

Reference Standards

Environmental



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Acetates

8260B Acetate Mix (5 components)

n-Butyl acetate (123-86-4) *n*-Propyl acetate (109-60-4)
Ethyl acetate (141-78-6) Vinyl acetate (108-05-4)
Isopropyl acetate (108-21-4)

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

8260B Acetate Mix (Revised) (7 components)

- Includes methyl acetate and *n*-amyl acetate.
- Contains 7 acetates.

n-Amyl acetate (628-63-7) Methyl acetate (79-20-9)
Butyl acetate (123-86-4) Propyl acetate (109-60-4)
Ethyl acetate (141-78-6) Vinyl acetate (108-05-4)
Isopropyl acetate (108-21-4)

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

Vinyl Acetate

Vinyl acetate (108-05-4)

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

Alcohols

8240 Alcohols Mix (5 components)

Allyl alcohol (2-propen-1-ol) (107-18-6) Isobutyl alcohol (78-83-1)
2-Chloroethanol (107-07-3) Propargyl alcohol (107-19-7)
Ethanol (64-17-5)

2,000 µg/mL each in P&T methanol, 1 mL/ampul
cat.# 30214 (ea.)

Aldehydes

Method 8315 (Aldehydes & Ketones DNPH by LC)

Aldehyde-Ketone-DNPH TO-11A Calibration Mix (15 components)

Acetaldehyde-DNPH (1019-57-4) Formaldehyde-DNPH (1081-15-8)
Acetone-DNPH (1567-89-1) Hexaldehyde-DNPH (1527-97-5)
Acrolein-DNPH (888-54-0) Isovaleraldehyde-DNPH (2256-01-1)
Benzaldehyde-DNPH (1157-84-2) Propionaldehyde-DNPH (725-00-8)
n-Butyraldehyde-DNPH (1527-98-6) *m*-Tolualdehyde-DNPH (2880-05-9)
Crotonaldehyde-DNPH (1527-96-4) *o*-Tolualdehyde-DNPH (1773-44-0)
2,5-Dimethylbenzaldehyde-DNPH (152477-96-8) *p*-Tolualdehyde-DNPH (2571-00-8)
Valeraldehyde-DNPH (2057-84-3)

15 µg/mL each in acetonitrile, 1 mL/ampul*
cat.# 31808 (ea.)

*The reported concentrations reflect the amount of aldehyde or ketone in the mixture.
The concentration of derivatized aldehyde or ketone is not reported.

Formaldehyde-DNPH Mix

500 µg/mL in acetonitrile, 1 mL/ampul*
cat.# 31837 (ea.)

*The reported concentrations reflect the amount of formaldehyde in the mixture.
The concentration of derivatized formaldehyde is not reported.

Aldehydes, cont.

CARB 1004 Aldehyde/Ketone-DNPH Calibration Standard (13 components)

Acetaldehyde-2,4-DNPH (1019-57-4) Hexaldehyde-2,4-DNPH (1527-97-5)
Acetone-2,4-DNPH (1567-89-1) Methacrolein-2,4-DNPH (5077-73-6)
Acrolein-2,4-DNPH (888-54-0) Methyl ethyl ketone-2,4-DNPH
Benzaldehyde-2,4-DNPH (1157-84-2) (958-60-1)
n-Butyraldehyde-2,4-DNPH (1527-98-6) Propionaldehyde-2,4-DNPH (725-00-8)
Crotonaldehyde-2,4-DNPH (1527-96-4) *m*-Tolualdehyde-2,4-DNPH (2880-05-9)
Formaldehyde-2,4-DNPH (1081-15-8) Valeraldehyde-2,4-DNPH (2057-84-3)

3 µg/mL each in acetonitrile, 1 mL/ampul*
cat.# 33093 (ea.)

*The reported concentrations reflect the amount of aldehyde or ketone in the mixture.
The concentration of derivatized aldehyde or ketone is not reported.

DNPH Reference Materials

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

Compound	CAS #	Solvent	Conc.	cat.#
acetaldehyde-2,4-DNPH	1019-57-4	ACN	100	33074
formaldehyde-2,4-DNPH	1081-15-8	ACN	100	33082
glycolaldehyde-2,4-DNPH		ACN	100	33091

*The reported concentrations reflect the amount of aldehyde or ketone in the mixture.
The concentration of derivatized aldehyde or ketone is not reported.
ACN = acetonitrile

ASTM Method 5197 (Formaldehyde and Other Carbonyl Compounds in Air)

See cat. #s 33093, 33074, 33082, and 33091 above.

Base, Neutral & Acid Extractable (BNA)/ Semivolatile Organics

See pages 532-544.

Benzidines

605 Benzidines Calibration Mix (2 components)

Benzidine (92-87-5)
3,3'-Dichlorobenzidine (91-94-1)
2,000 µg/mL each in methanol, 1 mL/ampul
cat.# 31030 (ea.)
2,000 µg/mL each in methylene chloride, 1 mL/ampul
cat.# 31834 (ea.)

8270 Benzidines Mix (3 components)

Benzidine (92-87-5) 3,3'-Dimethylbenzidine (*o*-tolidine)
3,3'-Dichlorobenzidine (91-94-1) (119-93-7)
2,000 µg/mL each in methanol, 1 mL/ampul
cat.# 31688 (ea.)
2,000 µg/mL each in methylene chloride, 1 mL/ampul
cat.# 31852 (ea.)

3,3'-Dichlorobenzidine

3,3'-Dichlorobenzidine (91-94-1)
2,000 µg/mL in methanol, 1 mL/ampul
cat.# 31026 (ea.)
2,000 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31835 (ea.)

BTEX

BTEX Standard (6 components)

Benzene (71-43-2)	<i>m</i> -Xylene (108-38-3)
Ethylbenzene (100-41-4)	<i>o</i> -Xylene (95-47-6)
Toluene (108-88-3)	<i>p</i> -Xylene (106-42-3)
200 µg/mL each in P&T methanol, 1 mL/ampul	
cat.# 30051 (ea.)	
2,000 µg/mL each in P&T methanol, 1 mL/ampul	
cat.# 30213 (ea.)	
2,000 µg/mL each in P&T methanol (<i>m</i> - & <i>p</i> -xylene at 1,000 µg/mL), 1 mL/ampul	
cat.# 30488 (ea.)	

BTEX Gas Mix (6 components)

Benzene (71-43-2)	<i>m</i> -Xylene (108-38-3)
Ethylbenzene (100-41-4)	<i>o</i> -Xylene (95-47-6)
Toluene (108-88-3)	<i>p</i> -Xylene (106-42-3)

cylinder design

Cylinder Construction: aluminum
Cylinder Fitting: CGA-180 outlet

Spectra (Linde) 104 L Cylinders:

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



Scotty (Air Liquide) 110 L Cylinders:

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



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

1 ppm in nitrogen, 110 liters @ 1,800 psi
cat.# 26361 (ea.)

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

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

100 ppb in nitrogen, 110 liters @ 1,800 psi
cat.# 26362 (ea.)

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

No data pack available.

Gas standards are subject to hazardous materials shipping fees by most freight carriers. All calibration gas standards are nonreturnable due to DOT hazardous shipping requirements.

also available

High-Purity VOC Regulators

See page 453.



Diesel Fuel

Diesel Surrogate and Internal Standards

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

Compound	CAS #	Solvent	Conc.	cat.#
1-Chlorooctadecane	3386-33-2	D	10,000	31098
2-Fluorobiphenyl	321-60-8	D	10,000	31096
<i>o</i> -Terphenyl	84-15-1	D	10,000	31097
<i>p</i> -Terphenyl	92-94-4	D	10,000	31095

Recommended Internal Standards

Compound	CAS #	Solvent	Conc.	cat.#
5- α -Androstane	438-22-2	D	2,000	31065
<i>o</i> -Terphenyl	84-15-1	A	2,000	31066

A = acetone; D = methylene chloride

Diesel Fuel #2 Composite Standard

Diesel fuel #2 composite (68334-30-5)

5,000 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31093 (ea.)

50,000 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31258 (ea.)

50,000 µg/mL in methylene chloride, 5 mL/ampul
cat.# 31259 (ea.)

Diesel Fuel #2 Standard

Prepared from a single-source (one-refinery) product.

Diesel fuel #2: unweathered (68334-30-5)

5,000 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31233 (ea.)

Certified PAHs in Diesel (7 components)

- Confirms diesel #2 TPH and priority PAHs in a single analysis.
- Certificate of analysis includes concentration of TPH and certified concentrations of individual PAHs.
- Complete data packs available.

Certified for:
Acenaphthene*
Acenaphthylene*
Fluorene*
1-Methylnaphthalene*
2-Methylnaphthalene*
Naphthalene*
Phenanthrene*

50,000 ppm diesel #2 in methylene chloride, 1 mL/ampul
cat.# 31673 (ea.)

*Concentration differs from lot to lot. See online data pack for certified concentrations.

Diesel:Biodiesel (80:20) Blend Standard

The biodiesel component is methyl soyate.

Diesel:biodiesel (80:20) (67784-80-9)

5,000 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31880 (ea.)

Diesel Fuel, cont.**ISO/DIS 9377 Water Quality Testing (German H-53)**

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

Diesel #2/Motor Oil (2 components)

Diesel fuel #2 composite (68334-30-5)
Motor oil (64742-65-0)

5,000 µg/mL each in hexane, 1 mL/ampul

cat.# 31682 (ea.)

Diesel #2/Mineral Oil (2 components)

Diesel fuel #2 composite (68334-30-5)
Mineral oil (8042-47-5)

5,000 µg/mL each in hexane, 1 mL/ampul

cat.# 31676 (ea.)

Standard Mixture Stock Solution (2 components)

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

Diesel #2 (additive-free) (68334-30-5)

Mineral oil (additive-free [i.e., USP grade] bp 325–460 or C18–C32 retention time range) (8042-47-5)

5,000 µg/mL each in cyclohexane, 1 mL/ampul (prepares 8 mL of 1.25 µg/µL calibration curve high point). Total hydrocarbon concentration is 10,000 µg/mL.

cat.# 31630 (ea.)

Quality Control Standard Mixture, Revised

(2 components)

- Updated reference materials for GC analysis of TPH in water.
- Determination of hydrocarbon oil index—applicable to drinking, surface, waste, and treated water.

Diesel #2 (additive-free) (68334-30-5)

Motor oil (additive-free bp 325–460 or C18–C32 retention time range) (64742-65-0)

500 µg/mL each in acetone, 1 mL/ampul (1 mL is enough mix to spike one 900 mL quality control sample). Total hydrocarbon concentration is 1,000 µg/mL.

cat.# 31641 (ea.)

Quality Control Standard Mixture (2 components)

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

Diesel #2 (additive-free) (68334-30-5)

Mineral oil (additive-free [i.e., USP grade] bp 391–522 or C24–C40 retention time range) (8042-47-5)

500 µg/mL each in acetone, 1 mL/ampul (1 mL is enough mix to spike one quality control sample). Total hydrocarbon concentration is 1,000 µg/mL.

cat.# 31631 (ea.)

Disinfection By-Products**Chloral Hydrate**

Chloral hydrate (302-17-0)

1,000 µg/mL in acetonitrile, 1 mL/ampul

cat.# 30609 (ea.)

Disinfection By-Product Mix (7 components)

Bromochloroacetonitrile (83463-62-1)

Chloropicrin (76-06-2)

Dibromoacetonitrile (3252-43-5)

Dichloroacetonitrile (3018-12-0)

1,1-Dichloro-2-propanone (513-88-2)

Trichloroacetonitrile (545-06-2)

1,1,1-Trichloro-2-propanone (918-00-3)

2,000 µg/mL each in acetone, 1 mL/ampul

cat.# 30616 (ea.)

Drinking Water Odor**Drinking Water Odor Standard** (2 components)

- Reference mix of the two most common odor-causing compounds.
- Convenient concentration for purge-and-trap analysis: 100 µg/mL in methanol.

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

(+/-)-Geosmin (16423-19-1)

2-Methylisoborneol (MIB) (2371-42-8)

100 µg/mL in P&T methanol, 1 mL/ampul

cat.# 30608 (ea.)

Ethylene Oxide**Ethylene Oxide**

Ethylene oxide (75-21-8)

500 µg/mL in dimethyl sulfoxide, 1 mL/ampul

cat.# 36005 (ea.)

50 mg/mL in methylene chloride, 1 mL/ampul

cat.# 30620 (ea.)

Ethylene oxide is available in other solvents and concentrations. Request your custom formulation at www.restek.com/solutions



Restek Offers a Full Line of Certified Reference Materials

See **pages 464–465**.



www.restek.com/iso

Explosives

Method 609 (Nitroaromatics & Isophorone)

609 Nitroaromatics & Isophorone Calibration Mix

(4 components)

2,4-Dinitrotoluene (121-14-2) 2,6-Dinitrotoluene (606-20-2)
Isophorone (78-59-1) Nitrobenzene (98-95-3)

2,000 µg/mL each in hexane, 1 mL/ampul

cat.# 31033 (ea.)

Method 8095 (Explosives by GC)

8095 Matrix Spike Mix B (7 components)

3,5-Dinitroaniline (618-87-1)* 3-Nitrotoluene (99-08-1)
Nitrobenzene (98-95-3) 4-Nitrotoluene (99-99-0)
Nitroglycerin (55-63-0) PETN (78-11-5)
2-Nitrotoluene (88-72-2)

1,000 µg/mL each in acetonitrile (*3,5-dinitroaniline at 200 µg/mL), 1 mL/ampul
cat.# 31610 (ea.)

Ships under Restek's USDOT explosives approval.

8095 Calibration Mix A (10 components)

2-Amino-4,6-dinitrotoluene (35572-78-2) HMX (2691-41-0)
4-Amino-2,6-dinitrotoluene (19406-51-0) RDX (121-82-4)
1,3-Dinitrobenzene (99-65-0) Tetryl (479-45-8)
2,4-Dinitrotoluene (121-14-2) 1,3,5-Trinitrobenzene (99-35-4)
2,6-Dinitrotoluene (606-20-2) 2,4,6-Trinitrotoluene (118-96-7)

1,000 µg/mL each in acetonitrile, 1 mL/ampul

cat.# 31607 (ea.)

Ships under Restek's USDOT explosives approval.

8095 Calibration Mix B (7 components)

3,5-Dinitroaniline (618-87-1)* 3-Nitrotoluene (99-08-1)
Nitrobenzene (98-95-3) 4-Nitrotoluene (99-99-0)
Nitroglycerine (55-63-0) PETN (78-11-5)
2-Nitrotoluene (88-72-2)

5,000 µg/mL each in acetonitrile (*3,5-dinitroaniline at 1,000 µg/mL), 1 mL/ampul
cat.# 31608 (ea.)

Ships under Restek's USDOT explosives approval.

Method 8095 (Explosives by GC), *cont.*

Single-Component Explosives Solutions

- Supports U.S. Department of Defense base closures and remediation.
- Mixtures and singles supporting LC U.S. EPA Method 8330.
- Mixtures and singles supporting GC-ECD U.S. EPA Method 8095.
- Internal standards and surrogates to support both methods.

These materials support nitroaromatic, nitramine, and nitro-ester 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.

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

Compound	CAS #	Solvent	Conc.	cat.#
4-Amino-2,6-dinitrotoluene	19406-51-0	ACN	1,000	31671
3,5-Dinitroaniline	618-87-1	ACN	1,000	31661
1,2-Dinitrobenzene	528-29-0	M	1,000	31453
1,3-Dinitrobenzene	99-65-0	ACN	1,000	31662
2,4-Dinitrotoluene	121-14-2	ACN	1,000	31663
2,6-Dinitrotoluene	606-20-2	ACN	1,000	31664
3,4-Dinitrotoluene	610-39-9	M	1,000	31452
EGDN*	628-96-6	M	1,000	31601
HMX*	2691-41-0	ACN	1,000	31665
Nitrobenzene	98-95-3	ACN	1,000	31657
Nitroglycerin*	55-63-0	M	1,000	31498
Nitroguanidine*†	556-88-7	M	1,000	31602
2-Nitrotoluene	88-72-2	ACN	1,000	31659
3-Nitrotoluene	99-08-1	ACN	1,000	31660
4-Nitrotoluene	99-99-0	ACN	1,000	31658
PETN (pentaerythritol tetranitrate)*	78-11-5	M	1,000	31600
Picric acid*	88-89-1	M	1,000	31499
RDX*	121-82-4	ACN	1,000	31666
Tetryl*	479-45-8	ACN	1,000	31667
1,3,5-Trinitrobenzene*	99-35-4	ACN	1,000	31668
2,4,6-Trinitrotoluene*	118-96-7	ACN	1,000	31669

ACN = acetonitrile; M = methanol

* Ships under Restek's USDOT explosives approval.

