosulfan I	10	methoxychlor	100
In hexane, 1mL/ampul			
cat. # 32033 (ea.)			

Pesticide Standard Mix B (2/88 SOW) (11 components)

aldrin	10 μ g/mL	4,4'-DDD	20
α -BHC	5	4,4'-DDE	10
β -BHC	10	endosulfan sulfate	20
δ -BHC	10	endrin	10
α -chlordane	10	endrin ketone	20
γ -chlordane	10		
In hexane, 1mL/ampul			
cat. # 32034 (ea.)			

Pesticide Standard Mix A (9 components)

α -BHC	5 μ g/mL	endosulfan I	5
γ -BHC (lindane)	5	endrin	10
4,4'-DDD	10	heptachlor	5
4,4'-DDT	10	methoxychlor	50
dieldrin	10		

In hexane:toluene (90:10), 1mL/ampul

cat. # 32297 (ea.)

CLP Pesticides Mixtures, Calibration Mixes cont'd

Pesticide Standard Mix B (11 components)

aldrin	5 μ g/mL	endosulfan II	10
β -BHC	5	endosulfan sulfate	10
δ -BHC	5	endrin aldehyde	10
α -chlordane	5	endrin ketone	10
γ -chlordane	5	heptachlor epoxide (isomer B)	5
4,4'-DDE	10		

In hexane:toluene (90:10), 1mL/ampul
cat. # 32298 (ea.)

Organochlorine Pesticide Mix AB #1 (20 components)

aldrin	dieldrin
α -BHC	endosulfan I
β -BHC	endosulfan II
δ -BHC	endosulfan sulfate
γ -BHC (lindane)	endrin
α -chlordane	endrin aldehyde
γ -chlordane	endrin ketone
4,4'-DDD	heptachlor
4,4'-DDE	heptachlor epoxide (isomer B)
4,4'-DDT	methoxychlor
200 μ g/mL each in hexane:toluene (1:1), 1mL/ampul	
cat. # 32291 (ea.)	

Organochlorine Pesticide Mix AB #2 (20 components)

aldrin	8 μ g/mL	dieldrin	16
α -BHC	8	endosulfan I	8
β -BHC	8	endosulfan II	16
δ -BHC	8	endosulfan sulfate	16
γ -BHC (lindane)	8	endrin	16
α -chlordane	8	endrin aldehyde	16
γ -chlordane	8	endrin ketone	16
4,4'-DDD	16	heptachlor	8
4,4'-DDE	16	heptachlor epoxide (isomer B)	8
4,4'-DDT	16	methoxychlor	80

In hexane:toluene (1:1), 1mL/ampul
cat. # 32292 (ea.)

Organochlorine Pesticide Mix AB #3 (20 components)

aldrin	dieldrin
α -BHC	endosulfan I
β -BHC	endosulfan II
δ -BHC	endosulfan sulfate
γ -BHC (lindane)	endrin
α -chlordane	endrin aldehyde
γ -chlordane	endrin ketone
4,4'-DDD	heptachlor
4,4'-DDE	heptachlor epoxide (isomer B)
4,4'-DDT	methoxychlor
2,000 μ g/mL each in hexane:toluene (1:1), 1mL/ampul	
cat. # 32415 (ea.)	

Pesticides Calibration Mixtures

Components of these products are at 16x the Contract Required Quantitation Level (CRQL) and can be used to prepare calibration mixes at 4x CRQL and at 1x CRQL by serial dilution.

Pesticide Standard Mix A w/Surrogates (11 components)

α -BHC	8 μ g/mL	endosulfan I	8
γ -BHC (lindane)	8	endrin	16
4,4'-DDD	16	heptachlor	8
4,4'-DDT	16	methoxychlor	80
decachlorobiphenyl (SS)	16	2,4,5,6-tetrachloro- <i>m</i> -xylene (SS)	8
dieldrin	16		
In hexane, 1mL/ampul			
		cat. # 32003 (ea.)	

Pesticide Standard Mix B w/Surrogates (13 components)

aldrin	8 μ g/mL	endosulfan II	16
β -BHC	8	endosulfan sulfate	16
δ -BHC	8	endrin aldehyde	16
α -chlordane	8	endrin ketone	16
γ -chlordane	8	heptachlor epoxide (isomer B)	8
4,4'-DDE	16	2,4,5,6-tetrachloro- <i>m</i> -xylene (SS)	8
decachlorobiphenyl (SS)	16		
In hexane, 1mL/ampul			
		cat. # 32004 (ea.)	

Pesticide Kit #3

Calibration mixes only for CLP 04.1. Includes pesticide standard mixes A & B at 16x CRQL with surrogates.

32003: Pesticide Standard Mix A w/Surrogates

32004: Pesticide Standard Mix B w/Surrogates

32005: Toxaphene

32007: Aroclor 1221

32008: Aroclor 1232

32009: Aroclor 1242

32010: Aroclor 1248

32011: Aroclor 1254

32039: Aroclor 1016/1260

Contains 1mL each of these mixtures.

cat. # 32404 (kit)



Technical Chlordane, Toxaphene Solutions

Volume is 1mL/ampul. Concentration is μ g/mL.

Compound	Solvent	Conc.	cat.# (ea.)	price
chlordane (technical)	H	1,000	32021	
chlordane (technical)	I	5,000	32072	
chlordane (technical)	M	2,000	32016	
toxaphene	H	1,000	32005	
toxaphene	I	5,000	32071	
toxaphene	M	2,000	32015	

H = hexane

I = isoctane

M = methanol



also available

See pages 80-81 for Rtx®-CLPesticides and Rtx®-CLPesticide2 capillary columns for pesticides analysis.

See page 452 for our complete listing of PCBs and congeners.

Aroclor Solutions

Volume is 1mL/ampul. Concentration is μ g/mL unless otherwise noted.

Compound	Solvent	Conc.	cat.# (ea.)	price
Aroclor 1016	H	1,000	32006	
Aroclor 1016	I	200	32064	
Aroclor 1016	TO	50mg/kg	32075	
Aroclor 1016	TO	500mg/kg	32076	
Aroclor 1221	H	1,000	32007	
Aroclor 1221	I	200	32065	
Aroclor 1221	TO	50mg/kg	32077	
Aroclor 1221	TO	500mg/kg	32078	
Aroclor 1232	H	1,000	32008	
Aroclor 1232	I	200	32066	
Aroclor 1232	TO	50mg/kg	32079	
Aroclor 1232	TO	500mg/kg	32080	
Aroclor 1242	H	1,000	32009	
Aroclor 1242	I	200	32067	
Aroclor 1242	TO	50mg/kg	32081	
Aroclor 1242	TO	500mg/kg	32082	
Aroclor 1248	H	1,000	32010	
Aroclor 1248	I	200	32068	
Aroclor 1248	TO	50mg/kg	32083	
Aroclor 1248	TO	500mg/kg	32084	
Aroclor 1254	H	1,000	32011	
Aroclor 1254	I	200	32069	
Aroclor 1254	TO	50mg/kg	32085	
Aroclor 1254	TO	500mg/kg	32086	
Aroclor 1260	H	1,000	32012	
Aroclor 1260	I	200	32070	
Aroclor 1260	TO	50mg/kg	32087	
Aroclor 1260	TO	500mg/kg	32088	
Aroclor 1262	H	1,000	32409	
Aroclor 1268	H	1,000	32410	
Aroclor 1016/1260	H	1,000	32039	
Aroclor 1016/1260	I	200	32299	
Aroclor 1016/1260	A	400	32456	

A = acetone

H = hexane

I = isoctane

TO = transformer oil (PCB-free)

please note

We test our transformer oil solvent to ensure that it is PCB-free.



tech tip

Achieving the Best Results from Gas Standards

In order to achieve the best results from gas standards, proper handling and storage of gas solutions is of vital importance. Use the following tips to help ensure trouble-free performance:

- Before opening the sealed ampul, warm it to room temperature and invert ampul several times. This will redissolve any gases that may have migrated into the headspace of the ampul.
- When diluting a gas standard, always add it to a solvent. Adding the gas standard to an empty vessel prior to adding solvent will result in the loss of gas compounds.
- When diluting a gas standard in solvent, make sure the pipette or needle tip is directly above, or immersed below, the solvent surface.
- We recommend that any unused portion of gas standard be disposed of after it has been removed from the sealed ampul. If it is necessary to store the unused portion, place it into a tightly capped vial and store it in the freezer.
- We recommend that any gas solutions that have been stored outside of a sealed ampul be disposed of after 7 days.

PCBs, Organotin

PCB Kits

PCB Kit #1

32006: Aroclor 1016
 32007: Aroclor 1221
 32008: Aroclor 1232
 32009: Aroclor 1242
 32010: Aroclor 1248
 32011: Aroclor 1254
 32012: Aroclor 1260

1,000 μ g/mL each in hexane, 1mL/ampul
 cat. # 32089 (kit)

**PCB Kit #2**

32064: Aroclor 1016
 32065: Aroclor 1221
 32066: Aroclor 1232
 32067: Aroclor 1242
 32068: Aroclor 1248
 32069: Aroclor 1254
 32070: Aroclor 1260

200 μ g/mL each in isoctane, 1mL/ampul
 cat. # 32090 (kit)

**PCB Kit #3**

32007: Aroclor 1221
 32008: Aroclor 1232
 32009: Aroclor 1242
 32010: Aroclor 1248
 32011: Aroclor 1254
 32039: Aroclor 1016/1260

1,000 μ g/mL each in hexane, 1mL/ampul
 cat. # 32400 (kit)

**PCB Kit #4**

32065: Aroclor 1221
 32066: Aroclor 1232
 32067: Aroclor 1242
 32068: Aroclor 1248
 32069: Aroclor 1254
 32299: Aroclor 1016/1260

200 μ g/mL each in isoctane, 1mL/ampul
 cat. # 32401 (kit)

**PCB Congeners**

Volume is 1mL/ampul. Concentration is μ g/mL.