† Available only to customers or distributors inside the 48 contiguous United States; item may not be resold for export.

References (Not available from Restek)

¹U.S. 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.

Compound Index for Reference Standards

See pages 586-592.



Explosives, *cont.*

Method 8330 (Nitroaromatics and Nitramines by LC)

8330 Internal Standard

3,4-Dinitrotoluene (610-39-9)
1,000 µg/mL in methanol, 1 mL/ampul
cat.# 31452 (ea.)

8330 Internal Standard

1,4-Dinitrobenzene (100-25-4)
2,000 µg/mL in acetonitrile, 1 mL/ampul
cat.# 33205 (ea.)

8330 Surrogate

1,2-Dinitrobenzene (528-29-0)
1,000 µg/mL in methanol, 1 mL/ampul
cat.# 31453 (ea.)

8330B Nitroaromatics and Nitramine Mix (17 components)*

2-Amino-4,6-dinitrotoluene (35572-78-2)	2-Nitrotoluene (88-72-2)
4-Amino-2,6-dinitrotoluene (19406-51-0)	3-Nitrotoluene (99-08-1)
3,5-Dinitroaniline (618-87-1)	4-Nitrotoluene (99-99-0)
1,3-Dinitrobenzene (99-65-0)	PETN (78-11-5)
2,4-Dinitrotoluene (121-14-2)	RDX (121-82-4)
2,6-Dinitrotoluene (606-20-2)	Tetryl (479-45-8)
HMX (2691-41-0)	1,3,5-Trinitrobenzene (99-35-4)
Nitrobenzene (98-95-3)	2,4,6-Trinitrotoluene (118-96-7)
Nitroglycerin (55-63-0)	

1,000 µg/mL each in acetonitrile, 1 mL/ampul
cat.# 33204 (ea.)

Nitroaromatics and Nitramine Explosives by LC (14 components)*

1,3-Dinitrobenzene (99-65-0)	2-Nitrotoluene (88-72-2)
2-Amino-4,6-dinitrotoluene (35572-78-2)	3-Nitrotoluene (99-08-1)
4-Amino-2,6-dinitrotoluene (19406-51-0)	4-Nitrotoluene (99-99-0)
2,4-Dinitrotoluene (121-14-2)	RDX (121-82-4)
2,6-Dinitrotoluene (606-20-2)	Tetryl (479-45-8)
HMX (2691-41-0)	1,3,5-Trinitrobenzene (99-35-4)
Nitrobenzene (98-95-3)	2,4,6-Trinitrotoluene (118-96-7)

1,000 µg/mL each in acetonitrile, 1 mL/ampul
cat.# 33905 (ea.)

*Ships under Restek's USDOT explosives approval.

8330 Calibration Mix #1 (7 components)*

1,3-Dinitrobenzene (99-65-0)	RDX (121-82-4)
2,4-Dinitrotoluene (121-14-2)	1,3,5-Trinitrobenzene (99-35-4)
HMX (2691-41-0)	2,4,6-Trinitrotoluene (118-96-7)
Nitrobenzene (98-95-3)	

1,000 µg/mL each in acetonitrile, 1 mL/ampul
cat.# 31450 (ea.)

8330 Calibration Mix #2 (7 components)*

2-Amino-4,6-dinitrotoluene (35572-78-2)	3-Nitrotoluene (99-08-1)
4-Amino-2,6-dinitrotoluene (19406-51-0)	4-Nitrotoluene (99-99-0)
2,6-Dinitrotoluene (606-20-2)	Tetryl (479-45-8)
2-Nitrotoluene (88-72-2)	

1,000 µg/mL each in acetonitrile, 1 mL/ampul
cat.# 31451 (ea.)

*Ships under Restek's USDOT explosives approval.

did you know?

Obtaining pure, neat compounds for Method 8330 reference standards can be very difficult.

To ensure the highest quality standards, Restek's Quality Control (QC) lab confirms the chemical identity and purity of mixture components and solvents using one or more of the following techniques: GC-FID, HPLC, GC-ECD, GC-MS, LC-MS, refractive index, and melting point.



More than 1/3 of the ampuls that leave our facility are custom-ordered reference standards, and almost all of them are certified reference materials (CRMs).

Restek® Safe Cracker

Included with every reference standard shipment for added convenience.

Gases

624 Calibration Mix #1 (gases) (5 components)

Bromomethane (methyl bromide) (74-83-9)
 Chloroethane (ethyl chloride) (75-00-3)
 Chloromethane (methyl chloride) (74-87-3)
 Trichlorofluoromethane (CFC-11) (75-69-4)
 Vinyl chloride (75-01-4)

2,000 µg/mL each in P&T methanol, 1 mL/ampul
 cat.# 30020 (ea.)

Method 8240 (Volatile Organic Compounds [VOCs])

502.2 Calibration Mix #1 (gases) (6 components)

Bromomethane (methyl bromide) (74-83-9)
 Chloroethane (ethyl chloride) (75-00-3)
 Chloromethane (methyl chloride) (74-87-3)
 Dichlorodifluoromethane (CFC-12) (75-71-8)
 Trichlorofluoromethane (CFC-11) (75-69-4)
 Vinyl chloride (75-01-4)

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

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

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, gently invert the 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.
- Keep the gas standard cold throughout its use. Make sure it is cold before opening the ampul, work quickly to minimize heat transfer from hands or room, and only dilute the standard into a very cold solvent.
- 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 with little to no headspace 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.



For more gas calibration standards, see **pages 443–451**.

BTEX Gas Mix (6 components)

Benzene (71-43-2) *m*-Xylene (108-38-3)
 Ethylbenzene (100-41-4) *o*-Xylene (95-47-6)
 Toluene (108-88-3) *p*-Xylene (106-42-3)

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

1 ppm in nitrogen, 110 liters @ 1,800 psi
 cat.# 26361 (ea.)

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

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

100 ppb in nitrogen, 110 liters @ 1,800 psi
 cat.# 26362 (ea.)

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

No data pack available.

Gas standards are subject to hazardous materials shipping fees by most freight carriers. All calibration gas standards are nonreturnable due to DOT hazardous shipping requirements.

cylinder design

Cylinder Construction: aluminum
 Cylinder Fitting: CGA-180 outlet

Spectra (Linde) 104 L Cylinders:

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



Scotty (Air Liquide) 110 L Cylinders:

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



Japan Calibration Mix (9 components)

Acrylonitrile
 Benzene
 1,3-Butadiene
 Chloroform
 1,2-Dichloroethane
 Dichloromethane
 Tetrachloroethylene
 Trichloroethylene
 Vinyl chloride

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

1 ppm in nitrogen, 110 liters @ 1,800 psi
 cat.# 26367 (ea.)

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

No data pack available.

also available

High-Purity VOC Regulators

See **page 453**.



Gasoline

Gasoline Surrogate and Internal Standards

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

Compound	CAS #	Solvent	Conc.	cat.#
1-Bromo-4-fluorobenzene (BFB)	460-00-4	PTM	2,500	30067
1-Bromo-4-fluorobenzene (BFB)	460-00-4	PTM	10,000	30082
1-Chlorooctane	111-85-3	PTM	10,000	30084
α,α,α-Trifluorotoluene	98-08-8	PTM	2,500	30068
α,α,α-Trifluorotoluene	98-08-8	PTM	10,000	30083

Recommended Internal Standard (PID) for EPA GRO Method

Compound	CAS #	Solvent	Conc.	cat.#
1-Chloro-4-fluorobenzene	352-33-0	PTM	2,500	30066

PTM = Purge-and-trap grade methanol

Unleaded Gasoline Standard

Prepared from a single-source (one-refinery) product.

Unleaded gasoline: unweathered (8006-61-9)

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

cat.# 30096 (ea.)

Unleaded Gasoline Composite Standard

Unleaded gasoline composite (8006-61-9)

2,500 µg/mL in P&T methanol, 1 mL/ampul

cat.# 30081 (ea.)

50,000 µg/mL in P&T methanol, 1 mL/ampul

cat.# 30205 (ea.)

50,000 µg/mL in P&T methanol, 5 mL/ampul

cat.# 30206 (ea.)

Petroleum Volatile Organic Compounds (PVOC), Gasoline Range Organics (GRO) & Benzene-Toluene-Ethylbenzene-Xylenes (BTEX)

PVOC Mix (California) (7 components)

Benzene (71-43-2)	Toluene (108-88-3)
Ethylbenzene (100-41-4)	<i>m</i> -Xylene (108-38-3)
Methyl <i>tert</i> -butyl ether (MTBE) (1634-04-4)	<i>o</i> -Xylene (95-47-6)
	<i>p</i> -Xylene (106-42-3)

1,000 µg/mL each in P&T methanol, 1 mL/ampul

cat.# 30231 (ea.)

PVOC/GRO Mix (Wisconsin) (10 components)

Benzene (71-43-2)	1,2,4-Trimethylbenzene (95-63-6)
Ethylbenzene (100-41-4)	1,3,5-Trimethylbenzene (108-67-8)
Methyl <i>tert</i> -butyl ether (MTBE) (1634-04-4)	<i>m</i> -Xylene (108-38-3)
	<i>o</i> -Xylene (95-47-6)
Naphthalene (91-20-3)	<i>p</i> -Xylene (106-42-3)
Toluene (108-88-3)	

1,000 µg/mL each in P&T methanol, 1 mL/ampul

cat.# 30095 (ea.)

GRO Mix (9 components)

Benzene (71-43-2)	1,2,4-Trimethylbenzene (95-63-6)
Ethylbenzene (100-41-4)	2,2,4-Trimethylpentane (isooctane) (540-84-1)
3-Methylpentane (96-14-0)	<i>m</i> -Xylene (108-38-3)
Naphthalene (91-20-3)	<i>o</i> -Xylene (95-47-6)
Toluene (108-88-3)	

1,000 µg/mL each in P&T methanol, 1 mL/ampul

cat.# 30069 (ea.)

Petroleum Volatile Organic Compounds (PVOC), Gasoline Range Organics (GRO) & Benzene-Toluene-Ethylbenzene-Xylenes (BTEX), cont.

GRO Mix (EPA) (9 components)

Benzene (71-43-2)	500 µg/mL	1,2,4-Trimethylbenzene (95-63-6)	1,000
Ethylbenzene (100-41-4)	500	2,2,4-Trimethylpentane (isooctane) (540-84-1)	1,500
Heptane (142-82-5)	500	<i>m</i> -Xylene (108-38-3)	1,000
2-Methylpentane (107-83-5)	1,500	<i>o</i> -Xylene (95-47-6)	1,000
Toluene (108-88-3)	1,500		

In P&T methanol, 1 mL/ampul

cat.# 30065 (ea.)

BTEX Standard (6 components)

Benzene (71-43-2)	<i>m</i> -Xylene (108-38-3)
Ethylbenzene (100-41-4)	<i>o</i> -Xylene (95-47-6)
Toluene (108-88-3)	<i>p</i> -Xylene (106-42-3)

200 µg/mL each in P&T methanol, 1 mL/ampul

cat.# 30051 (ea.)

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

cat.# 30213 (ea.)

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

cat.# 30488 (ea.)

Gasoline Component Standard (10 components)

Benzene (71-43-2)	500 µg/mL	2,2,4-Trimethylpentane (isooctane) (540-84-1)	1,500
Ethylbenzene (100-41-4)	500	<i>m</i> -Xylene (108-38-3)	1,000
Heptane (142-82-5)	500	<i>o</i> -Xylene (95-47-6)	1,000
2-Methylpentane (107-83-5)	1,500	<i>p</i> -Xylene (106-42-3)	1,000
Toluene (108-88-3)	1,500		
1,2,4-Trimethylbenzene (95-63-6)	1,000		

10,000 µg/mL total in P&T methanol, 1 mL/ampul

cat.# 30486 (ea.)

Certified BTEX in Unleaded Gas Composite Standard

(9 components)

Certified for:	Naphthalene*
Benzene*	Toluene*
Ethylbenzene*	<i>m</i> -Xylene*
Isopropyl benzene*	<i>o</i> -Xylene*
Methyl <i>tert</i> -butyl ether (MTBE)*	<i>p</i> -Xylene*

5,500 ppm gasoline in P&T methanol, 1 mL/ampul

cat.# 30237 (ea.)

*Concentration differs from lot to lot. See online data pack for certified concentrations.

Certified Aromatics in Gasoline (16 components)

Certified for:	<i>n</i> -Propylbenzene*
Benzene*	Toluene*
Ethylbenzene*	1,2,3-Trimethylbenzene*
<i>m</i> -Ethyltoluene*	1,2,4-Trimethylbenzene*
<i>o</i> -Ethyltoluene*	1,3,5-Trimethylbenzene*
<i>p</i> -Ethyltoluene*	<i>m</i> -Xylene*
Isopropylbenzene*	<i>o</i> -Xylene*
Methyl <i>tert</i> -butyl ether (MTBE)*	<i>p</i> -Xylene*
Naphthalene*	

5,500 ppm gasoline in P&T methanol, 1 mL/ampul

cat.# 30485 (ea.)

*Concentration differs from lot to lot. See online data pack for certified concentrations.

Glycols

Glycols Standard (2 components)

Ethylene glycol (107-21-1)
Propylene glycol (57-55-6)

50,000 µg/mL each in DI water, 1 mL/ampul

cat.# 30471 (ea.)

Haloacetic Acids

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

Internal Standards and Surrogates for Method 552

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

Compound	CAS #	Solvent	Conc.	cat.#
Internal Standard				
1,2,3-trichloropropane	96-18-4	MTBE	1,000	31648
Surrogates for Method 552, 552.1				
2,3-dichloropropionic acid	565-64-0	MTBE	1,000	31650
Surrogates for Method 552.2				
2-bromopropionic acid	598-72-1	MTBE	1,000	31653
2,3-dibromopropionic acid	600-05-5	MTBE	1,000	31655
methyl-2,3-dibromopropionate	1729-67-5	MTBE	1,000	31656

Surrogates for Method 552.3

2-bromobutanoic acid	80-58-0	MTBE	2,000	31881
2-bromobutyrate	3196-15-4	MTBE	2,000	31882

MTBE = methyl *tert*-butyl ether

Haloacetic Acid Mix (9 components)

Bromochloroacetic acid (5589-96-8)	Monobromoacetic acid (79-08-3)
Bromodichloroacetic acid (71133-14-7)	Monochloroacetic acid (79-11-8)
Chlorodibromoacetic acid (5278-95-5)	Tribromoacetic acid (75-96-7)
Dibromoacetic acid (631-64-1)	Trichloroacetic acid (76-03-9)
Dichloroacetic acid (79-43-6)	

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

cat.# 31896 (ea.)

Haloacetic Acid Mix #1 (6 components)

Bromochloroacetic acid (5589-96-8)	Monobromoacetic acid (79-08-3)
Dibromoacetic acid (631-64-1)	Monochloroacetic acid (79-11-8)
Dichloroacetic acid (79-43-6)	Trichloroacetic acid (76-03-9)

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

cat.# 31644 (ea.)

Haloacetic Acids, *cont.*

Methods 552, 552.1, 552.2, 552.3 (Haloacetic Acids and Dalapon), *cont.*

Haloacetic Acid Methyl Ester Mix #1 (6 components)

Methyl bromochloroacetate (20428-74-4)	Methyl monobromoacetate (96-32-2)
Methyl dibromoacetate (6482-26-4)	Methyl monochloroacetate (96-34-4)
Methyl dichloroacetate (116-54-1)	Methyl trichloroacetate (598-99-2)

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

cat.# 31645 (ea.)

Haloacetic Acid Mix #2 (9 components)

Bromochloroacetic acid (5589-96-8)	400 µg/mL	Dibromoacetic acid (631-64-1)	200
Bromodichloroacetic acid (71133-14-7)	400	Dichloroacetic acid (79-43-6)	600
Chlorodibromoacetic acid (5278-95-5)	1,000	Monobromoacetic acid (79-08-3)	400
		Monochloroacetic acid (79-11-8)	600
		Tribromoacetic acid (75-96-7)	2,000
		Trichloroacetic acid (76-03-9)	200

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

cat.# 31646 (ea.)