Compound	Solvent	Conc.	cat.# (ea.)	price
2,4,4'-trichlorobiphenyl (BZ #28)	I	10	32283	
2,2',5,5'-tetrachlorobiphenyl (BZ #52)	I	10	32284	
2,2',4,5,5'-pentachlorobiphenyl (BZ #101)	I	10	32285	
2,3,4,4',5-pentachlorobiphenyl (BZ #118)	I	10	32293	
2,2',3,4,4',5-hexachlorobiphenyl (BZ #138)	I	10	32286	
2,2',4,4',5,5'-hexachlorobiphenyl (BZ #153)	I	10	32287	
2,2',3,4,4',5,5'-heptachlorobiphenyl (BZ #180)	I	10	32288	
decachlorobiphenyl (BZ #209)	I	10	32289	

I = isoctane

PCB Congeners cont'd**PCB Congener Standard #1**

2,4,4'-trichlorobiphenyl (BZ #28)
 2,2',5,5'-tetrachlorobiphenyl (BZ #52)
 2,2',4,5,5'-pentachlorobiphenyl (BZ #101)
 2,2',3,4,4',5-hexachlorobiphenyl (BZ #138)
 2,2',4,4',5,5'-hexachlorobiphenyl (BZ #153)
 2,2',3,4,4',5,5'-heptachlorobiphenyl (BZ #180)
 10 μ g/mL each in isoctane, 1mL/ampul

cat. # 32290 (ea.)

PCB Congener Standard #2

2,4,4'-trichlorobiphenyl (BZ #28)
 2,2',5,5'-tetrachlorobiphenyl (BZ #52)
 2,2',4,5,5'-pentachlorobiphenyl (BZ #101)
 2,3',4,4',5-pentachlorobiphenyl (BZ #118)
 2,2',3,4,4',5-hexachlorobiphenyl (BZ #138)
 2,2',4,4',5,5'-hexachlorobiphenyl (BZ #153)
 2,2',3,4,4',5,5'-heptachlorobiphenyl (BZ #180)
 10 μ g/mL each in isoctane, 1mL/ampul

cat. # 32294 (ea.)

also available

Additional PCB congener mixes:

See EPA Method 8082: cat.# 32416 page 429.

See EPA Method 525: cat.# 32420 page 414.

Organotin Mixes**Butyltin Chloride Calibration Mixture**

butyltin trichloride	tetrabutyltin
dibutyltin dichloride	tributyltin chloride
2,000 μ g/mL each in methylene chloride, 1mL/ampul	
	cat. # 31472 (ea.)

Tributyltin Chloride Calibration Mixture

2,000 μ g/mL in methylene chloride, 1mL/ampul	
	cat. # 31478 (ea.)

Phenyltin Chloride Calibration Mixture

diphenyltin dichloride	tetraphenyltin
phenyltin trichloride	triphenyltin chloride
2,000 μ g/mL each in methylene chloride, 1mL/ampul	
	cat. # 31473 (ea.)

Tri-n-propyltin Chloride Surrogate

2,000 μ g/mL in methylene chloride, 1mL/ampul	
	cat. # 31476 (ea.)

Tripentyltin Chloride Surrogate

2,000 μ g/mL in methylene chloride, 1mL/ampul	
	cat. # 31477 (ea.)

Tetra-n-propyltin Internal Standard

2,000 μ g/mL in methylene chloride, 1mL/ampul	
	cat. # 31474 (ea.)

Tetrapentyltin Internal Standard

2,000 μ g/mL in methylene chloride, 1mL/ampul	
	cat. # 31475 (ea.)

Minnesota Department of Agriculture List 1 Pesticides

Minnesota Ag List 1 Pesticides Mix A (16 components)

acetochlor	metolachlor
alachlor	metribuzin
atrazine	pendimethalin
cyanazine	prometon
desethylatrazine	propachlor
desisopropylatrazine	propazine
dimethenamid*	simazine
ethalfluralin	trifluralin
200ppm each in acetone, 1mL/ampul	
	cat. # 32406 (ea.)

*Added to Minnesota Department of Agriculture List 1 pesticide (neutrals) incident investigation requirements, effective January 1, 2000.¹ CAS # 87674-68-8 manufactured by several companies under various trade names.

¹Analytical Lists for Pesticide Incident Investigations, Minnesota Department of Agriculture, Guidance Document 26 (3/99), St. Paul, MN. For a copy, visit their web site at: www.mda.state.mn.us

Minnesota Ag List 1 Pesticides Mix B

chloryrifos	phorate
EPTC	terbufos
fonofos	triallate
200ppm each in acetone, 1mL/ampul	

cat. # 32407 (ea.)

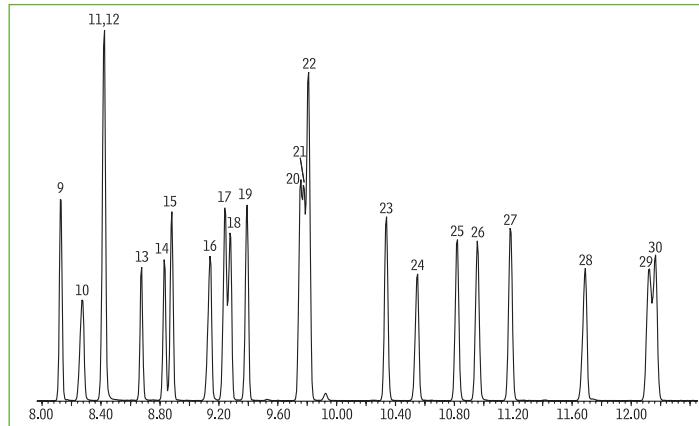
**Minnesota Ag List 1 Pesticide Kit**

32406: Minnesota Ag List Pesticides Mix A
32407: Minnesota Ag List Pesticides Mix B
Contains 1mL each of these mixtures.

cat. # 32408 (kit)

Minnesota Dept. of Agriculture List 1 Pesticides on an Rxi®-1ms column.

- | | |
|--------------------------------|---------------------------|
| 1. 2-fluorophenol (SS) | 19. propazine |
| 2. phenol-d6 (SS) | 20. terbufos |
| 3. 1,4-dichlorobenzene-d4 (IS) | 21. fonofos |
| 4. nitrobenzene-d5 (SS) | 22. phenanthrene-d10 (IS) |
| 5. naphthalene-d8 (IS) | 23. triallate |
| 6. EPTC | 24. metribuzin |
| 7. 2-fluorobiphenyl (SS) | 25. dimethenamid |
| 8. acenaphthene-d10 (IS) | 26. acetochlor |
| 9. propachlor | 27. alachlor |
| 10. desisopropyl atrazine | 28. cyanazine |
| 11. desethyl atrazine | 29. metolachlor |
| 12. 2,4,6-tribromophenol (SS) | 30. chloryrifos |
| 13. ethalfluralin | 31. pendimethalin |
| 14. trifluralin | 32. p-terphenyl-d14 (SS) |
| 15. phorate | 33. chrysene-d12 (IS) |
| 16. simazine | 34. perylene-d12 (IS) |
| 17. prometon | |
| 18. atrazine | |
| 19. atrazine | |



Column: Rxi®-1ms, 30m, 0.25mm ID, 0.25µm (cat.# 13323)

Sample: Minnesota Ag List 1 Pesticides Mix A (cat.# 32406), Minnesota Ag List 1 Pesticides Mix B (cat.# 32407),

SV Internal Standard Mix (cat.# 31206), B/N Surrogate Mix (4/89 SOW) (cat.# 31024), Acid Surrogate Mix (4/89 SOW) (cat.# 31025)

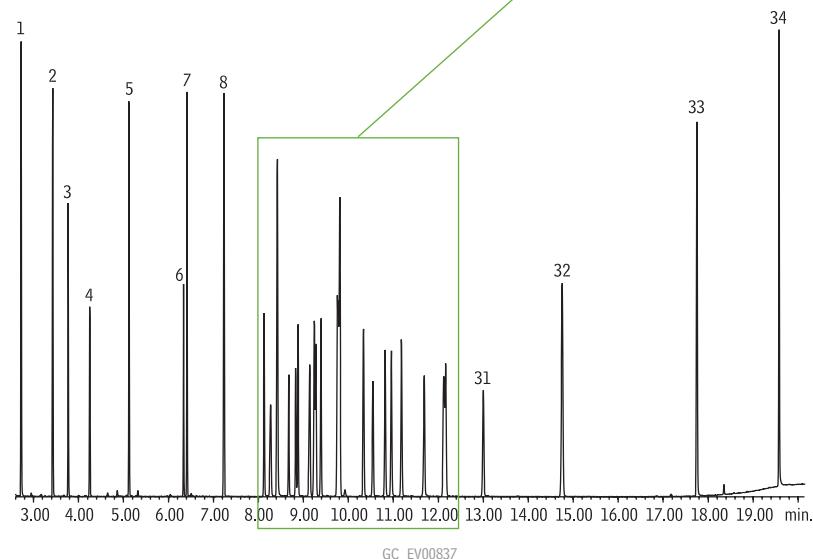
Inj.: 1.0µL, 10µg/mL each analyte (internal standards 25µg/mL), split (10:1) 4mm Drilled Uniliner® inlet liner (hole near bottom) (cat.# 20771)

Instrument: Agilent 6890
Inj. temp.: 250°C
Carrier gas: helium, constant flow

Flow rate: 1.2mL/min.
Oven temp.: 70°C (hold 1 min.) to 180°C @ 20°C/min., to 230°C @ 5°C/min., to 325°C @ 40°C/min. (hold 3.5 min.)

Det.: Agilent 5973 MSD
Transfer line temp.: 280°C
Scan range: 35-550amu

Solvent delay: 2.50 min.
Tune: DFTPP
Ionization: EI



International Mixes

International Environmental Mixes

Country/Miscellaneous	Compound Class
Canada: CCME	Alkanes; PAHs
Canada: Drinking Water	Volatiles; Pesticides
Canada: RBCA - Atlantic Provinces	Aromatics; Aliphatics; PAHs
European Union	Pesticides
Japan	Odor Compounds
Korea	Volatiles; Pesticides
ISO/DIS-9377 Water Quality Testing	Hydrocarbons

Canada cont'd

Canadian Drinking Water Volatiles Mix (19 components)

benzene	1,1-dichloroethene
bromodichloromethane	ethylbenzene
bromoform	methylene chloride
carbon tetrachloride	tetrachloroethene
chlorobenzene	toluene
chloroform	trichloroethene
dibromochloromethane	m-xylene
1,2-dichlorobenzene	o-xylene
1,4-dichlorobenzene	p-xylene
1,2-dichloroethane	

2,000µg/mL each in P&T methanol, 1mL/ampul
cat. # 30610 (ea.)

Canada

C50 in Toluene

n-pentacontane (C50)
10µg/mL in toluene, 1mL/ampul
cat. # 31685 (ea.)

CCME F1 Surrogate Standard

n-undecane (C11)
1,000µg/mL in methylene chloride, 1mL/ampul
cat. # 30612 (ea.)

CCME F2 Surrogate Standard

2-methylnonane
1,000µg/mL in methylene chloride, 1mL/ampul
cat. # 31870 (ea.)

CCME F1 Retention Time Marker

n-decane (C10) toluene
n-hexane (C6)
2,000µg/mL each in methanol, 1mL/ampul
cat. # 30611 (ea.)