Dalapon (2,2-dichloropropionic acid)

Dalapon (75-99-0)

1,000 µg/mL in acetonitrile, 1 mL/ampul

cat.# 32432 (ea.)

1,000 µg/mL in methanol, 1 mL/ampul

cat.# 32253 (ea.)

2,000 µg/mL in methanol, 1 mL/ampul

cat.# 32056 (ea.)

Dalapon Methyl Ester

Dalapon methyl ester (17640-02-7)

2,000 µg/mL in hexane, 1 mL/ampul

cat.# 32057 (ea.)





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Herbicides, Chloroacetanilide Herbicide Degradates

Method 535 (Chloroacetanilide Herbicide Degradates)

Method 535 Internal Standard

Butachlor ESA sodium salt
100 µg/mL in methanol, 1 mL/ampul
cat.# 33202 (ea.)

Method 535 Surrogate Standard

Dimethachlor ESA sodium salt
100 µg/mL in methanol, 1 mL/ampul
cat.# 33203 (ea.)

Herbicides, Chlorinated Acids

Method 515, 515.4 (Chlorinated Acid Herbicides)

Herbicide Internal Standard

4,4'-Dibromooctafluorobiphenyl (10386-84-2)
250 µg/mL in hexane, 1 mL/ampul
cat.# 32053 (ea.)
2,000 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31040 (ea.)
2,000 µg/mL in methyl *tert*-butyl ether, 1 mL/ampul
cat.# 31856 (ea.)

Herbicide Surrogate

Free Acid Form

2,4-Dichlorophenylacetic acid (2,4-DCAA) (19719-28-9)
200 µg/mL in methanol, 1 mL/ampul
cat.# 32049 (ea.)
1,000 µg/mL in acetone, 1 mL/ampul
cat.# 32439 (ea.)

Derivatized Form

2,4-Dichlorophenyl acetic acid methyl ester (DCAA methyl ester) (55954-23-9)
200 µg/mL in hexane, 1 mL/ampul
cat.# 32050 (ea.)

Herbicide Lab Performance Check Mix (5 components)

Dinoseb methyl ether (6099-79-2)	4 µg/mL	3,5-Dichlorobenzoic acid methyl ester (2905-67-1)	600
DCAA methyl ester (55954-23-9)	500	4-Nitroanisole (100-17-4)	1,600
4,4'-Dibromooctafluorobiphenyl (10386-84-2)	250		

In methyl *tert*-butyl ether, 1 mL/ampul
cat.# 32063 (ea.)

Method 515, 515.4 (Chlorinated Acid Herbicides), *cont.*

Herbicide Mix #1 (7 components)

Free Acid Form

2,4-D (94-75-7)	Dicamba (1918-00-9)
2,4-DB (94-82-6)	Dichlorprop (120-36-5)
2,4,5-T (93-76-5)	Dinoseb (88-85-7)
2,4,5-TP (Silvex) (93-72-1)	

200 µg/mL each in methanol, 1 mL/ampul
cat.# 32054 (ea.)

Derivatized Form

2,4-D methyl ester (1928-38-7)	Dicamba methyl ester (6597-78-0)
2,4-DB methyl ester (18625-12-2)	Dichlorprop methyl ester (57153-17-0)
2,4,5-T methyl ester (1928-37-6)	Dinoseb methyl ether (6099-79-2)
2,4,5-TP methyl ester (Silvex) (4841-20-7)	

200 µg/mL each in hexane, 1 mL/ampul
cat.# 32055 (ea.)

Herbicide Mix #2

Free Acid Form

Dalapon (75-99-0)
1,000 µg/mL in acetonitrile, 1 mL/ampul
cat.# 32432 (ea.)
1,000 µg/mL in methanol, 1 mL/ampul
cat.# 32253 (ea.)
2,000 µg/mL in methanol, 1 mL/ampul
cat.# 32056 (ea.)

Derivatized Form

Dalapon methyl ester (17640-02-7)
2,000 µg/mL in hexane, 1 mL/ampul
cat.# 32057 (ea.)

Herbicide Mix #4 (8 components)

Free Acid Form

Acifluorfen (50594-66-6)	3,5-Dichlorobenzoic acid (51-36-5)
Bentazon (25057-89-0)	4-Nitrophenol (100-02-7)
Chloramben (133-90-4)	Pentachlorophenol (87-86-5)
DCPA diacid (tetrachloroterephthalic acid) (2136-79-0)	Picloram (1918-02-1)

200 µg/mL each in methanol, 1 mL/ampul
cat.# 32061 (ea.)

Derivatized Form

Acifluorfen methyl ester (50594-67-7)	3,5-Dichlorobenzoic acid methyl ester (2905-67-1)
Bentazon methyl ester (61592-45-8)	4-Nitroanisole (100-17-4)
Chloramben methyl ester (7286-84-2)	Pentachloroanisole (1825-21-4)
DCPA methyl ester (Chlorthal-dimethyl) (1861-32-1)	Picloram methyl ester (14143-55-6)

200 µg/mL each in hexane, 1 mL/ampul
cat.# 32062 (ea.)



Herbicides, Chlorinated Acids, *cont.*

Method 515, 515.4 (Chlorinated Acid Herbicides), *cont.*

515.4 Calibration Mix (16 components)

Acifluorfen (50594-66-6)	50 µg/mL	3,5-Dichlorobenzoic acid (51-36-5)	50
Bentazon (25057-89-0)	100	Dichlorprop (120-36-5)	100
Chloramben (133-90-4)	50	Dinoseb (88-85-7)	100
2,4-D (94-75-7)	100	Pentachlorophenol (87-86-5)	10
Dalapon (75-99-0)	100	Picloram (1918-02-1)	50
2,4-DB (94-82-6)	100	Quinclorac (84087-01-4)	50
DCPA diacid (tetrachloroterephthalic acid) (2136-79-0)	50	2,4,5-T (93-76-5)	25
Dicamba (1918-00-9)	50	2,4,5-TP (Silvex) (93-72-1)	25

In acetone, 1 mL/ampul

cat.# 32443 (ea.)

515.4 Methylated Chlorinated Acids Mix (16 components)

Acifluorfen methyl ester (50594-67-7)	50 µg/mL	3,5-Dichlorobenzoic acid methyl ester (2905-67-1)	50
Bentazon methyl ester (61592-45-8)	100	Dichlorprop methyl ester (57153-17-0)	100
Chloramben methyl ester (7286-84-2)	50	Dinoseb methyl ether (6099-79-2)	100
Dalapon methyl ester (17640-02-7)	100	Pentachloroanisole (1825-21-4)	10
2,4-D methyl ester (1928-38-7)	100	Picloram methyl ester (14143-55-6)	50
2,4-DB methyl ester (18625-12-2)	100	Quinclorac methyl ester	50
DCPA methyl ester (Chlorthal-dimethyl) (1861-32-1)	100	2,4,5-T methyl ester (1928-37-6)	25
Dicamba methyl ester (6597-78-0)	50	2,4,5-TP (Silvex) methyl ester (4841-20-7)	25

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

cat.# 32444 (ea.)

Method 555 (Chlorinated Acids) LC Mixes

Chlorinated Acids by LC, Mix A (8 components)

Acifluorfen (50594-66-6)	Dicamba (1918-00-9)
Bentazon (25057-89-0)	Dichlorprop (120-36-5)
Chloramben (133-90-4)	Picloram (1918-02-1)
2,4-D (94-75-7)	2,4,5-TP (Silvex) (93-72-1)

1,000 µg/mL each in acetonitrile, 1 mL/ampul

cat.# 32431 (ea.)

Chlorinated Acids by LC, Mix B (8 components)

2,4-DB (94-82-6)	MCP (Mecoprop) (93-65-2)
3,5-Dichlorobenzoic acid (51-36-5)	4-Nitrophenol (100-02-7)
Dinoseb (88-85-7)	Pentachlorophenol (87-86-5)
MCPA (94-74-6)	2,4,5-T (93-76-5)

1,000 µg/mL each in acetonitrile, 1 mL/ampul

cat.# 32430 (ea.)

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Method 615 (Chlorinated Acid Herbicides)

Herbicide Surrogate

Free Acid Form

2,4-Dichlorophenylacetic acid (2,4-DCAA) (19719-28-9)
200 µg/mL in methanol, 1 mL/ampul
cat.# 32049 (ea.)
1,000 µg/mL in acetone, 1 mL/ampul
cat.# 32439 (ea.)

Derivatized Form

2,4-Dichlorophenyl acetic acid methyl ester (DCAA methyl ester) (55954-23-9)
200 µg/mL in hexane, 1 mL/ampul
cat.# 32050 (ea.)

Herbicide Mix #1 (7 components)

Free Acid Form

2,4-D (94-75-7)	Dicamba (1918-00-9)
2,4-DB (94-82-6)	Dichlorprop (120-36-5)
2,4,5-T (93-76-5)	Dinoseb (88-85-7)
2,4,5-TP (Silvex) (93-72-1)	
200 µg/mL each in methanol, 1 mL/ampul	
cat.# 32054 (ea.)	

Derivatized Form

2,4-D methyl ester (1928-38-7)	Dicamba methyl ester (6597-78-0)
2,4-DB methyl ester (18625-12-2)	Dichlorprop methyl ester (57153-17-0)
2,4,5-T methyl ester (1928-37-6)	Dinoseb methyl ether (6099-79-2)
2,4,5-TP methyl ester (Silvex) (4841-20-7)	
200 µg/mL each in hexane, 1 mL/ampul	
cat.# 32055 (ea.)	

Herbicide Mix #2

Free Acid Form

Dalapon (75-99-0)
1,000 µg/mL in acetonitrile, 1 mL/ampul
cat.# 32432 (ea.)
1,000 µg/mL in methanol, 1 mL/ampul
cat.# 32253 (ea.)
2,000 µg/mL in methanol, 1 mL/ampul
cat.# 32056 (ea.)

Derivatized Form

Dalapon methyl ester (17640-02-7)
2,000 µg/mL in hexane, 1 mL/ampul
cat.# 32057 (ea.)

Herbicide Mix #3 (2 components)

Free Acid Form

MCPA (94-74-6)
MCP (Mecoprop) (93-65-2)
20,000 µg/mL each in methanol, 1 mL/ampul
cat.# 32058 (ea.)

Derivatized Form

MCPA methyl ester (2436-73-9)
MCP (Mecoprop) methyl ester (2786-19-8)
20,000 µg/mL each in hexane, 1 mL/ampul
cat.# 32059 (ea.)

Herbicides, Chlorinated Acids, *cont.*

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

Herbicide Internal Standard

4,4'-Dibromooctafluorobiphenyl (10386-84-2)

250 µg/mL in hexane, 1 mL/ampul

cat.# 32053 (ea.)

2,000 µg/mL in methylene chloride, 1 mL/ampul

cat.# 31040 (ea.)

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

cat.# 31856 (ea.)

Herbicide Surrogate

Free Acid Form

2,4-Dichlorophenylacetic acid (2,4-DCAA) (19719-28-9)

200 µg/mL in methanol, 1 mL/ampul

cat.# 32049 (ea.)

1,000 µg/mL in acetone, 1 mL/ampul

cat.# 32439 (ea.)

Derivatized Form

2,4-Dichlorophenyl acetic acid methyl ester (DCAA methyl ester) (55954-23-9)

200 µg/mL in hexane, 1 mL/ampul

cat.# 32050 (ea.)

Herbicide Mix #1 (7 components)

Free Acid Form

2,4-D (94-75-7)

Dicamba (1918-00-9)

2,4-DB (94-82-6)

Dichlorprop (120-36-5)

2,4,5-T (93-76-5)

Dinoseb (88-85-7)

2,4,5-TP (Silvex) (93-72-1)

200 µg/mL each in methanol, 1 mL/ampul

cat.# 32054 (ea.)

Derivatized Form

2,4-D methyl ester (1928-38-7)

Dicamba methyl ester (6597-78-0)

2,4-DB methyl ester (18625-12-2)

Dichlorprop methyl ester (57153-17-0)

2,4,5-T methyl ester (1928-37-6)

Dinoseb methyl ether (6099-79-2)

2,4,5-TP methyl ester (Silvex) (4841-20-7)

200 µg/mL each in hexane, 1 mL/ampul

cat.# 32055 (ea.)

Herbicide Mix #2

Free Acid Form

Dalapon (75-99-0)

1,000 µg/mL in acetonitrile, 1 mL/ampul

cat.# 32432 (ea.)

1,000 µg/mL in methanol, 1 mL/ampul

cat.# 32253 (ea.)

2,000 µg/mL in methanol, 1 mL/ampul

cat.# 32056 (ea.)

Derivatized Form

Dalapon methyl ester (17640-02-7)

2,000 µg/mL in hexane, 1 mL/ampul

cat.# 32057 (ea.)

Herbicide Mix #3 (2 components)

Free Acid Form

MCPA (94-74-6)

MCPP (Mecoprop) (93-65-2)

20,000 µg/mL each in methanol, 1 mL/ampul

cat.# 32058 (ea.)

Derivatized Form

MCPA methyl ester (2436-73-9)

MCPP (Mecoprop) methyl ester (2786-19-8)

20,000 µg/mL each in hexane, 1 mL/ampul

cat.# 32059 (ea.)

Herbicide Mix #4 (8 components)

Free Acid Form

Acifluorfen (50594-66-6)

3,5-Dichlorobenzoic acid (51-36-5)

Bentazon (25057-89-0)

4-Nitrophenol (100-02-7)

Chloramben (133-90-4)

Pentachlorophenol (87-86-5)

DCPA diacid (tetrachloroterephthalic acid) (2136-79-0)

Picloram (1918-02-1)

200 µg/mL each in methanol, 1 mL/ampul

cat.# 32061 (ea.)

Derivatized Form

Acifluorfen methyl ester (50594-67-7)

3,5-Dichlorobenzoic acid methyl ester (2905-67-1)

Bentazon methyl ester (61592-45-8)

4-Nitroanisole (100-17-4)

Chloramben methyl ester (7286-84-2)

Pentachloroanisole (1825-21-4)

DCPA methyl ester (Chlorthal-dimethyl) (1861-32-1)

Picloram methyl ester (14143-55-6)

200 µg/mL each in hexane, 1 mL/ampul

cat.# 32062 (ea.)

Picloram

Picloram (1918-02-1)

1,000 µg/mL in methanol, 1 mL/ampul

cat.# 32265 (ea.)

Reference Standards Documentation Search

Locate SDSs, certificates,
& data packs by cat. #
or lot #

www.restek.com/documentation



Herbicides, Chlorinated Acids, *cont.*

Method 8321 (Chlorinated Acids by LC)

Chlorinated Acids by LC, Mix A (8 components)

Acifluorfen (50594-66-6)	Dicamba (1918-00-9)
Bentazon (25057-89-0)	Dichlorprop (120-36-5)
Chloramben (133-90-4)	Picloram (1918-02-1)
2,4-D (94-75-7)	2,4,5-TP (Silvex) (93-72-1)

1,000 µg/mL each in acetonitrile, 1 mL/ampul
cat.# 32431 (ea.)

Chlorinated Acids by LC, Mix B (8 components)

2,4-DB (94-82-6)	MCPP (Mecoprop) (93-65-2)
3,5-Dichlorobenzoic acid (51-36-5)	4-Nitrophenol (100-02-7)
Dinoseb (88-85-7)	Pentachlorophenol (87-86-5)
MCPA (94-74-6)	2,4,5-T (93-76-5)

1,000 µg/mL each in acetonitrile, 1 mL/ampul
cat.# 32430 (ea.)

Dalapon (2,2-dichloropropionic acid)

Dalapon (75-99-0)

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

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

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

Method 1311 (Toxicity Characteristic Leaching Procedure [TCLP])

TCLP Herbicide Mix (2 components)

2,4-D (free acid) (94-75-7)

2,4,5-TP (Silvex) (free acid) (93-72-1)

2,000 µg/mL each in methanol, 1 mL/ampul
cat.# 32014 (ea.)

Herbicides, Glyphosate

Method 547 (Glyphosate)

Glyphosate Standard

Glyphosate (N-(phosphonomethyl)glycine) (1071-83-6)

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

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

AMPA (glyphosate metabolite)

Aminomethyl phosphonic acid (AMPA) (1066-51-9)

100 µg/mL in DI water, 1 mL/ampul
cat.# 32428 (ea.)

Herbicides, Paraquat/Diquat

Method 549.2 (Paraquat/Diquat)

Paraquat & Diquat Calibration Mix (2 components)

Diquat dibromide (6385-62-2)

Paraquat dichloride (1910-42-5)

1,000 µg/mL each in water, 1 mL/ampul
cat.# 32437 (ea.)

Herbicides, Triazines

Canadian Drinking Water Triazine Herbicides Mix

(7 components)

Alachlor (15972-60-8)	Metribuzin (21087-64-9)
Atrazine (122-34-9)	Prometryne (7287-19-6)
Cyanazine (Bladex) (21725-46-2)	Simazine (122-34-9)
Metolachlor (51218-45-2)	

500 µg/mL each in acetone, 1 mL/ampul
cat.# 31864 (ea.)

Compound Index for Reference Standards



See pages 586–592.



Hormones

Method 539 (Hormones in Drinking Water)

EPA 539 Calibration Stock Standard (7 components)

- Contains the seven hormones listed in EPA Method 539 at the appropriate concentrations.
- Certified reference material (CRM) manufactured and QC-tested in Restek's ISO-accredited labs—satisfy your ISO requirements.
- Also available: UCMR3 Method 539 calibration standard with concentrations of 10–400 µg/mL to more conveniently match UCMR3 requirements (cat.# 32461, see below).

4-Androstene-3,17-dione (63-05-8)	100 µg/mL
Equilin (474-86-2)	200
17-beta-Estradiol (50-28-2)	250
Estrinol (50-27-1)	200
Estrone (53-16-7)	200
17-alpha-Ethinylestradiol (57-63-6)	350
Testosterone (58-22-0)	100

In acetonitrile, 1 mL/ampul

cat.# 31998 (ea.)

UCMR3 Method 539 Calibration Standard

(7 components)

- Contains the seven hormones listed in EPA Method 539 at concentrations suited for Unregulated Contaminant Monitoring Rule 3 (UCMR3) screening.
- Ideal for the analysis of finished drinking water as outlined in UCMR3, which requires monitoring of all public drinking water systems with 10,000 or more customers.
- Certified reference material (CRM) manufactured and QC-tested in Restek's ISO-accredited labs—satisfy your ISO requirements.
- Also available: EPA 539 calibration stock standard with concentrations of 100–350 µg/mL to more conveniently match EPA requirements (cat.# 31998, see above).

4-Androstene-3,17-dione (63-05-8)	30 µg/mL
Equilin (474-86-2)	400
17-beta-Estradiol (50-28-2)	40
Estrinol (50-27-1)	80
Estrone (53-16-7)	200
17-alpha-Ethinylestradiol (57-63-6)	90
Testosterone (58-22-0)	10

In acetonitrile, 1 mL/ampul

cat.# 32461 (ea.)

Hydrocarbons, Aromatic

Method 8020 (Aromatic Volatile Organics)

Internal and Surrogate Standards for Method 8020

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

Compound	CAS #	Solvent	Conc.	cat.#
1-Bromo-4-fluorobenzene (BFB)	460-00-4	PTM	2,000	30026
1,4-Difluorobenzene	540-36-3	PTM	2,000	30032
Fluorobenzene	462-06-6	PTM	2,000	30030
α,α,α-Trifluorotoluene	98-08-8	PTM	2,000	30048

PTM = Purge-and-trap grade methanol

8020A Calibration Mix (10 components)

Benzene (71-43-2)	Ethylbenzene (100-41-4)
Chlorobenzene (108-90-7)	Toluene (108-88-3)
1,2-Dichlorobenzene (95-50-1)	<i>m</i> -Xylene (108-38-3)
1,3-Dichlorobenzene (541-73-1)	<i>o</i> -Xylene (95-47-6)
1,4-Dichlorobenzene (106-46-7)	<i>p</i> -Xylene (106-42-3)

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

cat.# 30222 (ea.)

Method 609 (Nitroaromatics & Isophorone)

609 Nitroaromatics & Isophorone Calibration Mix

(4 components)

2,4-Dinitrotoluene (121-14-2)	2,6-Dinitrotoluene (606-20-2)
Isophorone (78-59-1)	Nitrobenzene (98-95-3)

2,000 µg/mL each in hexane, 1 mL/ampul

cat.# 31033 (ea.)

Hydrocarbons, Halogenated

Method 612 (Chlorinated Hydrocarbons)

612 Chlorinated Hydrocarbons Calibration Mix

(9 components)

2-Chloronaphthalene (91-58-7)	Hexachlorobutadiene (87-68-3)
1,2-Dichlorobenzene (95-50-1)	Hexachlorocyclopentadiene (77-47-4)
1,3-Dichlorobenzene (541-73-1)	Hexachloroethane (67-72-1)
1,4-Dichlorobenzene (106-46-7)	1,2,4-Trichlorobenzene (120-82-1)
Hexachlorobenzene (118-74-1)	

2,000 µg/mL each in isooctane, 1 mL/ampul

cat.# 31035 (ea.)



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See pages 464–465 or visit www.restek.com/iso



Hydrocarbons, Halogenated, *cont.*

Method 624 (Purgeable Halocarbons)

Volatiles MegaMix® Standard, EPA Method 624 (26 components)



Benzene (71-43-2)	<i>trans</i> -1,2-Dichloroethene (156-60-5)
Bromodichloromethane (75-27-4)	1,2-Dichloropropane (78-87-5)
Bromoform (75-25-2)	<i>cis</i> -1,3-Dichloropropene (10061-01-5)
Carbon tetrachloride (56-23-5)	<i>trans</i> -1,3-Dichloropropene (10061-02-6)
Chlorobenzene (108-90-7)	Ethylbenzene (100-41-4)
2-Chloroethyl vinyl ether (110-75-8)	Methylene chloride (dichloromethane) (75-09-2)
Chloroform (67-66-3)	1,1,2,2-Tetrachloroethane (79-34-5)
Dibromochloromethane (124-48-1)	Tetrachloroethene (127-18-4)
1,2-Dichlorobenzene (95-50-1)	Toluene (108-88-3)
1,3-Dichlorobenzene (541-73-1)	1,1,1-Trichloroethane (71-55-6)
1,4-Dichlorobenzene (106-46-7)	1,1,2-Trichloroethane (79-00-5)
1,1-Dichloroethane (75-34-3)	Trichloroethene (79-01-6)
1,2-Dichloroethane (107-06-2)	
1,1-Dichloroethene (75-35-4)	

2,000 µg/mL each in P&T methanol, 1 mL/ampul
cat.# 30497 (ea.)

624 Internal Standard Mix (3 components)

Bromochloromethane (74-97-5)
2-Bromo-1-chloropropane (3017-95-6)
1,4-Dichlorobutane (110-56-5)

1,500 µg/mL each in P&T methanol, 1 mL/ampul
cat.# 30023 (ea.)

624 Surrogate Standard Mix (3 components)

1-Bromo-4-fluorobenzene (BFB) (460-00-4)
Fluorobenzene (462-06-6)
Pentafluorobenzene (363-72-4)

2,000 µg/mL each in P&T methanol, 1 mL/ampul
cat.# 30243 (ea.)

Surrogate Standard (2 components)

1-Bromo-4-fluorobenzene (BFB) (460-00-4)
α, α, α -Trifluorotoluene (98-08-8)

2,500 µg/mL each in P&T methanol, 1 mL/ampul
cat.# 30484 (ea.)

624 Calibration Mix #1 (gases) (5 components)

Bromomethane (methyl bromide) (74-83-9)	Chloromethane (methyl chloride) (74-87-3)
Chloroethane (ethyl chloride) (75-00-3)	Trichlorofluoromethane (CFC-11) (75-69-4)
	Vinyl chloride (75-01-4)

2,000 µg/mL each in P&T methanol, 1 mL/ampul
cat.# 30020 (ea.)

Method 624 (Purgeable Halocarbons), *cont.*

624 Calibration Mix #2 (12 components)

Benzene (71-43-2)	1,2-Dichloropropane (78-87-5)
Carbon tetrachloride (56-23-5)	Methylene chloride (dichloromethane) (75-09-2)
Chlorobenzene (108-90-7)	Tetrachloroethene (127-18-4)
2-Chloroethyl vinyl ether (110-75-8)	1,1,2-Trichloroethane (79-00-5)
Dibromochloromethane (124-48-1)	Trichloroethene (79-01-6)
1,1-Dichloroethane (75-34-3)	
1,1-Dichloroethene (75-35-4)	

2,000 µg/mL each in P&T methanol, 1 mL/ampul
cat.# 30021 (ea.)

624 Calibration Mix #3 (14 components)

Bromodichloromethane (75-27-4)	<i>trans</i> -1,2-Dichloroethene (156-60-5)
Bromoform (75-25-2)	<i>cis</i> -1,3-Dichloropropene (10061-01-5)
Chloroform (67-66-3)	<i>trans</i> -1,3-Dichloropropene (10061-02-6)
1,2-Dichlorobenzene (95-50-1)	Ethylbenzene (100-41-4)
1,3-Dichlorobenzene (541-73-1)	1,1,2,2-Tetrachloroethane (79-34-5)
1,4-Dichlorobenzene (106-46-7)	Toluene (108-88-3)
1,2-Dichloroethane (107-06-2)	1,1,1-Trichloroethane (71-55-6)

2,000 µg/mL each in P&T methanol, 1 mL/ampul
cat.# 30022 (ea.)

Method 8010 (Halogenated Volatile Organics)

502.2 Calibration Mix #1 (gases) (6 components)

Bromomethane (methyl bromide) (74-83-9)
Chloroethane (ethyl chloride) (75-00-3)
Chloromethane (methyl chloride) (74-87-3)
Dichlorodifluoromethane (CFC-12) (75-71-8)
Trichlorofluoromethane (CFC-11) (75-69-4)
Vinyl chloride (75-01-4)

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

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

BTEX Standard (6 components)

Benzene (71-43-2)	<i>m</i> -Xylene (108-38-3)
Ethylbenzene (100-41-4)	<i>o</i> -Xylene (95-47-6)
Toluene (108-88-3)	<i>p</i> -Xylene (106-42-3)

200 µg/mL each in P&T methanol, 1 mL/ampul
cat.# 30051 (ea.)

2,000 µg/mL each in P&T methanol, 1 mL/ampul
cat.# 30213 (ea.)

2,000 µg/mL each in P&T methanol (*m*- & *p*-xylene at 1,000 µg/mL), 1 mL/ampul
cat.# 30488 (ea.)

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

8011 Calibration Mix—EDB/DBCP (2 components)

1,2-Dibromo-3-chloropropane (DBCP) (96-12-8)
1,2-Dibromoethane (EDB) (106-93-4)

2,000 µg/mL each in P&T methanol, 1 mL/ampul
cat.# 30062 (ea.)



Hydrocarbons, Leaking Underground Storage Tank (LUST): General

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)

n-Hexane (C6) (110-54-3) *n*-Octacosane (C28) (630-02-4)
n-Decane (C10) (124-18-5) *n*-Triacontane (C30) (638-68-6)
n-Dodecane (C12) (112-40-3) *n*-Tetracontane (C40) (4181-95-7)
n-Tetracosane (C24) (646-31-1)

25 µg/mL each in methylene chloride, 1 mL/ampul
 cat.# 31200 (ea.)

Retention Time Marker (3 components)

n-Hexane (C6) (110-54-3) *n*-Dodecane (C12) (112-40-3)
n-Decane (C10) (124-18-5)

1,000 µg/mL each in P&T methanol, 1 mL/ampul
 cat.# 30483 (ea.)

TNRC 1005 Retention Time Markers Mix

(4 components)

- Easily determine the retention time window for each boiling point range.
- Prepared in *n*-pentane according to EPA requirements.

n-Hexane (C6) (110-54-3) *n*-Octacosane (C28) (630-02-4)
n-Dodecane (C12) (112-40-3) *n*-Pentatriacontane (C35) (630-07-9)

200 µg/mL each in pentane, 1 mL/ampul
 cat.# 31698 (ea.)

Retention Time Marker - Alaska (4 components)

n-Hexane (C6) (110-54-3) *n*-Pentacosane (C25) (629-99-2)
n-Decane (C10) (124-18-5) *n*-Hexatriacontane (C36) (630-06-8)

1,000 µg/mL in methylene chloride, 1 mL/ampul
 cat.# 31819 (ea.)

Fuel Composite Standards

Unleaded Gasoline Composite Standard

Unleaded gasoline composite (8006-61-9)

2,500 µg/mL in P&T methanol, 1 mL/ampul
 cat.# 30081 (ea.)

50,000 µg/mL in P&T methanol, 1 mL/ampul
 cat.# 30205 (ea.)

50,000 µg/mL in P&T methanol, 5 mL/ampul
 cat.# 30206 (ea.)

Diesel Fuel #2 Composite Standard

Diesel fuel #2 composite (68334-30-5)

5,000 µg/mL in methylene chloride, 1 mL/ampul
 cat.# 31093 (ea.)

50,000 µg/mL in methylene chloride, 1 mL/ampul
 cat.# 31258 (ea.)

50,000 µg/mL in methylene chloride, 5 mL/ampul
 cat.# 31259 (ea.)

Kerosene Composite Standard

Kerosene composite (84742-81-0)

5,000 µg/mL in methylene chloride, 1 mL/ampul
 cat.# 31094 (ea.)

50,000 µg/mL in methylene chloride, 1 mL/ampul
 cat.# 31256 (ea.)

50,000 µg/mL in methylene chloride, 5 mL/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.

Motor oil composite (64742-65-0)

50,000 µg/mL in methylene chloride, 1 mL/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.

Used motor oil composite (64742-65-0)

50,000 µg/mL in methylene chloride, 1 mL/ampul
 cat.# 31465 (ea.)

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See pages 464–465.



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also available

Other fuels, oils, and lubricant oils available on request as custom products.

Hydrocarbons, Leaking Underground Storage Tank (LUST): General, *cont.*

Single-Source Fuels

Unleaded Gasoline Standard

Prepared from a single-source (one-refinery) product.

Unleaded gasoline: unweathered (8006-61-9)

5,000 µg/mL in P&T methanol, 1 mL/ampul
cat.# 30096 (ea.)

Kerosene Standard

Prepared from a single-source (one-refinery) product.

Kerosene: unweathered (84742-81-0)

5,000 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31229 (ea.)

Diesel Fuel #2 Standard

Prepared from a single-source (one-refinery) product.

Diesel fuel #2: unweathered (68334-30-5)

5,000 µg/mL in methylene chloride, 1 mL/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. The 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.

Fuel oil #4 (68476-31-3)

5,000 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31216 (ea.)

50,000 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31244 (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.

Fuel oil #6 (68553-00-4)

5,000 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31218 (ea.)

50,000 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31248 (ea.)

Diesel:Biodiesel (80:20) Blend Standard

The biodiesel component is methyl soyate.

Diesel:biodiesel (80:20) (67784-80-9)

5,000 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31880 (ea.)

Aviation Gas Standard

100-octane, low-lead fuel used in piston-type aircraft.

Aviation gas (8006-69-1)

50,000 µg/mL in P&T methanol, 1 mL/ampul
cat.# 30207 (ea.)

Jet Fuel A Standard

Jet fuel A (64742-47-8)

5,000 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31215 (ea.)

50,000 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31242 (ea.)

50,000 µg/mL in methylene chloride, 5 mL/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).

Creosote oil (8001-58-9)

50,000 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31838 (ea.)

Hydraulic Oil Standard

Hydraulic oil (64741-89-5)

50,000 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31839 (ea.)



Restek® Safe Cracker

Included with every reference standard shipment for added convenience.

Hydrocarbons, Leaking Underground Storage Tank (LUST): General, *cont.*

Military Fuels (Jet Propellant)

JP-5 Military Fuel Standard

JP-5 Military fuel (8008-20-6)

50,000 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31252 (ea.)

JP-8 Military Fuel Standard

JP-8 Military fuel (94114-58-6)

5,000 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31262 (ea.)
50,000 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31254 (ea.)