CCME PAH Calibration Mix (10 components)

benzo(a)anthracene	fluoranthene
benzo(a)pyrene	indeno(1,2,3-cd)pyrene
benzo(b)fluoranthene	naphthalene
benzo(k)fluoranthene	phenanthrene
dibenzo(a,h)anthracene	pyrene

2,000µg/mL each in methylene chloride, 1mL/ampul
cat. # 31869 (ea.)

CCME PHC Calibration Mix

n-decane (C10)	n-tetratriacontane (C34)
n-hexadecane (C16)	

5,000µg/mL each in toluene, 1mL/ampul
cat. # 31684 (ea.)

Canadian Drinking Water Triazine Herbicides Mix

(7 components)
alachlor metribuzin
atrazine prometryne
cyanazine (Bladex) simazine
metolachlor
500µg/mL each in acetone, 1mL/ampul
cat. # 31864 (ea.)

Canadian Drinking Water Phenoxyacid Herbicides Mix

(11 components)
bromoxynil pentachlorophenol
2,4-D picloram
dicamba 2,4,5-T
2,4-dichlorophenol 2,3,4,6-tetrachlorophenol
diclofop methyl 2,4,6-trichlorophenol
dinoseb
1,000µg/mL each in acetone, 1mL/ampul
cat. # 31868 (ea.)

Canadian Drinking Water Carbamates Mix

aldicarb carbofuran
bendiocarb triallate
carbaryl (Sevin)

100µg/mL each in acetonitrile, 1mL/ampul
cat. # 31865 (ea.)

Canadian Drinking Water Chlorinated Pesticides Mix

(14 components)
aldrin 4,4'-DDT
γ-BHC (lindane) dieldrin
α-chlordane heptachlor
γ-chlordane heptachlor epoxide (isomer B)
2,4'-DDE methoxychlor
4,4'-DDE oxychlordane
2,4'-DDT trifluralin
200µg/mL each in hexane:toluene, 1mL/ampul
cat. # 31866 (ea.)

Canadian Drinking Water OP Pesticides Mix (9 components)

azinphos methyl (Guthion)	parathion (ethyl)
chlorpyrifos (Dursban)	phorate
Diazinon	temephos (Abate)
dimethoate	terbufos
malathion	

1,000µg/mL each in acetonitrile, 1mL/ampul
cat. # 31867 (ea.)

free data

Available on Our Website: Lot Certificates, Data Packs, and MSDSs

For complete information detailing manufacturing and testing for Restek inventoried reference standards, visit our website at www.restek.com/datapacks. To view certificates and/or an MSDS, enter the catalog number of the product in the Search feature. For a free data pack (Adobe® PDF file), enter the catalog number and lot number of the product.

also available

Petroleum Standards & Sulfur Standards!
See pages 472-475 for more information.

Canada - Atlantic Provinces

Atlantic RBCA EPH Mix (11 components)	
acenaphthene	n-dotriacontane (C32)
anthracene	n-heneicosane (C21)
benzo(a)pyrene	n-hexadecane (C16)
chrysene	n-octacosane (C28)
n-decane (C10)	naphthalene
n-dodecane (C12)	
1,000 μ g/mL each in hexane:methylene chloride, 1mL/ampul	
cat. # 31872 (ea.)	

Atlantic RBCA EPH Surrogate Standard

n-dotriacontane (C32)	isobutylbenzene
1,000 μ g/mL each in methylene chloride, 1mL/ampul	
cat. # 31873 (ea.)	

Atlantic RBCA VPH Mix (12 components)

benzene	n-octane (C8)
n-decane (C10)	toluene
ethylbenzene	1,2,4-trimethylbenzene
n-heptane (C7)	1,3,5-trimethylbenzene
n-hexane (C6)	o-xylene
1-methyl-3-ethylbenzene	p-xylene
1,000 μ g/mL each in P&T methanol, 1mL/ampul	
cat. # 31871 (ea.)	

Atlantic RBCA VPH Surrogate Standard

isobutylbenzene
1,000 μ g/mL in P&T methanol, 1mL/ampul
cat. # 30613 (ea.)

Europe

Organophosphorus Pesticide Mix, European Formulation

(16 components)			
acephate	200 μ g/mL	methamidophos	500
azinphos methyl (Guthion)	400	methidathion	200
chlorpyrifos	100	omethoate	1,000
demeton-s-methyl	200	pirimiphos methyl	100
dichlorvos (DDVP)	500	profenos	200
dimethoate	200	pyrazophos	500
ethion	200	tokuthion (prothifos)	200
malathion	200	tolclofos-methyl	100
In acetone, 1mL/ampul			
cat. # 32418 (ea.)			

PCB Congener Standard #1

2,4,4'-trichlorobiphenyl (BZ #28)
2,2',5,5'-tetrachlorobiphenyl (BZ #52)
2,2',4,5,5'-pentachlorobiphenyl (BZ #101)
2,2',3,4,4',5'-hexachlorobiphenyl (BZ #138)
2,2',4,4',5,5'-hexachlorobiphenyl (BZ #153)
2,2',3,4,4',5,5'-heptachlorobiphenyl (BZ #180)
10 μ g/mL each in isooctane, 1mL/ampul
cat. # 32290 (ea.)

PCB Congener Standard #2

2,4,4'-trichlorobiphenyl (BZ #28)
2,2',5,5'-tetrachlorobiphenyl (BZ #52)
2,2',4,5,5'-pentachlorobiphenyl (BZ #101)
2,3',4,4',5-pentachlorobiphenyl (BZ #118)
2,2',3,4,4',5'-hexachlorobiphenyl (BZ #138)
2,2',4,4',5,5'-hexachlorobiphenyl (BZ #153)
2,2',3,4,4',5,5'-heptachlorobiphenyl (BZ #180)
10 μ g/mL each in isooctane, 1mL/ampul
cat. # 32294 (ea.)

Europe cont'd

Desethyl-atrazine

1,000 μ g/mL in acetone, 1mL/ampul
cat. # 32445 (ea.)

Desisopropylatrazine

1,000 μ g/mL in acetone, 1mL/ampul
cat. # 32446 (ea.)

Terbutylazine

1,000 μ g/mL in acetone, 1mL/ampul
cat. # 32447 (ea.)

Propazine

1,000 μ g/mL in acetone, 1mL/ampul
cat. # 32448 (ea.)

Prometryne

1,000 μ g/mL in acetone, 1mL/ampul
cat. # 32449 (ea.)

Japan

Japan Calibration Mix (9 components)

acrylonitrile	dichloromethane
benzene	tetrachloroethene
1,3-butadiene	trichloroethene
chloroform	vinyl chloride
1,2-dichloroethane	

Cylinder Construction:
 Cylinder Fitting:

aluminum
 CGA-180 outlet



Scotty 110L Cylinders
(Pi-marked Cylinders for EU Regulations):



Size: 8.3 x 29.5 cm.
 Volume/Pressure:
 110 liters of gas
 @ 1,800psi
 Weight: 2.2 lbs./1 kg
 US DOT Specs: 3AL2216

1ppm in nitrogen, 104 liters @ 1,800psi
 cat. # 34418 (ea.)

1ppm in nitrogen, 110 liters @ 1,800psi (Pi-marked Cylinder)
 cat. # 34418-PI (ea.)

Requires a high-purity VOC single-stage regulator. See page 386.
 No data pack available.

Drinking Water Odor Standard

Unpleasant odor in drinking water is associated with the growth and decay of microorganisms. The threshold value for these compounds is low (10ppt) and purge and trap analyses usually are used to quantify them.

(+/-)-geosmin
 100 μ g/mL in P&T methanol, 1mL/ampul
 cat. # 30608 (ea.)

International Mixes

Korea

Korean Drinking Water—Pesticides Mix

carbaryl (Sevin) malathion
diazinon parathion, ethyl
fenitrothion
1,000 μ g/mL each in P&T methanol, 1mL/ampul
cat. # 32411 (ea.) enquire

No data pack available.

Korean Drinking Water—VOC Mix A (17 components)

benzene	phenol
bromodichloromethane	tetrachloroethene
bromoform	toluene
carbon tetrachloride	1,1,1-trichloroethane
chloroform	trichloroethene
dibromochloromethane	m-xylene
1,1-dichloroethene	o-xylene
ethylbenzene	p-xylene
methylene chloride	
100 μ g/mL each in P&T methanol, 1mL/ampul	
cat. # 30480 (ea.) enquire	

No data pack available.

ISO/DIS 9377 Water Quality Testing

- For GC analysis of total petroleum hydrocarbons (TPH) in water.
- Calibration standard available as Diesel #2/ motor oil and Diesel #2/mineral oil.

Reference mixtures for ISO/DIS 9377 (German H-53), a gas chromatography/flame ionization detection (GC/FID) method.

Diesel #2/Motor Oil

diesel fuel #2 composite	motor oil
5,000 μ g/mL each in hexane, 1mL/ampul	
cat. # 31682 (ea.)	

Diesel #2/Mineral Oil

diesel fuel #2 composite	mineral oil
5,000 μ g/mL each in hexane, 1mL/ampul	
cat. # 31676 (ea.)	

Standard Mixture Stock Solution

diesel #2 (additive-free)
mineral oil (additive-free [i.e., USP grade] bp 325-460 or C18-C32 retention time range)
5,000 μ g/mL each in cyclohexane, 1mL/ampul
(prepares 8mL of 1.25 μ g/ μ L calibration curve high point)
Total hydrocarbon concentration 10,000 μ g/mL
cat. # 31630 (ea.)

Quality Control Standard Mixture, Revised

diesel #2 (additive-free)
motor oil (additive-free bp 325-460 or C18-C32 retention time range)
500 μ g/mL each in acetone, 1mL/ampul
(1mL is enough mix to spike one 900mL quality control sample).
Total hydrocarbon concentration 1,000 μ g/mL
cat. # 31641 (ea.)

ISO/DIS 9377 Water Quality Testing cont'd**Quality Control Standard Mixture**

diesel #2 (additive-free)
mineral oil (additive-free [i.e., USP grade] bp 391-522 or C24-C40 retention time range)
500 μ g/mL each in acetone, 1mL/ampul
(1mL is enough mix to spike one quality control sample).
Total hydrocarbon concentration 1,000 μ g/mL
cat. # 31631 (ea.)

System Performance Test Standard Mixture of n-Alkanes

(16 components)

n-decane (C10)	n-hexacosane (C26)
n-dodecane (C12)	n-octacosane (C28)
n-tetradecane (C14)	n-triacontane (C30)
n-hexadecane (C16)	n-dotriacontane (C32)
n-octadecane (C18)	n-tetratriacontane (C34)
n-eicosane (C20)	n-hexatriacontane (C36)
n-docosane (C22)	n-octatriacontane (C38)
n-tetracosane (C24)	n-tetracontane (C40)
50 μ g/mL each in hexane, 1mL/ampul	
cat. # 31678 (ea.)	

Extraction Solvent Stock Solution #1

n-decane (C10)	20 μ L/L	n-tetracontane (C40)	20mg/L
In hexane, 5mL/ampul			
cat. # 31679 (ea.)			

Extraction Solvent Stock Solution #2

n-decane (C10)	20 μ L/L	n-tetracontane (C40)	20mg/L
In hexane, 20mL/ampul			
cat. # 31680 (ea.)			

Stearyl Stearate Test Solution

stearyl stearate	
2,000 μ g/mL in hexane, 10mL/ampul	cat. # 31681 (ea.)
2,000 μ g/mL in cyclohexane, 10mL/ampul (enough to check one Florisil cartridge)	cat. # 31636 (ea.)

Florisil® Cartridge Quality Control Standard Mixture, Rev.3

diesel fuel #2 composite	motor oil
1,000 μ g/mL each in hexane, 10mL/ampul	
cat. # 31683 (ea.)	

Florisil® Cartridge Quality Control Standard Mixture, Rev.2

diesel fuel #2 composite	mineral oil
1,000 μ g/mL each in hexane, 10mL/ampul	
cat. # 31677 (ea.)	

n-Tetracontane (C40)

Neat, 100mg	
cat. # 31859 (ea.)	

n-Decane (C10)

Neat, 1mL/ampul	
cat. # 31858 (ea.)	

Stearyl Stearate

Neat, 100mg	
cat. # 31860 (ea.)	

Underground Storage Tank Monitoring (UST): General

Category	Compound Class
Retention Time Standards .....	.Hydrocarbons
Fuel Composite Standards .....	.Hydrocarbons
Motor Oil Composite Standards .....	.Hydrocarbons
Single Source Fuel Standards .....	.Hydrocarbons
Military Fuels (Jet Propellant) .....	.Hydrocarbons
Fuel Oil Degradation Test .....	.Hydrocarbons
Mineral Spirits .....	.Hydrocarbons
PVOC, GRO and BTEX .....	.Hydrocarbons
Gasoline Surrogate and Internal Standards .....	.Volatiles
Diesel Surrogate and Internal Standards .....	.Hydrocarbons
Diesel/Biodiesel Blend .....	.Hydrocarbons

Retention Time Standards

Used during initial sample screening, to determine retention time windows for each petroleum product. Gasoline generally elutes in the window from C6 to C10 (or C12), and diesel fuel from C10 (or C12) to C24 (or C28). Retention above C24 (or C28) indicates oil or lubricant contamination.

Leaking Underground Storage Tank Retention Time Standard

(7 components)

<i>n</i> -hexane (C6)	<i>n</i> -octacosane (C28)
<i>n</i> -decane (C10)	<i>n</i> -triicontane (C30)
<i>n</i> -dodecane (C12)	<i>n</i> -tetracontane (C40)
<i>n</i> -tetrasocane (C24)	
25 μ g/mL each in 1mL methylene chloride, 1mL/ampul	
cat. # 31200 (ea.)	

Retention Time Marker Standard

<i>n</i> -decane (C10)	<i>n</i> -hexatriacontane (C36)
<i>n</i> -pentacosane (C25)	
1,000 μ g/mL each in hexane, 1mL/ampul	
cat. # 31637 (ea.)	

Retention Time Marker

<i>n</i> -hexane (C6)	<i>n</i> -dodecane (C12)
<i>n</i> -decane (C10)	
1,000 μ g/mL each in P&T methanol, 1mL/ampul	
cat. # 30483 (ea.)	

TNRCC 1005 Retention Time Markers Mix

<i>n</i> -hexane (C6)	<i>n</i> -octacosane (C28)
<i>n</i> -dodecane (C12)	<i>n</i> -pentatriacontane (C35)
200 μ g/mL each in pentane, 1mL/ampul	
cat. # 31698 (ea.)	

Retention Time Marker - Alaska

<i>n</i> -hexane (C6)	<i>n</i> -pentacosane (C25)
<i>n</i> -decane (C10)	<i>n</i> -hexatriacontane (C36)
1,000 μ g/mL in methylene chloride, 1mL/ampul	
cat. # 31819 (ea.)	

Fuel Composite Standards

Unleaded Gasoline Composite Standard

2,500 μ g/mL in P&T methanol, 1mL/ampul
cat. # 30081 (ea.)
50,000 μ g/mL in P&T methanol, 1mL/ampul
cat. # 30205 (ea.)

50,000 μ g/mL in P&T methanol, 5mL/ampul
cat. # 30206 (ea.)

Diesel Fuel #2 Composite Standard

5,000 μ g/mL in methylene chloride, 1mL/ampul
cat. # 31093 (ea.)
50,000 μ g/mL in methylene chloride, 1mL/ampul
cat. # 31258 (ea.)

50,000 μ g/mL in methylene chloride, 5mL/ampul
cat. # 31259 (ea.)

Kerosene Composite Standard

5,000 μ g/mL in methylene chloride, 1mL/ampul
cat. # 31094 (ea.)
50,000 μ g/mL in methylene chloride, 1mL/ampul
cat. # 31256 (ea.)

50,000 μ g/mL in methylene chloride, 5mL/ampul
cat. # 31257 (ea.)

Motor Oil Composite Standards

Motor Oil Composite Standard

Prepared from an equal volume blend of 5W30, 10W30, 10W40, and 20W50 motor oils. After blending, a precisely weighed amount of the composite is added to a volumetric flask to produce the standard.

50,000 μ g/mL in methylene chloride, 1mL/ampul
cat. # 31464 (ea.)

Used Motor Oil Composite Standard

Prepared from an equal volume blend from five gasoline powered vehicles (belonging to Restek employees). After blending, a precisely weighed amount of the composite is added to a volumetric flask to produce the standard.

50,000 μ g/mL in methylene chloride, 1mL/ampul
cat. # 31465 (ea.)

free literature

EPA Office of Underground Storage Tanks (OUST) Recommended Methods

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Fast Facts
lit. cat.# 59397

See pages 461-467 for information on UST technical literature for individual states.

also available

Other fuels, oils and lubricant oils available on request as custom products.

UST Monitoring

Single Source Fuels

Unleaded Gasoline Standard

Prepared from a single source (one refinery) product.

5,000 μ g/mL in P&T methanol, 1mL/ampul
cat. # 30096 (ea.)**Kerosene Standard**

Prepared from a single source (one refinery) product.

5,000 μ g/mL in methylene chloride, 1mL/ampul
cat. # 31229 (ea.)**Diesel Fuel #2 Standard**

Prepared from a single source (one refinery) product.

5,000 μ g/mL in methylene chloride, 1mL/ampul
cat. # 31233 (ea.)**Fuel Oil #4 Standard**

Fuel oil #4 is typically used in limited applications in which the fuel cannot be preheated prior to burning. The fuel is a blend of distillate (fuel oil #2) and residual (fuel oil #6) to meet ASTM viscosity specifications. Fuel oil #4 used to prepare this mixture has a kinematic viscosity of 21.9 at 38°C (100°F), measured using ASTM D-445.

5,000 μ g/mL in methylene chloride, 1mL/ampul
cat. # 31216 (ea.)50,000 μ g/mL in methylene chloride, 1mL/ampul
cat. # 31244 (ea.)**Fuel Oil #5 Standard**

Fuel oil #5 is typically used in applications in which there is little or no preheating of the fuel prior to burning. A blend of distillate (fuel oil #2) and residual (fuel oil #6), the fuel oil #5 used to prepare this mixture has a kinematic viscosity of 106.5 at 38°C (100°F), measured using ASTM D-445.

5,000 μ g/mL in methylene chloride, 1mL/ampul
cat. # 31217 (ea.)50,000 μ g/mL in methylene chloride, 1mL/ampul
cat. # 31246 (ea.)**Fuel Oil #6 Standard**

This fuel, sometimes called bunker C or residual, is a black viscous oil. Applications in which it may be used require the ability to preheat the fuel prior to pumping and burning.

5,000 μ g/mL in methylene chloride, 1mL/ampul
cat. # 31218 (ea.)50,000 μ g/mL in methylene chloride, 1mL/ampul
cat. # 31248 (ea.)50,000 μ g/mL in methylene chloride, 5mL/ampul
cat. # 31249 (ea.)**Diesel/Biodiesel 80:20 Blend Standard**

The biodiesel component is methyl soyate.
diesel/biodiesel 80:20

5,000 μ g/mL in methylene chloride, 1mL/ampul
cat. # 31880 (ea.)

Single Source Fuels cont'd

Aviation Gas Standard

100-octane low-lead fuel currently used in piston-type aircraft.

2,500 μ g/mL in P&T methanol, 1mL/ampul
cat. # 30094 (ea.)50,000 μ g/mL in P&T methanol, 1mL/ampul
cat. # 30207 (ea.)50,000 μ g/mL in P&T methanol, 5mL/ampul
cat. # 30208 (ea.)**Jet Fuel A Standard**

Commercial jet fuel A.

5,000 μ g/mL in methylene chloride, 1mL/ampul
cat. # 31215 (ea.)50,000 μ g/mL in methylene chloride, 1mL/ampul
cat. # 31242 (ea.)50,000 μ g/mL in methylene chloride, 5mL/ampul
cat. # 31243 (ea.)**Creosote Oil Standard**

Creosote oil, a widely used wood preservative produced by distilling coal tar, contains chemicals that are classified as carcinogens (e.g., benzo(a)pyrene). We offer this high concentration standard.

50,000 μ g/mL in methylene chloride, 1mL/ampul
cat. # 31838 (ea.)**Hydraulic Oil Standard**50,000 μ g/mL in methylene chloride, 1mL/ampul
cat. # 31839 (ea.)

Military Fuels (Jet Propellant)

JP-4 Military Fuel Standard5,000 μ g/mL in methylene chloride, 1mL/ampul
cat. # 31219 (ea.)50,000 μ g/mL in methylene chloride, 1mL/ampul
cat. # 31250 (ea.)50,000 μ g/mL in P&T methanol, 1mL/ampul
cat. # 30472 (ea.)**JP-5 Military Fuel Standard**5,000 μ g/mL in methylene chloride, 1mL/ampul
cat. # 31220 (ea.)50,000 μ g/mL in methylene chloride, 1mL/ampul
cat. # 31252 (ea.)50,000 μ g/mL in methylene chloride, 5mL/ampul
cat. # 31253 (ea.)**JP-8 Military Fuel Standard**5,000 μ g/mL in methylene chloride, 1mL/ampul
cat. # 31262 (ea.)50,000 μ g/mL in methylene chloride, 1mL/ampul
cat. # 31254 (ea.)

did you know?