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 (4 components)

Heptadecane (C17) (629-78-7)

Octadecane (C18) (593-45-3)

Pristane (2,6,10,14-tetramethylpentadecane) (1921-70-6)

Phytane (2,6,10,14-tetramethylhexadecane) (638-36-8)

2,000 µg/mL each in methylene chloride, 1 mL/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 (Unweathered)

5,000 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31225 (ea.)

50,000 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31260 (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.

Stoddard solvent (8052-41-3)

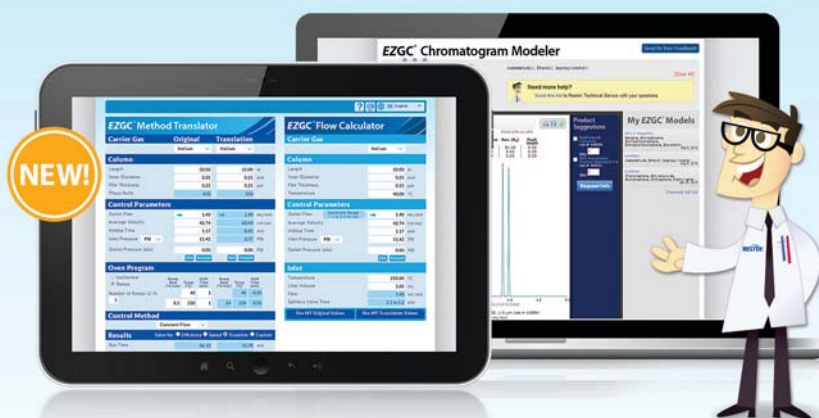
10,000 µg/mL in P&T methanol, 1 mL/ampul
cat.# 30487 (ea.)

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Hydrocarbons, Leaking Underground Storage Tank (LUST): General, *cont.*

Petroleum Volatile Organic Compounds (PVOCs), Gasoline Range Organics (GRO) & Benzene-Toluene-Ethylbenzene-Xylenes (BTEX)

PVOC Mix (California) (7 components)

Benzene (71-43-2)	Toluene (108-88-3)
Ethylbenzene (100-41-4)	<i>m</i> -Xylene (108-38-3)
Methyl <i>tert</i> -butyl ether (MTBE) (1634-04-4)	<i>o</i> -Xylene (95-47-6)
	<i>p</i> -Xylene (106-42-3)

1,000 µg/mL each in P&T methanol, 1 mL/ampul
cat.# 30231 (ea.)

PVOC/GRO Mix (Wisconsin) (10 components)

Benzene (71-43-2)	1,2,4-Trimethylbenzene (95-63-6)
Ethylbenzene (100-41-4)	1,3,5-Trimethylbenzene (108-67-8)
Methyl <i>tert</i> -butyl ether (MTBE) (1634-04-4)	<i>m</i> -Xylene (108-38-3)
Naphthalene (91-20-3)	<i>o</i> -Xylene (95-47-6)
Toluene (108-88-3)	<i>p</i> -Xylene (106-42-3)

1,000 µg/mL each in P&T methanol, 1 mL/ampul
cat.# 30095 (ea.)

GRO Mix (9 components)

Benzene (71-43-2)	1,2,4-Trimethylbenzene (95-63-6)
Ethylbenzene (100-41-4)	2,2,4-Trimethylpentane (isooctane) (540-84-1)
3-Methylpentane (96-14-0)	<i>m</i> -Xylene (108-38-3)
Naphthalene (91-20-3)	<i>o</i> -Xylene (95-47-6)
Toluene (108-88-3)	

1,000 µg/mL each in P&T methanol, 1 mL/ampul
cat.# 30069 (ea.)

GRO Mix (EPA) (9 components)

Benzene (71-43-2)	500 µg/mL	1,2,4-Trimethylbenzene (95-63-6)	1,000
Ethylbenzene (100-41-4)	500	2,2,4-Trimethylpentane (isooctane) (540-84-1)	1,500
Heptane (142-82-5)	500	<i>m</i> -Xylene (108-38-3)	1,000
2-Methylpentane (107-83-5)	1,500	<i>o</i> -Xylene (95-47-6)	1,000
Toluene (108-88-3)	1,500		

In P&T methanol, 1 mL/ampul
cat.# 30065 (ea.)

Gasoline Component Standard (10 components)

Benzene (71-43-2)	500 µg/mL	2,2,4-Trimethylpentane (isooctane) (540-84-1)	1,500
Ethylbenzene (100-41-4)	500	<i>m</i> -Xylene (108-38-3)	1,000
Heptane (142-82-5)	500	<i>o</i> -Xylene (95-47-6)	1,000
2-Methylpentane (107-83-5)	1,500	<i>p</i> -Xylene (106-42-3)	1,000
Toluene (108-88-3)	1,500		
1,2,4-Trimethylbenzene (95-63-6)	1,000		

10,000 µg/mL total in P&T methanol, 1 mL/ampul
cat.# 30486 (ea.)

BTEX Standard (6 components)

Benzene (71-43-2)	<i>m</i> -Xylene (108-38-3)
Ethylbenzene (100-41-4)	<i>o</i> -Xylene (95-47-6)
Toluene (108-88-3)	<i>p</i> -Xylene (106-42-3)

200 µg/mL each in P&T methanol, 1 mL/ampul
cat.# 30051 (ea.)

2,000 µg/mL each in P&T methanol, 1 mL/ampul
cat.# 30213 (ea.)

2,000 µg/mL each in P&T methanol (*m*- & *p*-xylene at 1,000 µg/mL), 1 mL/ampul
cat.# 30488 (ea.)

BTEX Gas Mix (6 components)

Benzene (71-43-2)
Ethylbenzene (100-41-4)
Toluene (108-88-3)
<i>m</i> -Xylene (108-38-3)
<i>o</i> -Xylene (95-47-6)
<i>p</i> -Xylene (106-42-3)

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

1 ppm in nitrogen, 110 liters @ 1,800 psi
cat.# 26361 (ea.)

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

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

100 ppb in nitrogen, 110 liters @ 1,800 psi
cat.# 26362 (ea.)

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

No data pack available.

Gas standards are subject to hazardous materials shipping fees by most freight carriers. All calibration gas standards are nonreturnable due to DOT hazardous shipping requirements.

cylinder design



Spectra (Linde)

104 L Cylinders:

Aluminum construction
Size: 8 x 24 cm
Volume/Pressure:
104 liters of gas @ 1,800 psi
CGA-180 outlet fitting.
Weight: 1.5 lb/0.7 kg



Scotty (Air Liquide)

110 L Cylinders:

Aluminum construction
Size: 8.3 x 29.5 cm
Volume/Pressure:
110 liters of gas @ 1,800 psi
CGA-180 outlet fitting.
Weight: 2.2 lb/1 kg
U.S. DOT Specs: 3AL2216

also available

High-Purity VOC Regulators

See **page 453**.



Hydrocarbons, Leaking Underground Storage Tank (LUST): General, *cont.*

Petroleum Volatile Organic Compounds (PVOCs), Gasoline Range Organics (GRO) & Benzene-Toluene-Ethylbenzene-Xylenes (BTEX), *cont.*

Certified BTEX in Unleaded Gas Composite Standard (9 components)

Certified for:	Naphthalene*
Benzene*	Toluene*
Ethylbenzene*	<i>m</i> -Xylene*
Isopropyl benzene*	<i>o</i> -Xylene*
Methyl <i>tert</i> -butyl ether (MTBE)*	<i>p</i> -Xylene*

5,500 ppm gasoline in P&T methanol, 1 mL/ampul
cat.# 30237 (ea.)

*Concentration differs from lot to lot. See online data pack for certified concentrations.

Certified Aromatics in Gasoline (16 components)

Certified for:	<i>n</i> -Propylbenzene*
Benzene*	Toluene*
Ethylbenzene*	1,2,3-Trimethylbenzene*
<i>m</i> -Ethyltoluene*	1,2,4-Trimethylbenzene*
<i>o</i> -Ethyltoluene*	1,3,5-Trimethylbenzene*
<i>p</i> -Ethyltoluene*	<i>m</i> -Xylene*
Isopropylbenzene*	<i>o</i> -Xylene*
Methyl <i>tert</i> -butyl ether (MTBE)*	<i>p</i> -Xylene*
Naphthalene*	

5,500 ppm gasoline in P&T methanol, 1 mL/ampul
cat.# 30485 (ea.)

*Concentration differs from lot to lot. See online data pack for certified concentrations.

Certified PAHs in Diesel (7 components)

Certified for:	1-Methylnaphthalene*
Acenaphthene*	2-Methylnaphthalene*
Acenaphthylene*	Naphthalene*
Fluorene*	Phenanthrene*

50,000 ppm diesel #2 in methylene chloride, 1 mL/ampul
cat.# 31673 (ea.)

*Concentration differs from lot to lot. See online data pack for certified concentrations.

Gasoline Surrogate & Internal Standards

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

Compound	CAS #	Solvent	Conc.	cat.#
1-Bromo-4-fluorobenzene (BFB)	460-00-4	PTM	2,500	30067
1-Bromo-4-fluorobenzene (BFB)	460-00-4	PTM	10,000	30082
1-Chlorooctane	111-85-3	PTM	10,000	30084
α,α,α -Trifluorotoluene	98-08-8	PTM	2,500	30068
α,α,α -Trifluorotoluene	98-08-8	PTM	10,000	30083
1-Chloro-4-fluorobenzene	352-33-0	PTM	2,500	30066

PTM = Purge-and-trap grade methanol

Diesel Surrogate & Internal Standards

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

Compound	CAS #	Solvent	Conc.	cat.#
1-Chlorooctadecane	3386-33-2	D	10,000	31098
2-Fluorobiphenyl	321-60-8	D	10,000	31096
<i>o</i> -Terphenyl	84-15-1	D	10,000	31097
<i>p</i> -Terphenyl	92-94-4	D	10,000	31095
5- α -Androstane	438-22-2	D	2,000	31065
<i>o</i> -Terphenyl	84-15-1	A	2,000	31066

A = acetone; D = methylene chloride

Diesel/Biodiesel Standard

Diesel:Biodiesel (80:20) Blend Standard

The biodiesel component is methyl soyate.

Diesel:biodiesel (80:20) (67784-80-9)

5,000 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31880 (ea.)

also available

ASTM Method D6584-10 and
EN14105 Biodiesel Standards

See **page 577**.



Hydrocarbons, Leaking Underground Storage Tank (LUST): State-Specific Methods, *cont.*

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 (4 components)

<i>n</i> -Hexane (C6) (110-54-3)	<i>n</i> -Pentacosane (C25) (629-99-2)
<i>n</i> -Decane (C10) (124-18-5)	<i>n</i> -Hexatriacontane (C36) (630-06-8)

1,000 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31819 (ea.)

1-Chloro-4-fluorobenzene Mix

1-Chloro-4-fluorobenzene (352-33-0)
2,500 µg/mL in P&T methanol, 1 mL/ampul
cat.# 30066 (ea.)

Alaska UST Method AK101AA (14 components)

Benzene (71-43-2)	Toluene (108-88-3)
Ethylbenzene (100-41-4)	1,2,3-Trimethylbenzene (526-73-8)
1-Ethyl-2-methylbenzene (611-14-3)	1,2,4-Trimethylbenzene (95-63-6)
1-Ethyl-3-methylbenzene (620-14-4)	1,3,5-Trimethylbenzene (108-67-8)
1-Ethyl-4-methylbenzene (622-96-8)	<i>m</i> -Xylene (108-38-3)
Isopropylbenzene (cumene) (98-82-8)	<i>o</i> -Xylene (95-47-6)
<i>n</i> -Propylbenzene (103-65-1)	<i>p</i> -Xylene (106-42-3)

2,000 µg/mL each in P&T methanol, 1 mL/ampul
cat.# 30461 (ea.)

1-Bromo-4-fluorobenzene (BFB)

1-Bromo-4-fluorobenzene (BFB) (460-00-4)
2,000 µg/mL in P&T methanol, 1 mL/ampul
cat.# 30026 (ea.)
2,500 µg/mL in P&T methanol, 1 mL/ampul
cat.# 30067 (ea.)
10,000 µg/mL in P&T methanol, 1 mL/ampul
cat.# 30082 (ea.)

Unleaded Gasoline Composite Standard

Unleaded gasoline composite (8006-61-9)
2,500 µg/mL in P&T methanol, 1 mL/ampul
cat.# 30081 (ea.)
50,000 µg/mL in P&T methanol, 1 mL/ampul
cat.# 30205 (ea.)
50,000 µg/mL in P&T methanol, 5 mL/ampul
cat.# 30206 (ea.)

α,α,α -Trifluorotoluene

α,α,α -Trifluorotoluene (98-08-8)
2,000 µg/mL in P&T methanol, 1 mL/ampul
cat.# 30048 (ea.)
2,500 µg/mL in P&T methanol, 1 mL/ampul
cat.# 30068 (ea.)
10,000 µg/mL in P&T methanol, 1 mL/ampul
cat.# 30083 (ea.)



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Hydrocarbons, Leaking Underground Storage Tank (LUST): State-Specific Methods, *cont.*

Alaska, *cont.*

AK102

Method for determination of aromatic and aliphatic hydrocarbons in diesel range organics.

DRO Mix (Tennessee/Mississippi) (16 components)

<i>n</i> -Decane (C10) (124-18-5)	<i>n</i> -Octadecane (C18) (593-45-3)
<i>n</i> -Undecane (C11) (1120-21-4)	<i>n</i> -Nonadecane (C19) (629-92-5)
<i>n</i> -Dodecane (C12) (112-40-3)	<i>n</i> -Eicosane (C20) (112-95-8)
<i>n</i> -Tridecane (C13) (629-50-5)	<i>n</i> -Heneicosane (C21) (629-94-7)
<i>n</i> -Tetradecane (C14) (629-59-4)	<i>n</i> -Docosane (C22) (629-97-0)
<i>n</i> -Pentadecane (C15) (629-62-9)	<i>n</i> -Tricosane (C23) (638-67-5)
<i>n</i> -Hexadecane (C16) (544-76-3)	<i>n</i> -Tetracosane (C24) (646-31-1)
<i>n</i> -Heptadecane (C17) (629-78-7)	<i>n</i> -Pentacosane (C25) (629-99-2)

1,000 µg/mL each in methylene chloride, 1 mL/ampul
cat.# 31214 (ea.)

Kerosene Composite Standard

Kerosene composite (84742-81-0)

5,000 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31094 (ea.)

50,000 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31256 (ea.)

50,000 µg/mL in methylene chloride, 5 mL/ampul
cat.# 31257 (ea.)

Diesel Fuel #2 Composite Standard

Diesel fuel #2 composite (68334-30-5)

5,000 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31093 (ea.)

50,000 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31258 (ea.)

50,000 µg/mL in methylene chloride, 5 mL/ampul
cat.# 31259 (ea.)

o-Terphenyl

o-Terphenyl (84-15-1)

2,000 µg/mL in acetone, 1 mL/ampul
cat.# 31066 (ea.)

10,000 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31097 (ea.)

5- α -Androstane

5- α -Androstane (438-22-2)

2,000 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31065 (ea.)

AK103

Method for determination of aromatic and aliphatic hydrocarbons in residual range organics.

Residual Range Calibration Standard (RCS)

(2 components)

SAE30 motor oil:SAE40 motor oil (1:1) (64742-65-0)

50,000 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31817 (ea.)

Residual Range Calibration Verification Standard (CVS) (2 components)

SAE30 motor oil:SAE40 motor oil (1:1) (64742-65-0)

25,000 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31818 (ea.)

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.

Motor oil composite (64742-65-0)

50,000 µg/mL in methylene chloride, 1 mL/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.

Fuel oil #6 (68553-00-4)

5,000 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31218 (ea.)

50,000 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31248 (ea.)

n-Triacontane-d62

n-Triacontane-d62

500 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31816 (ea.)



Restek Offers a Full Line of
Certified Reference Materials

See pages 464-465 or visit www.restek.com/iso

Hydrocarbons, Leaking Underground Storage Tank (LUST): State-Specific Methods, *cont.*

Arizona

Extraction Retention Time Standard (4 components)

n-Hexane (C6) (110-54-3) *n*-Docosane (C22) (629-97-0)
n-Decane (C10) (124-18-5) *n*-Dotriacontane (C32) (544-85-4)
 2,000 µg/mL each in methylene chloride, 1 mL/ampul
 cat.# 31830 (ea.)