We have more than 2,000 pure, characterized, neat compounds in our inventory! If you do not see the EXACT mixture you need listed on any of these pages, contact us for a custom standard.

Fuel Oil Degradation Test

Subsurface degradation of fuel oil spills can be estimated by examining the ratios of C17/pristane and C18/phytane.¹ To assist in identifying these four compounds from the complex fuel oil analysis, we offer a product that contains these compounds for retention time determination.

Fuel Oil Degradation Mix

heptadecane (C17)
octadecane (C18)
pristane (2,6,10,14-tetramethylpentadecane)
phytane (2,6,10,14-tetramethylhexadecane)

2,000 μ g/mL each in methylene chloride, 1mL/ampul
cat. # 31240 (ea.)

¹Interpretation of Gas Chromatographic Data in Subsurface Hydrocarbon Investigations, R. Senn and M. Johnson, Ground Water Monitoring Review, Winter 1987.

Mineral Spirits

There are four general types of mineral spirits, classified according to boiling point range (BPR):

- Type I (Stoddard solvent) BPR 149–182°C
- Type II (high flash point) BPR 177–196°C
- Type III (odorless) BPR 149–196°C
- Type IV (low dry point) BPR 149–174°C

We prepare our solutions from an equal volume blend of Type I, II, and III mineral spirits.

Mineral Spirits Standards

5,000 μ g/mL in methylene chloride, 1mL/ampul
cat. # 31225 (ea.)

50,000 μ g/mL in methylene chloride, 1mL/ampul
cat. # 31260 (ea.)

50,000 μ g/mL in methylene chloride, 5mL/ampul
cat. # 31261 (ea.)

Stoddard Solvent Standard

Stoddard solvent is also known as Type I mineral spirits, Texsolve S, or Varsol® 1 mineral spirits. We offer this reference material for those who need to calibrate Stoddard solvent separately. This standard is dissolved in methanol for analysis by either direct injection or purge and trap.

10,000 μ g/mL in P&T methanol, 1mL/ampul
cat. # 30487 (ea.)



free literature

EPA Office of Underground Storage Tanks (OUST) Recommended Methods

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Fast Facts

lit. cat.# 59397

See pages 461-467 for information on UST technical literature for individual states.

Petroleum Volatile Organic Compounds (PVOC), Gasoline Range Organics (GRO), & Benzene-Toluene-Ethylbenzene-Xylenes (BTEX)

PVOC Mix (California) (7 components)

benzene	m-xylene
ethylbenzene	o-xylene
methyl tert-butyl ether (MTBE)	p-xylene
toluene	

1,000 μ g/mL each in P&T methanol, 1mL/ampul
cat. # 30231 (ea.)

PVOC/GRO Mix (Wisconsin) (10 components)

benzene	1,2,4-trimethylbenzene
ethylbenzene	1,3,5-trimethylbenzene
methyl tert-butyl ether (MTBE)	m-xylene
naphthalene	o-xylene
toluene	p-xylene

1,000 μ g/mL each in P&T methanol, 1mL/ampul
cat. # 30095 (ea.)

GRO Mix (9 components)

benzene	1,2,4-trimethylbenzene
ethylbenzene	2,2,4-trimethylpentane (isooctane)
3-methylpentane	m-xylene
naphthalene	o-xylene
toluene	

1,000 μ g/mL each in P&T methanol, 1mL/ampul
cat. # 30069 (ea.)

GRO Mix (EPA) (9 components)

benzene	500 μ g/mL	1,2,4-trimethylbenzene	1,000
ethylbenzene	500	2,2,4-trimethylpentane	1,500
heptane	500	m-xylene	1,000
2-methylpentane	1,500	o-xylene	1,000
toluene	1,500		

In P&T methanol, 1mL/ampul
cat. # 30065 (ea.)

BTEX Standard

benzene	m-xylene
ethylbenzene	o-xylene
toluene	p-xylene

200 μ g/mL each in P&T methanol, 1mL/ampul
cat. # 30051 (ea.)

2,000 μ g/mL each in P&T methanol, 1mL/ampul
cat. # 30213 (ea.)

2,000 μ g/mL each in P&T methanol (m-xylene and p-xylene at 1,000 μ g/mL), 1mL/ampul
cat. # 30488 (ea.)

BTEX Gas Mix

benzene	m-xylene
ethylbenzene	o-xylene
toluene	p-xylene

1ppm in nitrogen, 104 liters @ 1,800psi
cat. # 34414 (ea.)

100ppb in nitrogen, 104 liters @ 1,800psi
cat. # 34428 (ea.)

1ppm in nitrogen, 110 liters @ 1,800psi
(Pi-marked Cylinder)
cat. # 34414-PI (ea.)

100ppb in nitrogen, 110 liters @ 1,800psi
(Pi-marked Cylinder)
cat. # 34428-PI (ea.)

Requires a high-purity VOC single-stage regulator. See page 386.
No data pack available.

cylinder design

Spectra 104L Cylinders:

Aluminum construction.
Size: 8 x 24 cm.
Volume/Pressure:
104 liters of gas @ 1,800psi
CGA-180 outlet fitting.
Weight: 1.5 lbs./0.7 kg

Scotty 110L Cylinders:

Aluminum construction.
Size: 8.3 x 29.5 cm.
Volume/Pressure:
110 liters of gas @ 1,800psi
CGA-180 outlet fitting.
Weight: 2.2 lbs./1 kg
US DOT Specs: 3AL2216

UST Monitoring

Petroleum Volatile Organic Compounds (PVOC),
Gasoline Range Organics (GRO), & Benzene-Toluene-Ethylbenzene-Xylenes (BTEX) *cont'd*

Gasoline Component Standard (10 components)

benzene	500 μ g/mL	1,2,4-trimethylbenzene	1,000
ethylbenzene	500	2,2,4-trimethylpentane	1,500
heptane	500	<i>m</i> -xylene	1,000
2-methylpentane	1,500	<i>o</i> -xylene	1,000
toluene	1,500	<i>p</i> -xylene	1,000
10,000 μ g/mL total in P&T methanol, 1mL/ampul			
cat. # 30486 (ea.)			

Certified BTEX in Unleaded Gas Composite Standard

(9 components)

Certified for:

benzene*	toluene*
ethylbenzene*	<i>m</i> -xylene*
isopropyl benzene*	<i>o</i> -xylene*
methyl <i>tert</i> -butyl ether (MTBE)*	<i>p</i> -xylene*
naphthalene*	

5,500ppm gasoline in P&T methanol, 1mL/ampul
cat. # 30237 (ea.)

*Concentration differs lot-to-lot. See on-line Certificate of Analysis for certified concentrations.

Certified Aromatics in Gasoline (16 components)**Certified for:**

benzene*	<i>n</i> -propylbenzene*
ethylbenzene*	toluene*
<i>m</i> -ethyltoluene*	1,2,3-trimethylbenzene*
<i>o</i> -ethyltoluene*	1,2,4-trimethylbenzene*
<i>p</i> -ethyltoluene*	1,3,5-trimethylbenzene*
isopropylbenzene*	<i>m</i> -xylene*
methyl <i>tert</i> -butyl ether (MTBE)*	<i>o</i> -xylene*
naphthalene*	<i>p</i> -xylene*

5,500ppm gasoline in P&T methanol, 1mL/ampul
cat. # 30485 (ea.)

*Concentration differs lot-to-lot. See on-line Certificate of Analysis for certified concentrations.

Certified PAHs in Diesel (7 components)**Certified PAHs**

acenaphthene*	2-methylnaphthalene*
acenaphthylene*	naphthalene*
fluorene*	phenanthrene*

1-methylnaphthalene*

50,000ppm diesel #2 in methylene chloride, 1mL/ampul
cat. # 31673 (ea.)

*Concentration differs lot-to-lot. See on-line Certificate of Analysis for certified concentrations.

Gasoline Surrogate and Internal StandardsVolume is 1mL/ampul. Concentration is μ g/mL.

Compound	Solvent	Conc.	cat.# (ea.)	price
4-bromofluorobenzene	PTM	2,500	30067	
4-bromofluorobenzene	PTM	10,000	30082	
1-chlorooctane	PTM	10,000	30084	
α,α,α -trifluorotoluene	PTM	2,500	30068	
α,α,α -trifluorotoluene	PTM	10,000	30083	

Recommended Internal Standard (PID) for EPA GRO Method

Compound	Solvent	Conc.	cat.# (ea.)	price
1-chloro-4-fluorobenzene	PTM	2,500	30066	

PTM = Purge & trap grade methanol

Diesel Surrogate and Internal StandardsVolume is 1mL/ampul. Concentration is μ g/mL.

Compound	Solvent	Conc.	cat.# (ea.)	price
1-chlorooctadecane	D	10,000	31098	
2-fluorobiphenyl	D	10,000	31096	
<i>o</i> -terphenyl	D	10,000	31097	
<i>p</i> -terphenyl	D	10,000	31095	

Recommended Internal Standards

Compound	Solvent	Conc.	cat.# (ea.)	price
5- α -androstane	D	2,000	31065	
<i>o</i> -terphenyl	A	2,000	31066	

A = acetone

D = methylene chloride

Diesel/Biodiesel Standard**Diesel/Biodiesel 80:20 Blend Standard**

The biodiesel component is methyl soyate.

5,000 μ g/mL in methylene chloride, 1mL/ampul
cat. # 31880 (ea.)**also available**

ASTM Method D6584-00 and EN14105 Biodiesel Standards. See page 471.



**Underground Storage Tank Monitoring (UST):
 State Specific Methods**

State	Compound Class
Alaska	.Hydrocarbons
Arizona	.Hydrocarbons
California/Los Angeles	.Hydrocarbons
Connecticut	.Hydrocarbons
Florida	.Hydrocarbons
Massachusetts	.Hydrocarbons
Michigan	.Hydrocarbons
Mississippi	.Hydrocarbons
Northwest (Oregon & Washington)	.Hydrocarbons
Pennsylvania	.Hydrocarbons
Tennessee/Mississippi	.Hydrocarbons
Texas	.Hydrocarbons
Washington	.Hydrocarbons
Wisconsin	.Hydrocarbons

Alaska cont'd

Alaska UST Method AK101AA (14 components)	
benzene	toluene
ethylbenzene	1,2,3-trimethylbenzene
1-ethyl-2-methylbenzene	1,2,4-trimethylbenzene
1-ethyl-3-methylbenzene	1,3,5-trimethylbenzene
1-ethyl-4-methylbenzene	m-xylene
isopropylbenzene	o-xylene
n-propylbenzene	p-xylene
2,000 μ g/mL each in P&T methanol, 1mL/ampul	
	cat. # 30461 (ea.)

Unleaded Gasoline Composite Standard

2,500 μ g/mL in P&T methanol, 1mL/ampul
cat. # 30081 (ea.)
50,000 μ g/mL in P&T methanol, 1mL/ampul
cat. # 30205 (ea.)
50,000 μ g/mL in P&T methanol, 5mL/ampul
cat. # 30206 (ea.)

1-Chloro-4-fluorobenzene Mix

2,500 μ g/mL in P&T methanol, 1mL/ampul
cat. # 30066 (ea.)

4-Bromofluorobenzene Mix

2,000 μ g/mL in P&T methanol, 1mL/ampul
cat. # 30026 (ea.)

α,α,α -Trifluorotoluene

2,000 μ g/mL in P&T methanol, 1mL/ampul
cat. # 30048 (ea.)
2,500 μ g/mL in P&T methanol, 1mL/ampul
cat. # 30068 (ea.)
10,000 μ g/mL in P&T methanol, 1mL/ampul
cat. # 30083 (ea.)

Alaska

Alaska Department of Environmental Conservation (ADEC) regulations indicate which products and indicator compounds are to be tested for each petroleum range. The analyst must use the following Alaska Series Methods or appropriate SW-846 method for the indicator compounds. The Alaska UST procedural manual indicates which products are to be tested for each petroleum range.

AK101

Method for determination of aromatic and aliphatic hydrocarbons in gasoline range organics.

Retention Time Marker - Alaska

n-hexane (C6)	n-pentacosane (C25)
n-decane (C10)	n-hexatriacontane (C36)
1,000 μ g/mL in methylene chloride, 1mL/ampul	
cat. # 31819 (ea.)	

for more info

State of Alaska

Method and regulatory information is available from:

Alaska Department of Environmental Conservation
 410 Willoughby Avenue
 Juneau, AK 99801-1795
 Phone: (907)465-5203
 Fax: (907)465-5218
www.dec.state.ak.us/regulations/index.htm



free literature

Alaska UST Monitoring

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Fast Facts
 lit. cat.# 59503

did you know?

We have more than 2,000 pure, characterized, neat compounds in our inventory! If you do not see the EXACT mixture you need listed on any of these pages, contact us for a custom standard.



Alaska cont'd

AK102

Method for determination of aromatic and aliphatic hydrocarbons in diesel range organics.

DRO Mix (Tennessee/Mississippi) (16 components)

<i>n</i> -decane (C10)	<i>n</i> -octadecane (C18)
<i>n</i> -undecane (C11)	<i>n</i> -nonadecane (C19)
<i>n</i> -dodecane (C12)	<i>n</i> -eicosane (C20)
<i>n</i> -tridecane (C13)	<i>n</i> -heneicosane (C21)
<i>n</i> -tetradecane (C14)	<i>n</i> -docosane (C22)
<i>n</i> -pentadecane (C15)	<i>n</i> -tricosane (C23)
<i>n</i> -hexadecane (C16)	<i>n</i> -tetracosane (C24)
<i>n</i> -heptadecane (C17)	<i>n</i> -pentacosane (C25)

1,000 μ g/mL each in methylene chloride, 1mL/ampul
cat. # 31214 (ea.)

AK103

Method for determination of aromatic and aliphatic hydrocarbons in residual range organics.

Residual Range Calibration Standard (RCS)

SAE30 motor oil:SAE40 motor oil (1:1)
50,000 μ g/mL in methylene chloride, 1mL/ampul
cat. # 31817 (ea.)

Residual Range Calibration Verification Standard (CVS)

SAE30 motor oil:SAE40 motor oil (1:1)
25,000 μ g/mL in methylene chloride, 1mL/ampul
cat. # 31818 (ea.)

Kerosene Composite Standard

5,000 μ g/mL in methylene chloride, 1mL/ampul
cat. # 31094 (ea.)
50,000 μ g/mL in methylene chloride, 1mL/ampul
cat. # 31256 (ea.)
50,000 μ g/mL in methylene chloride, 5mL/ampul
cat. # 31257 (ea.)

Motor Oil Composite Standard

50,000 μ g/mL in methylene chloride, 1mL/ampul
cat. # 31464 (ea.)

Fuel Oil #6 Standard

This fuel, sometimes called bunker C or residual, is a black viscous oil. Applications in which it may be used require the ability to preheat the fuel prior to pumping and burning.

5,000 μ g/mL in methylene chloride, 1mL/ampul
cat. # 31218 (ea.)
50,000 μ g/mL in methylene chloride, 1mL/ampul
cat. # 31248 (ea.)
50,000 μ g/mL in methylene chloride, 5mL/ampul
cat. # 31249 (ea.)

Diesel Fuel #2 Composite Standard

5,000 μ g/mL in methylene chloride, 1mL/ampul
cat. # 31093 (ea.)
50,000 μ g/mL in methylene chloride, 1mL/ampul
cat. # 31258 (ea.)
50,000 μ g/mL in methylene chloride, 5mL/ampul
cat. # 31259 (ea.)

***o*-Terphenyl**

2,000 μ g/mL in acetone, 1mL/ampul
cat. # 31066 (ea.)
10,000 μ g/mL in methylene chloride, 1mL/ampul
cat. # 31097 (ea.)

***n*-Triacontane-d62**

500 μ g/mL in methylene chloride, 1mL/ampul
cat. # 31816 (ea.)

5- α -androstane

2,000 μ g/mL in methylene chloride, 1mL/ampul
cat. # 31065 (ea.)

Surrogate Standard Mixture

squalane	tetrahydronaphthol
<i>o</i> -terphenyl	
1,000 μ g/mL each in methylene chloride, 1mL/ampul	
	cat. # 31638 (ea.)

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Arizona

Extraction Retention Time Standard

<i>n</i> -hexane (C6)	<i>n</i> -docosane (C22)
<i>n</i> -decane (C10)	<i>n</i> -dotriacontane (C32)
2,000 μ g/mL each in methylene chloride, 1mL/ampul	
cat. # 31830 (ea.)	

DRO/GRO Calibration Standard

10W30 motor oil:diesel fuel #2 (1:1 blend)
25,000 μ g/mL each in methylene chloride, 1mL/ampul
cat. # 31831 (ea.)

DRO/GRO Range Calibration Standard (12 components)

<i>n</i> -decane (C10)	<i>n</i> -docosane (C22)
<i>n</i> -dodecane (C12)	<i>n</i> -tetraacosane (C24)
<i>n</i> -tetradecane (C14)	<i>n</i> -hexacosane (C26)
<i>n</i> -hexadecane (C16)	<i>n</i> -octacosane (C28)
<i>n</i> -octadecane (C18)	<i>n</i> -triacontane (C30)
<i>n</i> -eicosane (C20)	<i>n</i> -dotriacontane (C32)
2,000 μ g/mL each in methylene chloride, 1mL/ampul	
cat. # 31832 (ea.)	

GRO P&T Retention Time Standard

benzene	naphthalene
1,000 μ g/mL each in P&T methanol, 1mL/ampul	
cat. # 30496 (ea.)	

o-Terphenyl

2,000 μ g/mL in acetone, 1mL/ampul
cat. # 31066 (ea.)

10,000 μ g/mL in methylene chloride, 1mL/ampul
cat. # 31097 (ea.)

California

PVOC Mix (California) (7 components)

benzene	<i>m</i> -xylene
ethylbenzene	<i>o</i> -xylene
methyl <i>tert</i> -butyl ether (MTBE)	<i>p</i> -xylene
toluene	
1,000 μ g/mL each in P&T methanol, 1mL/ampul	
cat. # 30231 (ea.)	

California Oxygenates Mix

diisopropyl ether (DIPE)	2,000 μ g/mL
ethyl- <i>tert</i> -butyl ether (ETBE)	2,000
<i>tert</i> -amyl methyl ether (TAME)	2,000
<i>tert</i> -butyl alcohol	10,000
methyl <i>tert</i> -butyl ether (MTBE)	2,000
In P&T methanol, 1mL/ampul	
cat. # 30465 (ea.)	

Methanol

10,000 μ g/mL in DI Water, 1mL/ampul
cat. # 30467 (ea.)

Ethanol

10,000 μ g/mL in DI Water, 1mL/ampul
cat. # 30466 (ea.)

Glycols Standard

ethylene glycol	propylene glycol
50,000 μ g/mL each in DI water, 1mL/ampul	
cat. # 30471 (ea.)	

Los Angeles County, CA Well Investigation Program (WIP)*

CA WIP VOA Standard (11 components)

benzene	methyl <i>tert</i> -butyl ether (MTBE)
chlorobenzene	toluene
1,2-dichlorobenzene	<i>m</i> -xylene
1,3-dichlorobenzene	<i>o</i> -xylene
1,4-dichlorobenzene	<i>p</i> -xylene
ethylbenzene	
2,000 μ g/mL each in P&T methanol, 1mL/ampul	
cat. # 30236 (ea.)	

*For samples suspected of gasoline contamination, Los Angeles County requires laboratories to calibrate and report these compounds.



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Connecticut

Connecticut ETPH Calibration Mixture (15 components)

<i>n</i> -nonane (C9)	<i>n</i> -tetracosane (C24)
<i>n</i> -decane (C10)	<i>n</i> -hexacosane (C26)
<i>n</i> -dodecane (C12)	<i>n</i> -octacosane (C28)
<i>n</i> -tetradecane (C14)	<i>n</i> -triacontane (C30)
<i>n</i> -hexadecane (C16)	<i>n</i> -dotriacontane (C32)
<i>n</i> -octadecane (C18)	<i>n</i> -tetracontane (C34)
<i>n</i> -eicosane (C20)	<i>n</i> -hexatriacontane (C36)
<i>n</i> -docosane (C22)	
1,000 μ g/mL each in methylene chloride, 1mL/ampul	
cat. # 31614 (ea.)	