DRO/ORO Calibration Standard (2 components)

10W30 Motor oil (64742-65-0):diesel fuel #2 (68334-30-5) (1:1 blend)
 25,000 µg/mL each in methylene chloride, 1 mL/ampul
 cat.# 31831 (ea.)

DRO/ORO Range Calibration Standard (12 components)

n-Decane (C10) (124-18-5) *n*-Docosane (C22) (629-97-0)
n-Dodecane (C12) (112-40-3) *n*-Tetracosane (C24) (646-31-1)
n-Tetradecane (C14) (629-59-4) *n*-Hexacosane (C26) (630-01-3)
n-Hexadecane (C16) (544-76-3) *n*-Octacosane (C28) (630-02-4)
n-Octadecane (C18) (593-45-3) *n*-Triacontane (C30) (638-68-6)
n-Eicosane (C20) (112-95-8) *n*-Dotriacontane (C32) (544-85-4)
 2,000 µg/mL each in methylene chloride, 1 mL/ampul
 cat.# 31832 (ea.)

o-Terphenyl

o-Terphenyl (84-15-1)
 2,000 µg/mL in acetone, 1 mL/ampul
 cat.# 31066 (ea.)
 10,000 µg/mL in methylene chloride, 1 mL/ampul
 cat.# 31097 (ea.)

Los Angeles County, CA Well Investigation Program (WIP)*

*For monitoring samples suspected of gasoline contamination, Los Angeles County requires laboratories to calibrate and report these compounds.

CA WIP VOA Standard (11 components)

Benzene (71-43-2) Methyl *tert*-butyl ether (MTBE)
 Chlorobenzene (108-90-7) (1634-04-4)
 1,2-Dichlorobenzene (95-50-1) Toluene (108-88-3)
 1,3-Dichlorobenzene (541-73-1) *m*-Xylene (108-38-3)
 1,4-Dichlorobenzene (106-46-7) *o*-Xylene (95-47-6)
 Ethylbenzene (100-41-4) *p*-Xylene (106-42-3)
 2,000 µg/mL each in P&T methanol, 1 mL/ampul
 cat.# 30236 (ea.)

Compound Index for Reference Standards

See pages 586–592.



California

PVOC Mix (California) (7 components)

Benzene (71-43-2) Toluene (108-88-3)
 Ethylbenzene (100-41-4) *m*-Xylene (108-38-3)
 Methyl *tert*-butyl ether
 (MTBE) (1634-04-4) *o*-Xylene (95-47-6)
 p-Xylene (106-42-3)
 1,000 µg/mL each in P&T methanol, 1 mL/ampul
 cat.# 30231 (ea.)

California Oxygenates Mix (5 components)

tert-Amyl methyl ether (TAME) (994-05-8) 2,000 µg/mL
tert-Butanol (TBA) (75-65-0) 10,000
 Diisopropyl ether (DIPE) (108-20-3) 2,000
 Ethyl *tert*-butyl ether (ETBE) (637-92-3) 2,000
 Methyl *tert*-butyl ether (MTBE) (1634-04-4) 2,000
 In P&T methanol, 1 mL/ampul
 cat.# 30465 (ea.)

Methanol

Methanol (67-56-1)
 10,000 µg/mL in DI water, 1 mL/ampul
 cat.# 30467 (ea.)
 15 mg/mL in dimethyl sulfoxide, 1 mL/ampul
 cat.# 36401 (ea.)

Ethanol

Ethanol (64-17-5)
 10,000 µg/mL in DI water, 1 mL/ampul
 cat.# 30466 (ea.)
 2,000 µg/mL in P&T methanol, 1 mL/ampul
 cat.# 30288 (ea.)

Glycols Standard (2 components)

Ethylene glycol (107-21-1)
 Propylene glycol (57-55-6)
 50,000 µg/mL each in DI water, 1 mL/ampul
 cat.# 30471 (ea.)

Connecticut

Connecticut ETPH Calibration Mixture (15 components)

n-Nonane (C9) (111-84-2) *n*-Tetracosane (C24) (646-31-1)
n-Decane (C10) (124-18-5) *n*-Hexacosane (C26) (630-01-3)
n-Dodecane (C12) (112-40-3) *n*-Octacosane (C28) (630-02-4)
n-Tetradecane (C14) (629-59-4) *n*-Triacontane (C30) (638-68-6)
n-Hexadecane (C16) (544-76-3) *n*-Dotriacontane (C32) (544-85-4)
n-Octadecane (C18) (593-45-3) *n*-Tetraatriacontane (C34) (14167-59-0)
n-Eicosane (C20) (112-95-8) *n*-Hexatriacontane (C36) (630-06-8)
n-Docosane (C22) (629-97-0)
 1,000 µg/mL each in methylene chloride, 1 mL/ampul
 cat.# 31614 (ea.)

Hydrocarbons, Leaking Underground Storage Tank (LUST): State-Specific Methods, *cont.*

Florida

Florida TRPH Standard (17 components)

<i>n</i> -Octane (C8) (111-65-9)	<i>n</i> -Hexacosane (C26) (630-01-3)
<i>n</i> -Decane (C10) (124-18-5)	<i>n</i> -Octacosane (C28) (630-02-4)
<i>n</i> -Dodecane (C12) (112-40-3)	<i>n</i> -Triacosane (C30) (638-68-6)
<i>n</i> -Tetradecane (C14) (629-59-4)	<i>n</i> -Dotriacontane (C32) (544-85-4)
<i>n</i> -Hexadecane (C16) (544-76-3)	<i>n</i> -Tetraatriacontane (C34) (14167-59-0)
<i>n</i> -Octadecane (C18) (593-45-3)	<i>n</i> -Hexatriacontane (C36) (630-06-8)
<i>n</i> -Eicosane (C20) (112-95-8)	<i>n</i> -Octatriacontane (C38) (7194-85-6)
<i>n</i> -Docosane (C22) (629-97-0)	<i>n</i> -Tetracontane (C40) (4181-95-7)
<i>n</i> -Tetracosane (C24) (646-31-1)	

500 µg/mL each in hexane, 1 mL/ampul

cat.# 31266 (ea.)

2,000 µg/mL each in carbon disulfide, 1 mL/ampul

cat.# 31878 (ea.)

Florida TRPH Surrogate Mix

n-Nonatriacontane (C39) (7194-86-7)

3,000 µg/mL in carbon disulfide, 1 mL/ampul

cat.# 31456 (ea.)

3,000 µg/mL in carbon disulfide, 10 mL/ampul

cat.# 31877 (ea.)

Note: Reference standards containing greater than 99% carbon disulfide are classified as UN1131 carbon disulfide 3(6.1), 1 and are restricted from air transportation. Additional restrictions may apply to lower concentration materials depending on formulations. Contact standards@restek.com with any questions.

Massachusetts

MA VPH Standard With Surrogate Rev. 1.1 (July 2004)

(16 components)

<i>n</i> -Pentane (C5) (109-66-0)	Naphthalene (91-20-3)
<i>n</i> -Nonane (C9) (111-84-2)	Toluene (108-88-3)
<i>n</i> -Decane (C10) (124-18-5)	1,2,4-Trimethylbenzene (95-63-6)
Benzene (71-43-2)	2,2,4-Trimethylpentane (isooctane) (540-84-1)
<i>n</i> -Butylcyclohexane (1678-93-9)	<i>m</i> -Xylene (108-38-3)
2,5-Dibromotoluene (SS) (615-59-8)	<i>o</i> -Xylene (95-47-6)
Ethylbenzene (100-41-4)	<i>p</i> -Xylene (106-42-3)
2-Methylpentane (107-83-5)	
Methyl <i>tert</i> -butyl ether (MTBE) (1634-04-4)	

10,000 µg/mL in P&T methanol, 1 mL/ampul

cat.# 30604 (ea.)

MA VPH Matrix Spike Mix With Surrogate Rev. 1.1 (July 2004) (16 components)

<i>n</i> -Pentane (C5) (109-66-0)	Naphthalene (91-20-3)
<i>n</i> -Nonane (C9) (111-84-2)	Toluene (108-88-3)
<i>n</i> -Decane (C10) (124-18-5)	1,2,4-Trimethylbenzene (95-63-6)
Benzene (71-43-2)	2,2,4-Trimethylpentane (isooctane) (540-84-1)
<i>n</i> -Butylcyclohexane (1678-93-9)	<i>m</i> -Xylene (108-38-3)
2,5-Dibromotoluene (SS) (615-59-8)	<i>o</i> -Xylene (95-47-6)
Ethylbenzene (100-41-4)	<i>p</i> -Xylene (106-42-3)
2-Methylpentane (107-83-5)	
Methyl <i>tert</i> -butyl ether (MTBE) (1634-04-4)	

50 µg/mL in P&T methanol, 1 mL/ampul

cat.# 30605 (ea.)

Massachusetts, *cont.*

MA Volatile Petroleum Hydrocarbon (VPH) Standard

(13 components)

<i>n</i> -Pentane (C5) (109-66-0)	1,000 µg/mL	Toluene (108-88-3)	1,500
<i>n</i> -Nonane (C9) (111-84-2)	1,000	1,2,4-Trimethylbenzene (95-63-6)	1,000
Benzene (71-43-2)	500	2,2,4-Trimethylpentane (isooctane) (540-84-1)	1,500
Ethylbenzene (100-41-4)	500	<i>m</i> -Xylene (108-38-3)	1,000
2-Methylpentane (107-83-5)	1,500	<i>o</i> -Xylene (95-47-6)	1,000
Methyl <i>tert</i> -butyl ether (MTBE) (1634-04-4)	1,500	<i>p</i> -Xylene (106-42-3)	1,000
Naphthalene (91-20-3)	1,000		

In P&T methanol, 1 mL/ampul

cat.# 30434 (ea.)

MA VPH Standard With Surrogate (14 components)

<i>n</i> -Pentane (C5) (109-66-0)	1,000 µg/mL	Naphthalene (91-20-3)	1,000
<i>n</i> -Nonane (C9) (111-84-2)	1,000	Toluene (108-88-3)	1,500
Benzene (71-43-2)	500	1,2,4-Trimethylbenzene (95-63-6)	1,000
2,5-Dibromotoluene (SS) (615-59-8)	1,000	2,2,4-Trimethylpentane (isooctane) (540-84-1)	1,500
Ethylbenzene (100-41-4)	500	<i>m</i> -Xylene (108-38-3)	1,000
2-Methylpentane (107-83-5)	1,500	<i>o</i> -Xylene (95-47-6)	1,000
Methyl <i>tert</i> -butyl ether (MTBE) (1634-04-4)	1,500	<i>p</i> -Xylene (106-42-3)	1,000

In P&T methanol, 1 mL/ampul

cat.# 30452 (ea.)

MA VPH Matrix Spike Mix With Surrogate

(14 components)

<i>n</i> -Pentane (C5) (109-66-0)	Naphthalene (91-20-3)
<i>n</i> -Nonane (C9) (111-84-2)	Toluene (108-88-3)
Benzene (71-43-2)	1,2,4-Trimethylbenzene (95-63-6)
2,5-Dibromotoluene (SS) (615-59-8)	2,2,4-Trimethylpentane (isooctane) (540-84-1)
Ethylbenzene (100-41-4)	<i>m</i> -Xylene (108-38-3)
2-Methylpentane (107-83-5)	<i>o</i> -Xylene (95-47-6)
Methyl <i>tert</i> -butyl ether (MTBE) (1634-04-4)	<i>p</i> -Xylene (106-42-3)

2,500 µg/mL each in P&T methanol, 1 mL/ampul

cat.# 30454 (ea.)

MA VPH Surrogate Standard

2,5-Dibromotoluene (615-59-8)

1,000 µg/mL in P&T methanol, 1 mL/ampul

cat.# 30435 (ea.)

10,000 µg/mL in P&T methanol, 1 mL/ampul

cat.# 30453 (ea.)

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Hydrocarbons, Leaking Underground Storage Tank (LUST): State-Specific Methods, *cont.*

Massachusetts, *cont.*

Massachusetts APH Mix (26 components)

Benzene
1,3-Butadiene
Butylcyclohexane
Cyclohexane
n-Decane
2,3-Dimethylheptane
2,3-Dimethylpentane
n-Dodecane
Ethylbenzene
n-Heptane
n-Hexane
Isopentane
Isopropylbenzene
p-Isopropyltoluene
Methyl *tert*-butyl ether
1-Methyl-3-ethylbenzene
Naphthalene
n-Nonane
n-Octane
Toluene
1,2,3-Trimethylbenzene
1,3,5-Trimethylbenzene
n-Undecane
o-Xylene
m/p-Xylene (combined)

cylinder design



Spectra (Linde)
104 L Cylinders:
Aluminum construction
Size: 8 x 24 cm
Volume/Pressure:
104 liters of gas @ 1,800 psi
CGA-180 outlet fitting.
Weight: 1.5 lb/0.7 kg



Scotty (Air Liquide)
110 L Cylinders:
Aluminum construction
Size: 8.3 x 29.5 cm
Volume/Pressure:
110 liters of gas @ 1,800 psi
CGA-180 outlet fitting.
Weight: 2.2 lb/1 kg
U.S. DOT Specs: 3AL2216

1 ppm in nitrogen, 104 liters @ 1,800 psi

cat.# 34540 (ea.)

100 ppb in nitrogen, 110 liters @ 1,800psi

cat.# 26366 (ea.)

100 ppb in nitrogen, 110 liters @ 1,800 psig (Pi-marked cylinder)

cat.# 34540-PI (ea.)

No data pack available.

Gas standards are subject to hazardous materials shipping fees by most freight carriers. All calibration gas standards are nonreturnable due to DOT hazardous shipping requirements.

MA EPH Aromatic Hydrocarbon Standard

(17 components)

Acenaphthene (83-32-9)
Acenaphthylene (208-96-8)
Anthracene (120-12-7)
Benz(a)anthracene (56-55-3)
Benzo(a)pyrene (50-32-8)
Benzo(b)fluoranthene (205-99-2)
Benzo(k)fluoranthene (207-08-9)
Benzo(ghi)perylene (191-24-2)
Chrysene (218-01-9)

Dibenz(a,h)anthracene (53-70-3)
Fluoranthene (206-44-0)
Fluorene (86-73-7)
Indeno(1,2,3-cd)pyrene (193-39-5)
2-Methylnaphthalene (91-57-6)
Naphthalene (91-20-3)
Phenanthrene (85-01-8)
Pyrene (129-00-0)

1,000 µg/mL each in methylene chloride, 1 mL/ampul

cat.# 31458 (ea.)

MA EPH Aliphatic Hydrocarbon Standard

(14 components)

n-Nonane (C9) (111-84-2)
n-Decane (C10) (124-18-5)
n-Dodecane (C12) (112-40-3)
n-Tetradecane (C14) (629-59-4)
n-Hexadecane (C16) (544-76-3)
n-Octadecane (C18) (593-45-3)
n-Nonadecane (C19) (629-92-5)

n-Eicosane (C20) (112-95-8)
n-Docosane (C22) (629-97-0)
n-Tetracosane (C24) (646-31-1)
n-Hexacosane (C26) (630-01-3)
n-Octacosane (C28) (630-02-4)
n-Triacosane (C30) (638-68-6)
n-Hexatriacontane (C36) (630-06-8)

1,000 µg/mL each in hexane, 1 mL/ampul

cat.# 31459 (ea.)

MA EPH Matrix Spike Mix (10 components)

n-Nonane (C9) (111-84-2)
n-Tetradecane (C14) (629-59-4)
n-Nonadecane (C19) (629-92-5)
n-Eicosane (C20) (112-95-8)
n-Octacosane (C28) (630-02-4)
Acenaphthene (83-32-9)
Anthracene (120-12-7)
Chrysene (218-01-9)
Naphthalene (91-20-3)
Pyrene (129-00-0)

250 µg/mL each in acetone, 1 mL/ampul

cat.# 31460 (ea.)

5- α -Androstane

5- α -Androstane (438-22-2)

2,000 µg/mL in methylene chloride, 1 mL/ampul

cat.# 31065 (ea.)

MA EPH Surrogate Spike Mix (2 components)

1-Chlorooctadecane (3386-33-2)
o-Terphenyl (84-15-1)

4,000 µg/mL each in acetone, 1 mL/ampul

cat.# 31479 (ea.)

1-Chlorooctadecane

1-Chlorooctadecane (3386-33-2)

10,000 µg/mL in methylene chloride, 1 mL/ampul

cat.# 31098 (ea.)

Naphthalene-d8

Naphthalene-d8 (1146-65-2)

2,000 µg/mL in methylene chloride, 1 mL/ampul

cat.# 31043 (ea.)

MA Fractionation Surrogate Spike Mix (2 components)

2-Bromonaphthalene (580-13-2)
2-Fluorobiphenyl (321-60-8)

4,000 µg/mL each in hexane, 1 mL/ampul

cat.# 31480 (ea.)

MA Fractionation Check Mix (31 components)

PAHs:

Acenaphthene (83-32-9)
Acenaphthylene (208-96-8)
Anthracene (120-12-7)
Benzo(a)anthracene (56-55-3)
Benzo(a)pyrene (50-32-8)
Benzo(b)fluoranthene (205-99-2)
Benzo(k)fluoranthene (207-08-9)
Benzo(ghi)perylene (191-24-2)
Chrysene (218-01-9)
Dibenz(a,h)anthracene (53-70-3)
Fluoranthene (206-44-0)
Fluorene (86-73-7)
Indeno(1,2,3-cd)pyrene (193-39-5)
2-Methylnaphthalene (91-57-6)
Naphthalene (91-20-3)
Phenanthrene (85-01-8)
Pyrene (129-00-0)

Hydrocarbons:

n-Nonane (C9) (111-84-2)
n-Decane (C10) (124-18-5)
n-Dodecane (C12) (112-40-3)
n-Tetradecane (C14) (629-59-4)
n-Hexadecane (C16) (544-76-3)
n-Octadecane (C18) (593-45-3)
n-Nonadecane (C19) (629-92-5)
n-Eicosane (C20) (112-95-8)
n-Docosane (C22) (629-97-0)
n-Tetracosane (C24) (646-31-1)
n-Hexacosane (C26) (630-01-3)
n-Octacosane (C28) (630-02-4)
n-Triacosane (C30) (638-68-6)
n-Hexatriacontane (C36) (630-06-8)

25 µg/mL each in hexane, 1 mL/ampul

cat.# 31481 (ea.)

Hydrocarbons, Leaking Underground Storage Tank (LUST): State-Specific Methods, *cont.*

Michigan

Michigan GRO Mix (14 components)

Benzene (71-43-2)	Naphthalene (91-20-3)
1,2-Dibromoethane (106-93-4)	Toluene (108-88-3)
1,2-Dichloroethane (107-06-2)	1,2,4-Trimethylbenzene (95-63-6)
Ethylbenzene (100-41-4)	1,3,5-Trimethylbenzene (108-67-8)
Isopropylbenzene (cumene) (98-82-8)	<i>m</i> -Xylene (108-38-3)
2-Methylnaphthalene (91-57-6)	<i>o</i> -Xylene (95-47-6)
Methyl <i>tert</i> -butyl-ether (MTBE) (1634-04-4)	<i>p</i> -Xylene (106-42-3)

2,000 µg/mL each in P&T methanol, 1 mL/ampul
cat.# 30468 (ea.)

Mississippi

DRO Mix (Tennessee/Mississippi) (16 components)

<i>n</i> -Decane (C10) (124-18-5)	<i>n</i> -Octadecane (C18) (593-45-3)
<i>n</i> -Undecane (C11) (1120-21-4)	<i>n</i> -Nonadecane (C19) (629-92-5)
<i>n</i> -Dodecane (C12) (112-40-3)	<i>n</i> -Eicosane (C20) (112-95-8)
<i>n</i> -Tridecane (C13) (629-50-5)	<i>n</i> -Heneicosane (C21) (629-94-7)
<i>n</i> -Tetradecane (C14) (629-59-4)	<i>n</i> -Docosane (C22) (629-97-0)
<i>n</i> -Pentadecane (C15) (629-62-9)	<i>n</i> -Tricosane (C23) (638-67-5)
<i>n</i> -Hexadecane (C16) (544-76-3)	<i>n</i> -Tetracosane (C24) (646-31-1)
<i>n</i> -Heptadecane (C17) (629-78-7)	<i>n</i> -Pentacosane (C25) (629-99-2)

1,000 µg/mL each in methylene chloride, 1 mL/ampul
cat.# 31214 (ea.)

Gasoline Component Standard (10 components)

Benzene (71-43-2)	500 µg/mL	2,2,4-Trimethylpentane (isooctane) (540-84-1)	1,500
Ethylbenzene (100-41-4)	500	<i>m</i> -Xylene (108-38-3)	1,000
Heptane (142-82-5)	500	<i>o</i> -Xylene (95-47-6)	1,000
2-Methylpentane (107-83-5)	1,500	<i>p</i> -Xylene (106-42-3)	1,000
Toluene (108-88-3)	1,500		
1,2,4-Trimethylbenzene (95-63-6)	1,000		

10,000 µg/mL total in P&T methanol, 1 mL/ampul
cat.# 30486 (ea.)

Save time with prepacked
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EPH Fractionation Tubes

See page 398.



New Jersey

NJDEP EPH 10/08 Rev. 2 Aliphatics Calibration Standard (20 components)

<i>n</i> -Nonane (C9) (111-84-2)	<i>n</i> -Hexacosane (C26) (630-01-3)
<i>n</i> -Decane (C10) (124-18-5)	<i>n</i> -Octacosane (C28) (630-02-4)
<i>n</i> -Dodecane (C12) (112-40-3)	<i>n</i> -Triacosane (C30) (638-68-6)
<i>n</i> -Tetradecane (C14) (629-59-4)	<i>n</i> -Dotriacontane (C32) (544-85-4)
<i>n</i> -Hexadecane (C16) (544-76-3)	<i>n</i> -Tetraatriacontane (C34) (14167-59-0)
<i>n</i> -Octadecane (C18) (593-45-3)	<i>n</i> -Hexatriacontane (C36) (630-06-8)
<i>n</i> -Eicosane (C20) (112-95-8)	<i>n</i> -Octatriacontane (C38) (7194-85-6)
<i>n</i> -Heneicosane (C21) (629-94-7)	<i>n</i> -Tetracontane (C40) (4181-95-7)
<i>n</i> -Docosane (C22) (629-97-0)	2-Methylnaphthalene (91-57-6)
<i>n</i> -Tetracosane (C24) (646-31-1)	Naphthalene (91-20-3)

2,000 µg/mL each in hexane:carbon disulfide (80:20), 1 mL/ampul
cat.# 30540 (ea.)

NJDEP EPH 10/08 Rev. 2 Aromatics Calibration Standard (18 components)

Acenaphthene (83-32-9)	Dibenz(a,h)anthracene (53-70-3)
Acenaphthylene (208-96-8)	Fluoranthene (206-44-0)
Anthracene (120-12-7)	Fluorene (86-73-7)
Benz(a)anthracene (56-55-3)	Indeno(1,2,3-cd)pyrene (193-39-5)
Benzo(a)pyrene (50-32-8)	2-Methylnaphthalene (91-57-6)
Benzo(b)fluoranthene (205-99-2)	Naphthalene (91-20-3)
Benzo(ghi)perylene (191-24-2)	Phenanthrene (85-01-8)
Benzo(k)fluoranthene (207-08-9)	Pyrene (129-00-0)
Chrysene (218-01-9)	1,2,3-Trimethylbenzene (526-73-8)

2,000 µg/mL each in methylene chloride, 1 mL/ampul
cat.# 30541 (ea.)

NJDEP EPH 10/08 Rev. 2 Aliphatics Matrix Spike Mix (18 components)

<i>n</i> -Nonane (C9) (111-84-2)	<i>n</i> -Tetracosane (C24) (646-31-1)
<i>n</i> -Decane (C10) (124-18-5)	<i>n</i> -Hexacosane (C26) (630-01-3)
<i>n</i> -Dodecane (C12) (112-40-3)	<i>n</i> -Octacosane (C28) (630-02-4)
<i>n</i> -Tetradecane (C14) (629-59-4)	<i>n</i> -Triacosane (C30) (638-68-6)
<i>n</i> -Hexadecane (C16) (544-76-3)	<i>n</i> -Dotriacontane (C32) (544-85-4)
<i>n</i> -Octadecane (C18) (593-45-3)	<i>n</i> -Tetraatriacontane (C34) (14167-59-0)
<i>n</i> -Eicosane (C20) (112-95-8)	<i>n</i> -Hexatriacontane (C36) (630-06-8)
<i>n</i> -Heneicosane (C21) (629-94-7)	<i>n</i> -Octatriacontane (C38) (7194-85-6)
<i>n</i> -Docosane (C22) (629-97-0)	<i>n</i> -Tetracontane (C40) (4181-95-7)

200 µg/mL each in pentane, 5 mL/ampul
cat.# 30542 (ea.)

NJDEP EPH 10/08 Rev. 2 Aromatics Matrix Spike Mix (18 components)

Acenaphthene (83-32-9)	Dibenz(a,h)anthracene (53-70-3)
Acenaphthylene (208-96-8)	Fluoranthene (206-44-0)
Anthracene (120-12-7)	Fluorene (86-73-7)
Benz(a)anthracene (56-55-3)	Indeno(1,2,3-cd)pyrene (193-39-5)
Benzo(a)pyrene (50-32-8)	2-Methylnaphthalene (91-57-6)
Benzo(b)fluoranthene (205-99-2)	Naphthalene (91-20-3)
Benzo(ghi)perylene (191-24-2)	Phenanthrene (85-01-8)
Benzo(k)fluoranthene (207-08-9)	Pyrene (129-00-0)
Chrysene (218-01-9)	1,2,3-Trimethylbenzene (526-73-8)

200 µg/mL each in acetone:toluene (50:50), 5 mL/ampul
cat.# 30543 (ea.)

Hydrocarbons, Leaking Underground Storage Tank (LUST): State-Specific Methods, *cont.*

New Jersey, *cont.*

NJDEP EPH 10/08 Rev. 2 Aliphatics Fractionation

Check Mix (18 components)

<i>n</i> -Nonane (C9) (111-84-2)	<i>n</i> -Tetracosane (C24) (646-31-1)
<i>n</i> -Decane (C10) (124-18-5)	<i>n</i> -Hexacosane (C26) (630-01-3)
<i>n</i> -Dodecane (C12) (112-40-3)	<i>n</i> -Octacosane (C28) (630-02-4)
<i>n</i> -Tetradecane (C14) (629-59-4)	<i>n</i> -Triacosane (C30) (638-68-6)
<i>n</i> -Hexadecane (C16) (544-76-3)	<i>n</i> -Dotriacontane (C32) (544-85-4)
<i>n</i> -Octadecane (C18) (593-45-3)	<i>n</i> -Tetraatriacontane (C34) (14167-59-0)
<i>n</i> -Eicosane (C20) (112-95-8)	<i>n</i> -Hexatriacontane (C36) (630-06-8)
<i>n</i> -Heneicosane (C21) (629-94-7)	<i>n</i> -Octatriacontane (C38) (7194-85-6)
<i>n</i> -Docosane (C22) (629-97-0)	<i>n</i> -Tetracontane (C40) (4181-95-7)

400 µg/mL each in hexane, 5 mL/ampul

cat.# 30544 (ea.)

NJDEP EPH 10/08 Rev. 2 Aromatics Fractionation

Check Mix (16 components)

Acenaphthene (83-32-9)	Chrysene (218-01-9)
Acenaphthylene (208-96-8)	Dibenz(a,h)anthracene (53-70-3)
Anthracene (120-12-7)	Fluoranthene (206-44-0)
Benz(a)anthracene (56-55-3)	Fluorene (86-73-7)
Benzo(a)pyrene (50-32-8)	Indeno(1,2,3-cd)pyrene (193-39-5)
Benzo(b)fluoranthene (205-99-2)	Phenanthrene (85-01-8)
Benzo(ghi)perylene (191-24-2)	Pyrene (129-00-0)
Benzo(k)fluoranthene (207-08-9)	1,2,3-Trimethylbenzene (526-73-8)

400 µg/mL each in hexane:toluene (50:50), 5 mL/ampul

cat.# 30545 (ea.)

Northwest U.S. Regional Method (Oregon & Washington)

Also see Washington, page 510.

Glycols Standard (2 components)

Ethylene glycol (107-21-1)
Propylene glycol (57-55-6)

50,000 µg/mL each in DI water, 1 mL/ampul

cat.# 30471 (ea.)

NW TPH-Dx Surrogate Mix Standards

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

Compound	CAS #	Solvent	Conc.	cat.#
2-Fluorobiphenyl	321-60-8	D	10,000	31096
<i>o</i> -Terphenyl	84-15-1	D	10,000	31097
<i>p</i> -Terphenyl	92-94-4	D	10,000	31095
Pentacosane (C25)	629-99-2	D	10,000	31487

D = methylene chloride

Pennsylvania

PA DEP UST Standard (11 components)

Benzene (71-43-2)	Naphthalene (91-20-3)
1,2-Dibromoethane (EDB) (106-93-4)	Toluene (108-88-3)
1,2-Dichloroethane (107-06-2)	<i>m</i> -Xylene (108-38-3)
Ethylbenzene (100-41-4)	<i>o</i> -Xylene (95-47-6)
Isopropyl benzene (cumene) (98-82-8)	<i>p</i> -Xylene (106-42-3)
Methyl <i>tert</i> -butyl ether (MTBE) (1634-04-4)	

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

cat.# 30433 (ea.)

Tennessee/Mississippi

DRO Mix (Tennessee/Mississippi) (16 components)

<i>n</i> -Decane (C10) (124-18-5)	<i>n</i> -Octadecane (C18) (593-45-3)
<i>n</i> -Undecane (C11) (1120-21-4)	<i>n</i> -Nonadecane (C19) (629-92-5)
<i>n</i> -Dodecane (C12) (112-40-3)	<i>n</i> -Eicosane (C20) (112-95-8)
<i>n</i> -Tridecane (C13) (629-50-5)	<i>n</i> -Heneicosane (C21) (629-94-7)
<i>n</i> -Tetradecane (C14) (629-59-4)	<i>n</i> -Docosane (C22) (629-97-0)
<i>n</i> -Pentadecane (C15) (629-62-9)	<i>n</i> -Tricosane (C23) (638-67-5)
<i>n</i> -Hexadecane (C16) (544-76-3)	<i>n</i> -Tetracosane (C24) (646-31-1)
<i>n</i> -Heptadecane (C17) (629-78-7)	<i>n</i> -Pentacosane (C25) (629-99-2)

1,000 µg/mL each in methylene chloride, 1 mL/ampul

cat.# 31214 (ea.)

Gasoline Component Standard (10 components)

Benzene (71-43-2)	500 µg/mL	2,2,4-Trimethylpentane (isooctane) (540-84-1)	1,500
Ethylbenzene (100-41-4)	500	<i>m</i> -Xylene (108-38-3)	1,000
Heptane (142-82-5)	500	<i>o</i> -Xylene (95-47-6)	1,000
2-Methylpentane (107-83-5)	1,500	<i>p</i> -Xylene (106-42-3)	1,000
Toluene (108-88-3)	1,500		
1,2,4-Trimethylbenzene (95-63-6)	1,000		

10,000 µg/mL total in P&T methanol, 1 mL/ampul

cat.# 30486 (ea.)

Reference Standards Documentation Search

Locate SDSs, certificates,
& data packs by cat. #
or lot #

www.restek.com/documentation



Hydrocarbons, Leaking Underground Storage Tank (LUST): State-Specific Methods, *cont.*

Texas

Texas TNRCC Method 1006

TNRCC 1006 Retention Time Marker Mix (9 components)

<i>n</i> -Hexane (C6) (110-54-3)	<i>n</i> -Hexadecane (C16) (544-76-3)
<i>n</i> -Heptane (C7) (142-82-5)	<i>n</i> -Heneicosane (C21) (629-94-7)
<i>n</i> -Octane (C8) (111-65-9)	<i>n</i> -Octacosane (C28) (630-02-4)
<i>n</i> -Decane (C10) (124-18-5)	<i>n</i> -Pentatriacontane (C35) (630-07-9)
<i>n</i> -Dodecane (C12) (112-40-3)	

200 µg/mL in pentane, 1 mL/ampul

cat.# 31814 (ea.)