Florida

Florida TRPH Standard (17 components)

<i>n</i> -octane (C8)	<i>n</i> -hexacosane (C26)
<i>n</i> -decane (C10)	<i>n</i> -octacosane (C28)
<i>n</i> -dodecane (C12)	<i>n</i> -triacontane (C30)
<i>n</i> -tetradecane (C14)	<i>n</i> -dotriacontane (C32)
<i>n</i> -hexadecane (C16)	<i>n</i> -tetracontane (C34)
<i>n</i> -octadecane (C18)	<i>n</i> -hexatriacontane (C36)
<i>n</i> -eicosane (C20)	<i>n</i> -octatriacontane (C38)
<i>n</i> -docosane (C22)	<i>n</i> -tetracontane (C40)
<i>n</i> -tetracosane (C24)	
500 μ g/mL each in hexane, 1mL/ampul	
cat. # 31266 (ea.)	
2,000 μ g/mL each in carbon disulfide, 1mL/ampul*	
cat. # 31878 (ea.)	

*Ground transportation shipments only.

Florida TRPH Surrogate Mix

<i>n</i> -nonatriacontane (C39)
3,000 μ g/mL in carbon disulfide, 1mL/ampul*
cat. # 31456 (ea.)

3,000 μ g/mL in carbon disulfide, 10mL/ampul*
cat. # 31877 (ea.)

*Ground transportation shipments only.



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UST Monitoring

Massachusetts

MA VPH Standard with Surrogate Rev. 1.1 (July 2004)

(16 components)

benzene	<i>n</i> -nonane (C9)
<i>n</i> -butylcyclohexane	<i>n</i> -pentane (C5)
<i>n</i> -decane (C10)	toluene
2,5-dibromotoluene (SS)	1,2,4-trimethylbenzene
ethylbenzene	2,2,4-trimethylpentane (isooctane)
2-methylpentane	<i>m</i> -xylene
methyl <i>tert</i> -butyl ether (MTBE)	<i>o</i> -xylene
naphthalene	<i>p</i> -xylene
10,000 μ g/mL in P&T methanol, 1mL/ampul	
cat. # 30604 (ea.)	

MA VPH Matrix Spike Mix with Surrogate Rev. 1.1 (July 2004)

(16 components)

benzene	<i>n</i> -nonane (C9)
<i>n</i> -butylcyclohexane	<i>n</i> -pentane (C5)
<i>n</i> -decane (C10)	toluene
2,5-dibromotoluene (SS)	1,2,4-trimethylbenzene
ethylbenzene	2,2,4-trimethylpentane (isooctane)
2-methylpentane	<i>m</i> -xylene
methyl <i>tert</i> -butyl ether (MTBE)	<i>o</i> -xylene
naphthalene	<i>p</i> -xylene
50 μ g/mL in P&T methanol, 1mL/ampul	
cat. # 30605 (ea.)	

MA Volatile Petroleum Hydrocarbon (VPH) Standard

(13 components)

<i>n</i> -pentane (C5)	1,000 μ g/mL	naphthalene	1,000
<i>n</i> -nonane (C9)	1,000	toluene	1,500
benzene	500	1,2,4-trimethylbenzene	1,000
ethylbenzene	500	<i>m</i> -xylene	1,000
isooctane	1,500	<i>o</i> -xylene	1,000
2-methylpentane	1,500	<i>p</i> -xylene	1,000
methyl <i>tert</i> -butyl ether (MTBE)	1,500		

In P&T methanol, 1mL/ampul

cat. # 30434 (ea.)

MA VPH Standard with Surrogate (14 components)

<i>n</i> -pentane (C5)	1,000 μ g/mL	methyl <i>tert</i> -butyl ether (MTBE)	1,500
<i>n</i> -nonane (C9)	1,000	naphthalene	1,000
benzene	500	toluene	1,500
2,5-dibromotoluene (SS)	1,000	1,2,4-trimethylbenzene	1,000
ethylbenzene	500	<i>m</i> -xylene	1,000
isooctane	1,500	<i>o</i> -xylene	1,000
2-methylpentane	1,500	<i>p</i> -xylene	1,000

In P&T methanol, 1mL/ampul

cat. # 30452 (ea.)

MA VPH Matrix Spike Mix with Surrogate (14 components)

<i>n</i> -pentane (C5)		methyl <i>tert</i> -butyl ether (MTBE)	
<i>n</i> -nonane (C9)		naphthalene	
benzene		toluene	
2,5-dibromotoluene (SS)		1,2,4-trimethylbenzene	
ethylbenzene		<i>m</i> -xylene	
isooctane		<i>o</i> -xylene	
2-methylpentane		<i>p</i> -xylene	

2,500 μ g/mL each in P&T methanol, 1mL/ampul

cat. # 30454 (ea.)

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**MA VPH Surrogate Standard**

2,5-dibromotoluene

1,000 μ g/mL in P&T methanol, 1mL/ampul
cat. # 30435 (ea.)10,000 μ g/mL in P&T methanol, 1mL/ampul
cat. # 30453 (ea.)**Massachusetts APH Mix** (26 components)

benzene	4-isopropyltoluene
1,3-butadiene	methyl <i>tert</i> -butyl ether (MTBE)
butylcyclohexane	1-methyl-3-ethylbenzene
cyclohexane	<i>n</i> -nonane (C9)
<i>n</i> -decane (C10)	<i>n</i> -octane (C8)
2,3-dimethylheptane	toluene
2,3-dimethylpentane	toluene-d8 (IS)
<i>n</i> -dodecane (C12)	1,2,3-trimethylbenzene
ethylbenzene	1,3,5-trimethylbenzene
<i>n</i> -heptane (C7)	<i>n</i> -undecane (C11)
<i>n</i> -hexane (C6)	<i>m</i> -xylene
isopentane	<i>o</i> -xylene
isopropylbenzene	<i>p</i> -xylene

Cylinder Construction: aluminum**Cylinder Fitting:** CGA-180 outlet1ppm in nitrogen, 104 liters @ 1,800psi
cat. # 34540 (ea.)1ppm in nitrogen, 21 liters @ 350psig (Pi-marked Cylinder)
cat. # 34540-PI (ea.)

Requires a high-purity VOC single-stage regulator. See page 386.

No data pack available.

MA EPH Aromatic Hydrocarbon Standard (17 components)

acenaphthene	dibenzo(a,h)anthracene
acenaphthylene	fluoranthene
anthracene	fluorene
benzo(a)anthracene	indeno(1,2,3-cd)pyrene
benzo(a)pyrene	2-methylnaphthalene
benzo(b)fluoranthene	naphthalene
benzo(k)fluoranthene	phenanthrene
benzo(ghi)perylene	pyrene
chrysene	

1,000 μ g/mL each in methylene chloride, 1mL/ampul
cat. # 31458 (ea.)**MA EPH Aliphatic Hydrocarbon Standard** (14 components)

<i>n</i> -nonane (C9)	<i>n</i> -eicosane (C20)
<i>n</i> -decane (C10)	<i>n</i> -docosane (C22)
<i>n</i> -dodecane (C12)	<i>n</i> -tetracosane (C24)
<i>n</i> -tetradecane (C14)	<i>n</i> -hexacosane (C26)
<i>n</i> -hexadecane (C16)	<i>n</i> -octacosane (C28)
<i>n</i> -octadecane (C18)	<i>n</i> -triacontane (C30)
<i>n</i> -nonadecane (C19)	<i>n</i> -hexatriacontane (C36)

1,000 μ g/mL each in hexane, 1mL/ampul
cat. # 31459 (ea.)**MA EPH Matrix Spike Mix** (10 components)

<i>n</i> -nonane (C9)	acenaphthene
<i>n</i> -tetradecane (C14)	anthracene
<i>n</i> -nonadecane (C19)	chrysene
<i>n</i> -eicosane (C20)	naphthalene
<i>n</i> -octacosane (C28)	pyrene

250 μ g/mL each in acetone, 1mL/ampul
cat. # 31460 (ea.)

Massachusetts cont'd

MA EPH Internal Standard

5- α -androstane
 2,000 μ g/mL in methylene chloride, 1mL/ampul
 cat. # 31065 (ea.)

MA EPH Surrogate Spike Mix

1-chlorooctadecane o-terphenyl
 4,000 μ g/mL each in acetone, 1mL/ampul
 cat. # 31479 (ea.)

1-Chlorooctadecane Mix

1-chlorooctadecane
 10,000 μ g/mL in methylene chloride, 1mL/ampul
 cat. # 31098 (ea.)

Naphthalene-d8

2,000 μ g/mL in methylene chloride, 1mL/ampul
 cat. # 31043 (ea.)

MA Fractionation Surrogate Spike Mix

2-bromonaphthalene 2-fluorobiphenyl
 4,000 μ g/mL each in hexane, 1mL/ampul
 cat. # 31480 (ea.)

MA Fractionation Check Mix (31 components)

PAHs:
 acenaphthene
 acenaphthylene
 anthracene
 benzo(a)anthracene
 benzo(a)pyrene
 benzo(b)fluoranthene
 benzo(k)fluoranthene
 benzo(ghi)perylene
 chrysene
 dibenzo(a,h)anthracene
 fluoranthene
 fluorene
 indeno(1,2,3-cd)pyrene
 2-methylnaphthalene
 naphthalene
 phenanthrene
 pyrene

25 μ g/mL each in hexane, 1mL/ampul
 cat. # 31481 (ea.)

Hydrocarbons:
 n-nonane (C9)
 n-decane (C10)
 n-dodecane (C12)
 n-tetradecane (C14)
 n-hexadecane (C16)
 n-octadecane (C18)
 n-nonadecane (C19)
 n-eicosane (C20)
 n-docosane (C22)
 n-tetracosane (C24)
 n-hexacosane (C26)
 n-octacosane (C28)
 n-triacontane (C30)
 n-hexatriacontane (C36)

Michigan

Michigan GRO Mix (14 components)

benzene naphthalene
 1,2-dibromoethane toluene
 1,2-dichloroethane 1,2,4-trimethylbenzene
 ethylbenzene 1,3,5-trimethylbenzene
 isopropylbenzene m-xylene
 2-methylnaphthalene o-xylene
 methyl tert-butyl-ether (MTBE) p-xylene
 2,000 μ g/mL each in P&T methanol, 1mL/ampul
 cat. # 30468 (ea.)

Mississippi

DRO Mix (Tennessee/Mississippi) (16 components)

n-decane (C10)	n-octadecane (C18)
n-undecane (C11)	n-nonadecane (C19)
n-dodecane (C12)	n-eicosane (C20)
n-tridecane (C13)	n-heneicosane (C21)
n-tetradecane (C14)	n-docosane (C22)
n-pentadecane (C15)	n-tricosane (C23)
n-hexadecane (C16)	n-tetracosane (C24)
n-heptadecane (C17)	n-pentacosane (C25)

1,000 μ g/mL each in methylene chloride, 1mL/ampul
 cat. # 31214 (ea.)

Gasoline Component Standard (10 components)

benzene	500 μ g/mL	1,2,4-trimethylbenzene	1,000
ethylbenzene	500	2,2,4-trimethylpentane	1,500
heptane	500	m-xylene	1,000
2-methylpentane	1,500	o-xylene	1,000
toluene	1,500	p-xylene	1,000

10,000 μ g/mL total in P&T methanol, 1mL/ampul
 cat. # 30486 (ea.)

Northwest USA Regional Method (Oregon & Washington)

also see Washington, page 467

NW TPH-HCID Retention Time Mix

n-dodecane (C12)	toluene
n-tetracosane (C24)	

2,500 μ g/mL each in methylene chloride, 1mL/ampul
 cat. # 31485 (ea.)

NW TPH-HCID Surrogate Mix

n-pentacosane (C25)	4-bromofluorobenzene
5,000 μ g/mL each in methylene chloride, 1mL/ampul	
	cat. # 31486 (ea.)

Glycols Standard

ethylene glycol	propylene glycol
50,000 μ g/mL each in DI water, 1mL/ampul	
	cat. # 30471 (ea.)

NW TPH-Dx Surrogate Mix Standards

Volume is 1mL/ampul. Concentration is μ g/mL

Compound	Solvent	Conc.	cat.# (ea.)	price
2-fluorobiphenyl	D	10,000	31096	
o-terphenyl	D	10,000	31097	
p-terphenyl	D	10,000	31095	
pentacosane (C25)	D	10,000	31487	

D = methylene chloride

also available

See the GC Applications section for glycols application chromatograms - pages 602-603.



UST Monitoring

Pennsylvania

PA DEP UST Standard (11 components)

benzene	naphthalene
1,2-dibromoethane	toluene
1,2-dichloroethane	m-xylene
ethylbenzene	o-xylene
isopropyl benzene	p-xylene
methyl <i>tert</i> -butyl ether (MTBE)	
2,000 μ g/mL each in P&T methanol, 1mL/ampul	
cat. # 30433 (ea.)	

Tennessee/Mississippi

DRO Mix (Tennessee/Mississippi) (16 components)

<i>n</i> -decane (C10)	<i>n</i> -octadecane (C18)
<i>n</i> -undecane (C11)	<i>n</i> -nonadecane (C19)
<i>n</i> -dodecane (C12)	<i>n</i> -eicosane (C20)
<i>n</i> -tridecane (C13)	<i>n</i> -heneicosane (C21)
<i>n</i> -tetradecane (C14)	<i>n</i> -docosane (C22)
<i>n</i> -pentadecane (C15)	<i>n</i> -tricosane (C23)
<i>n</i> -hexadecane (C16)	<i>n</i> -tetracosane (C24)
<i>n</i> -heptadecane (C17)	<i>n</i> -pentacosane (C25)
1,000 μ g/mL each in methylene chloride, 1mL/ampul	
cat. # 31214 (ea.)	

Gasoline Component Standard (10 components)

benzene	500 μ g/mL	1,2,4-trimethylbenzene	1,000
ethylbenzene	500	2,2,4-trimethylpentane	1,500
heptane	500	m-xylene	1,000
2-methylpentane	1,500	o-xylene	1,000
toluene	1,500	p-xylene	1,000
10,000 μ g/mL total in P&T methanol, 1mL/ampul			
cat. # 30486 (ea.)			

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Texas

Texas TNRCC Method 1006**TNRCC 1006 Retention Time Marker Mix** (9 components)

<i>n</i> -hexane (C6)	<i>n</i> -hexadecane (C16)
<i>n</i> -heptane (C7)	<i>n</i> -heneicosane (C21)
<i>n</i> -octane (C8)	<i>n</i> -octacosane (C28)
<i>n</i> -decane (C10)	<i>n</i> -pentatriacontane (C35)
<i>n</i> -dodecane (C12)	
200 μ g/mL in pentane, 1mL/ampul	
cat. # 31814 (ea.)	

Texas TNRCC Method 1005**TNRCC 1005 Retention Time Markers Mix**

<i>n</i> -hexane (C6)	<i>n</i> -octacosane (C28)
<i>n</i> -dodecane (C12)	<i>n</i> -pentatriacontane (C35)
200 μ g/mL each in pentane, 1mL/ampul	

TX TPH Locator Mix

<i>n</i> -hexane (C6)	<i>n</i> -octacosane (C28)
<i>n</i> -decane (C10)	
200 μ g/mL each in pentane, 1mL/ampul	

TX TPH Calibration Mix

diesel fuel #2 composite	unleaded gasoline composite
10,000 μ g/mL each in pentane, 1mL/ampul	

TX TPH Matrix Spike Mix

diesel fuel #2 composite	unleaded gasoline composite
10,000 μ g/mL each in P&T methanol, 1mL/ampul	

Alternate Boiling Point/Carbon Number Distribution Marker Stock Standard (9 components)

<i>n</i> -hexane (C6)	<i>n</i> -heneicosane (C21)
<i>n</i> -octane (C8)	<i>n</i> -octacosane (C28)
<i>n</i> -decane (C10)	<i>n</i> -pentatriacontane (C35)
<i>n</i> -dodecane (C12)	<i>n</i> -hexatriacontane (C36)
<i>n</i> -hexadecane (C16)	
200 μ g/mL each in pentane, 1mL/ampul	

 α,α,α -Trifluorotoluene

2,000 μ g/mL in P&T methanol, 1mL/ampul	
cat. # 30048 (ea.)	
2,500 μ g/mL in P&T methanol, 1mL/ampul	

cat. # 30068 (ea.)	
10,000 μ g/mL in P&T methanol, 1mL/ampul	

cat. # 30083 (ea.)	
--------------------	--

1-Chlorooctane

10,000 μ g/mL in P&T methanol, 1mL/ampul	
cat. # 30084 (ea.)	

1-Chlorooctadecane Mix

1-chlorooctadecane	
10,000 μ g/mL in methylene chloride, 1mL/ampul	

cat. # 31098 (ea.)

Washington

WA VPH Marker Standard (9 components)

<i>n</i> -pentane (C5)	1-methylnaphthalene
<i>n</i> -hexane (C6)	naphthalene
<i>n</i> -octane (C8)	toluene
<i>n</i> -decane (C10)	1,2,3-trimethylbenzene
<i>n</i> -dodecane (C12)	
1,000 μ g/mL each in P&T methanol, 1mL/ampul	
	cat. # 30450 (ea.)

WA VPH Standard (15 components)

<i>n</i> -pentane (C5)	methyl <i>tert</i> -butyl ether (MTBE)
<i>n</i> -hexane (C6)	naphthalene
<i>n</i> -octane (C8)	toluene
<i>n</i> -decane (C10)	1,2,3-trimethylbenzene
<i>n</i> -dodecane (C12)	<i>m</i> -xylene
benzene	<i>o</i> -xylene
ethylbenzene	<i>p</i> -xylene
1-methylnaphthalene	
1,000 μ g/mL each in P&T methanol, 1mL/ampul	
	cat. # 30451 (ea.)

WA EPH Aromatic Hydrocarbon Mix

acenaphthene	pyrene
benzo(ghi)perylene	toluene
naphthalene	1,2,3-trimethylbenzene
1,000 μ g/mL each in methylene chloride, 1mL/ampul	
cat. # 31488 (ea.)	

WA EPH Aliphatic Hydrocarbon Mix

<i>n</i> -octane (C8)	<i>n</i> -hexadecane (C16)
<i>n</i> -decane (C10)	<i>n</i> -heicosane (C21)
<i>n</i> -dodecane (C12)	<i>n</i> -tetracontane (C34)
1,000 μ g/mL each in hexane, 1mL/ampul	
cat. # 31489 (ea.)	

WA EPH Aromatic Hydrocarbon Standard (18 components)

acenaphthene	dibenzo(a,h)anthracene
acenaphthylene	fluoranthene
anthracene	fluorene
benzo(a)anthracene	indeno(1,2,3-cd)pyrene
benzo(a)pyrene	2-methylnaphthalene
benzo(b)fluoranthene	naphthalene
benzo(k)fluoranthene	phenanthrene
benzo(ghi)perylene	pyrene
chrysene	1,2,3-trimethylbenzene
1,000 μ g/mL each in methylene chloride, 1mL/ampul	
cat. # 31469 (ea.)	

did you know?

We have more than 2,000 pure, characterized, neat compounds in our inventory! If you do not see the EXACT mixture you need listed on any of these pages, contact us for a custom standard.

Washington cont'd

WA EPH Matrix Spike Mix (10 components)

<i>n</i> -decane (C10)	anthracene
<i>n</i> -dodecane (C12)	benzo(a)pyrene
<i>n</i> -hexadecane (C16)	benzo(ghi)perylene
<i>n</i> -heicosane (C21)	naphthalene
acenaphthene	pyrene
250 μ g/mL each in acetone, 1mL/ampul	
	cat. # 31490 (ea.)

WA EPH Fractionation Check Mix (22 components)

<i>n</i> -octane (C8)	benzo(b)fluoranthene
<i>n</i> -decane (C10)	benzo(k)fluoranthene
<i>n</i> -dodecane (C12)	benzo(ghi)perylene
<i>n</i> -hexadecane (C16)	chrysene
<i>n</i> -heicosane (C21)	dibenzo(a,h)anthracene
<i>n</i> -tetracontane (C34)	fluoranthene
acenaphthene	fluorene
acenaphthylene	indeno(1,2,3-cd)pyrene
anthracene	naphthalene
benzo(a)anthracene	phenanthrene
benzo(a)pyrene	pyrene
250 μ g/mL each in hexane, 1mL/ampul	
	cat. # 31491 (ea.)

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Fast Facts
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Wisconsin

PVOC/GRO Mix (Wisconsin) (10 components)

benzene	1,2,4-trimethylbenzene
ethylbenzene	1,3,5-trimethylbenzene
methyl <i>tert</i> -butyl ether	<i>m</i> -xylene
naphthalene	<i>o</i> -xylene
toluene	<i>p</i> -xylene
1,000 μ g/mL each in P&T methanol, 1mL/ampul	
	cat. # 30095 (ea.)

DRO Mix (EPA/Wisconsin) (10 components)

<i>n</i> -decane (C10)	<i>n</i> -eicosane (C20)
<i>n</i> -dodecane (C12)	<i>n</i> -docosane (C22)
<i>n</i> -tetradecane (C14)	<i>n</i> -tetracosane (C24)
<i>n</i> -hexadecane (C16)	<i>n</i> -hexacosane (C26)
<i>n</i> -octadecane (C18)	<i>n</i> -octacosane (C28)
2,000 μ g/mL each in methylene chloride, 1mL/ampul	
	cat. # 31064 (ea.)

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Wisconsin UST Monitoring

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