Texas TNRCC Method 1005, *cont.*

Alternate Boiling Point/Carbon Number Distribution Marker Stock Standard (9 components)

<i>n</i> -Hexane (C6) (110-54-3)	<i>n</i> -Heneicosane (C21) (629-94-7)
<i>n</i> -Octane (C8) (111-65-9)	<i>n</i> -Octacosane (C28) (630-02-4)
<i>n</i> -Decane (C10) (124-18-5)	<i>n</i> -Pentatriacontane (C35) (630-07-9)
<i>n</i> -Dodecane (C12) (112-40-3)	<i>n</i> -Hexatriacontane (C36) (630-06-8)
<i>n</i> -Hexadecane (C16) (544-76-3)	

200 µg/mL each in pentane, 1 mL/ampul

cat.# 31639 (ea.)

Texas TNRCC Method 1005

TNRCC 1005 Retention Time Markers Mix

(4 components)

<i>n</i> -Hexane (C6) (110-54-3)	<i>n</i> -Octacosane (C28) (630-02-4)
<i>n</i> -Dodecane (C12) (112-40-3)	<i>n</i> -Pentatriacontane (C35) (630-07-9)

200 µg/mL each in pentane, 1 mL/ampul

cat.# 31698 (ea.)

α,α,α-Trifluorotoluene

α,α,α-Trifluorotoluene (98-08-8)

2,000 µg/mL in P&T methanol, 1 mL/ampul

cat.# 30048 (ea.)

2,500 µg/mL in P&T methanol, 1 mL/ampul

cat.# 30068 (ea.)

10,000 µg/mL in P&T methanol, 1 mL/ampul

cat.# 30083 (ea.)

TX TPH Locator Mix (3 components)

<i>n</i> -Hexane (C6) (110-54-3)	<i>n</i> -Octacosane (C28) (630-02-4)
<i>n</i> -Decane (C10) (124-18-5)	

200 µg/mL each in pentane, 1 mL/ampul

cat.# 31482 (ea.)

1-Chlorooctane

1-Chlorooctane (111-85-3)

10,000 µg/mL in P&T methanol, 1 mL/ampul

cat.# 30084 (ea.)

TX TPH Calibration Mix (2 components)

Diesel fuel #2 composite (68334-30-5)
Unleaded gasoline composite (8006-61-9)

10,000 µg/mL each in pentane, 1 mL/ampul

cat.# 31483 (ea.)

1-Chlorooctadecane

1-Chlorooctadecane (3386-33-2)

10,000 µg/mL in methylene chloride, 1 mL/ampul

cat.# 31098 (ea.)

TX TPH Matrix Spike Mix (2 components)

Diesel fuel #2 composite (68334-30-5)
Unleaded gasoline composite (8006-61-9)

10,000 µg/mL each in P&T methanol, 1 mL/ampul

cat.# 31484 (ea.)



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Hydrocarbons, Leaking Underground Storage Tank (LUST): State-Specific Methods, *cont.*

Washington

Also see Northwest U.S. Regional Method, page 508.

WA VPH Marker Standard (9 components)

<i>n</i> -Pentane (C5) (109-66-0)	1-Methylnaphthalene (90-12-0)
<i>n</i> -Hexane (C6) (110-54-3)	Naphthalene (91-20-3)
<i>n</i> -Octane (C8) (111-65-9)	Toluene (108-88-3)
<i>n</i> -Decane (C10) (124-18-5)	1,2,3-Trimethylbenzene (526-73-8)
<i>n</i> -Dodecane (C12) (112-40-3)	

1,000 µg/mL each in P&T methanol, 1 mL/ampul
cat.# 30450 (ea.)

WA VPH Standard (15 components)

<i>n</i> -Pentane (C5) (109-66-0)	Methyl <i>tert</i> -butyl ether (MTBE) (1634-04-4)
<i>n</i> -Hexane (C6) (110-54-3)	Naphthalene (91-20-3)
<i>n</i> -Octane (C8) (111-65-9)	Toluene (108-88-3)
<i>n</i> -Decane (C10) (124-18-5)	1,2,3-Trimethylbenzene (526-73-8)
<i>n</i> -Dodecane (C12) (112-40-3)	<i>m</i> -Xylene (108-38-3)
Benzene (71-43-2)	<i>o</i> -Xylene (95-47-6)
Ethylbenzene (100-41-4)	<i>p</i> -Xylene (106-42-3)
1-Methylnaphthalene (90-12-0)	

1,000 µg/mL each in P&T methanol, 1 mL/ampul
cat.# 30451 (ea.)

WA EPH Aromatic Hydrocarbon Mix (6 components)

Acenaphthene (83-32-9)	Pyrene (129-00-0)
Benzo(ghi)perylene (191-24-2)	Toluene (108-88-3)
Naphthalene (91-20-3)	1,2,3-Trimethylbenzene (526-73-8)

1,000 µg/mL each in methylene chloride, 1 mL/ampul
cat.# 31488 (ea.)

WA EPH Aliphatic Hydrocarbon Mix (6 components)

<i>n</i> -Octane (C8) (111-65-9)	<i>n</i> -Hexadecane (C16) (544-76-3)
<i>n</i> -Decane (C10) (124-18-5)	<i>n</i> -Heneicosane (C21) (629-94-7)
<i>n</i> -Dodecane (C12) (112-40-3)	<i>n</i> -Tetraatriacontane (C34) (14167-59-0)

1,000 µg/mL each in hexane, 1 mL/ampul
cat.# 31489 (ea.)

WA EPH Aromatic Hydrocarbon Standard (18 components)

Acenaphthene (83-32-9)	Dibenz(a,h)anthracene (53-70-3)
Acenaphthylene (208-96-8)	Fluoranthene (206-44-0)
Anthracene (120-12-7)	Fluorene (86-73-7)
Benzo(a)anthracene (56-55-3)	Indeno(1,2,3-cd)pyrene (193-39-5)
Benzo(a)pyrene (50-32-8)	2-Methylnaphthalene (91-57-6)
Benzo(b)fluoranthene (205-99-2)	Naphthalene (91-20-3)
Benzo(k)fluoranthene (207-08-9)	Phenanthrene (85-01-8)
Benzo(ghi)perylene (191-24-2)	Pyrene (129-00-0)
Chrysene (218-01-9)	1,2,3-Trimethylbenzene (526-73-8)

1,000 µg/mL each in methylene chloride, 1 mL/ampul
cat.# 31469 (ea.)

Washington, *cont.*

WA EPH Fractionation Check Mix (22 components)

<i>n</i> -Octane (C8) (111-65-9)	Benzo(b)fluoranthene (205-99-2)
<i>n</i> -Decane (C10) (124-18-5)	Benzo(k)fluoranthene (207-08-9)
<i>n</i> -Dodecane (C12) (112-40-3)	Benzo(ghi)perylene (191-24-2)
<i>n</i> -Hexadecane (C16) (544-76-3)	Chrysene (218-01-9)
<i>n</i> -Heneicosane (C21) (629-94-7)	Dibenz(a,h)anthracene (53-70-3)
<i>n</i> -Tetraatriacontane (C34) (14167-59-0)	Fluoranthene (206-44-0)
Acenaphthene (83-32-9)	Fluorene (86-73-7)
Acenaphthylene (208-96-8)	Indeno(1,2,3-cd)pyrene (193-39-5)
Anthracene (120-12-7)	Naphthalene (91-20-3)
Benzo(a)anthracene (56-55-3)	Phenanthrene (85-01-8)
Benzo(a)pyrene (50-32-8)	Pyrene (129-00-0)

25 µg/mL each in hexane, 1 mL/ampul
cat.# 31491 (ea.)

Wisconsin

PVOC/GRO Mix (Wisconsin) (10 components)

Benzene (71-43-2)	1,2,4-Trimethylbenzene (95-63-6)
Ethylbenzene (100-41-4)	1,3,5-Trimethylbenzene (108-67-8)
Methyl <i>tert</i> -butyl ether (MTBE) (1634-04-4)	<i>m</i> -Xylene (108-38-3)
Naphthalene (91-20-3)	<i>o</i> -Xylene (95-47-6)
Toluene (108-88-3)	<i>p</i> -Xylene (106-42-3)

1,000 µg/mL each in P&T methanol, 1 mL/ampul
cat.# 30095 (ea.)

DRO Mix (EPA/Wisconsin) (10 components)

<i>n</i> -Decane (C10) (124-18-5)	<i>n</i> -Eicosane (C20) (112-95-8)
<i>n</i> -Dodecane (C12) (112-40-3)	<i>n</i> -Docosane (C22) (629-97-0)
<i>n</i> -Tetradecane (C14) (629-59-4)	<i>n</i> -Tetracosane (C24) (646-31-1)
<i>n</i> -Hexadecane (C16) (544-76-3)	<i>n</i> -Hexacosane (C26) (630-01-3)
<i>n</i> -Octadecane (C18) (593-45-3)	<i>n</i> -Octacosane (C28) (630-02-4)

2,000 µg/mL each in methylene chloride, 1 mL/ampul
cat.# 31064 (ea.)



WA EPH Aromatic Hydrocarbon Standard (18 components)

Acenaphthene (83-32-9)	Dibenz(a,h)anthracene (53-70-3)
Acenaphthylene (208-96-8)	Fluoranthene (206-44-0)
Anthracene (120-12-7)	Fluorene (86-73-7)
Benzo(a)anthracene (56-55-3)	Indeno(1,2,3-cd)pyrene (193-39-5)
Benzo(a)pyrene (50-32-8)	2-Methylnaphthalene (91-57-6)
Benzo(b)fluoranthene (205-99-2)	Naphthalene (91-20-3)
Benzo(k)fluoranthene (207-08-9)	Phenanthrene (85-01-8)
Benzo(ghi)perylene (191-24-2)	Pyrene (129-00-0)
Chrysene (218-01-9)	1,2,3-Trimethylbenzene (526-73-8)

1,000 µg/mL each in methylene chloride, 1 mL/ampul
cat.# 31469 (ea.)



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Hydrocarbons, Polycyclic Aromatic (PAHs)

Method 610

(Polycyclic Aromatic Hydrocarbons [PAHs])

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

Acenaphthene (83-32-9)	Chrysene (218-01-9)
Acenaphthylene (208-96-8)	Dibenz(a,h)anthracene (53-70-3)
Anthracene (120-12-7)	Fluoranthene (206-44-0)
Benz(a)anthracene (56-55-3)	Fluorene (86-73-7)
Benzo(a)pyrene (50-32-8)	Indeno(1,2,3-cd)pyrene (193-39-5)
Benzo(b)fluoranthene (205-99-2)	Naphthalene (91-20-3)
Benzo(k)fluoranthene (207-08-9)	Phenanthrene (85-01-8)
Benzo(ghi)perylene (191-24-2)	Pyrene (129-00-0)

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

610 PAH Calibration Mix A (16 components)

For LC-fluorescence detection.

Acenaphthene (83-32-9)	1,000 µg/mL	Chrysene (218-01-9)	500
Acenaphthylene (208-96-8)	1,000	Dibenz(a,h)anthracene (53-70-3)	500
Anthracene (120-12-7)	1,000	Fluoranthene (206-44-0)	500
Benz(a)anthracene (56-55-3)	500	Fluorene (86-73-7)	1,000
Benzo(a)pyrene (50-32-8)	500	Indeno(1,2,3-cd)pyrene (193-39-5)	500
Benzo(b)fluoranthene (205-99-2)	500	Naphthalene (91-20-3)	1,000
Benzo(k)fluoranthene (207-08-9)	500	Phenanthrene (85-01-8)	500
Benzo(ghi)perylene (191-24-2)	500	Pyrene (129-00-0)	500

In methylene chloride, 1 mL/ampul

cat.# 31264 (ea.)

610 PAH Calibration Mix B (16 components)

For LC-UV detection.

Acenaphthene (83-32-9)	1,000 µg/mL	Chrysene (218-01-9)	100
Acenaphthylene (208-96-8)	2,000	Dibenz(a,h)anthracene (53-70-3)	200
Anthracene (120-12-7)	100	Fluoranthene (206-44-0)	200
Benz(a)anthracene (56-55-3)	100	Fluorene (86-73-7)	200
Benzo(a)pyrene (50-32-8)	100	Indeno(1,2,3-cd)pyrene (193-39-5)	100
Benzo(b)fluoranthene (205-99-2)	200	Naphthalene (91-20-3)	1,000
Benzo(k)fluoranthene (207-08-9)	100	Phenanthrene (85-01-8)	100
Benzo(ghi)perylene (191-24-2)	200	Pyrene (129-00-0)	100

In methylene chloride:methanol (1:1), 1 mL/ampul

cat.# 31455 (ea.)

Method 8100

(Polycyclic Aromatic Hydrocarbons [PAHs])

PAH Supplement Mix for Method 8100 (8 components)

Benzo(j)fluoranthene (205-82-3)	Dibenzo(a,e)pyrene (192-65-4)
Dibenz(a,h)acridine (226-36-8)	Dibenzo(a,h)pyrene (189-64-0)
Dibenz(a,j)acridine (224-42-0)	Dibenzo(a,i)pyrene (189-55-9)
7H-Dibenzo(c,g)carbazole (194-59-2)	3-Methylcholanthrene (56-49-5)

1,000 µg/mL each in methylene chloride, 1 mL/ampul
cat.# 31857 (ea.)

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

See cat.# 31011 (above).

Method 8310

(Polycyclic Aromatic Hydrocarbons [PAHs])

EPA Method 8310 PAH Mixture (18 components)

Acenaphthene (83-32-9)	Dibenz(a,h)anthracene (53-70-3)
Acenaphthylene (208-96-8)	Fluoranthene (206-44-0)
Anthracene (120-12-7)	Fluorene (86-73-7)
Benz(a)anthracene (56-55-3)	Indeno(1,2,3-cd)pyrene (193-39-5)
Benzo(a)pyrene (50-32-8)	1-Methylnaphthalene (90-12-0)
Benzo(b)fluoranthene (205-99-2)	2-Methylnaphthalene (91-57-6)
Benzo(ghi)perylene (191-24-2)	Naphthalene (91-20-3)
Benzo(k)fluoranthene (207-08-9)	Phenanthrene (85-01-8)
Chrysene (218-01-9)	Pyrene (129-00-0)

500 µg/mL each in acetonitrile:toluene (92:8), 1 mL/ampul
cat.# 31874 (ea.)

EPA Method 8310 Surrogate Standard

Decafluorobiphenyl (434-90-2)

1,000 µg/mL in acetonitrile, 1 mL/ampul

cat.# 31842 (ea.)

EPA Method 8310 Quality Control Check

(18 components)

Acenaphthene (83-32-9)	100 µg/mL	Dibenz(a,h)anthracene (53-70-3)	10
Acenaphthylene (208-96-8)	100	Fluoranthene (206-44-0)	10
Anthracene (120-12-7)	100	Fluorene (86-73-7)	100
Benz(a)anthracene (56-55-3)	10	Indeno(1,2,3-cd)pyrene (193-39-5)	10
Benzo(a)pyrene (50-32-8)	10	1-Methylnaphthalene (90-12-0)	100
Benzo(b)fluoranthene (205-99-2)	10	2-Methylnaphthalene (91-57-6)	100
Benzo(ghi)perylene (191-24-2)	10	Naphthalene (91-20-3)	100
Benzo(k)fluoranthene (207-08-9)	5	Phenanthrene (85-01-8)	100
Chrysene (218-01-9)	10	Pyrene (129-00-0)	10

In acetonitrile, 1 mL/ampul

cat.# 31843 (ea.)

8270 Calibration Mix #5, Revised (18 components)

Acenaphthene (83-32-9)	Dibenz(a,h)anthracene (53-70-3)
Acenaphthylene (208-96-8)	Fluoranthene (206-44-0)
Anthracene (120-12-7)	Fluorene (86-73-7)
Benz(a)anthracene (56-55-3)	Indeno(1,2,3-cd)pyrene (193-39-5)
Benzo(a)pyrene (50-32-8)	1-Methylnaphthalene (90-12-0)
Benzo(b)fluoranthene (205-99-2)	2-Methylnaphthalene (91-57-6)
Benzo(ghi)perylene (191-24-2)	Naphthalene (91-20-3)
Benzo(k)fluoranthene (207-08-9)	Phenanthrene (85-01-8)
Chrysene (218-01-9)	Pyrene (129-00-0)

2,000 µg/mL each in methylene chloride, 1 mL/ampul

cat.# 31995 (ea.)

Certified PAHs in Diesel (7 components)

Certified for:	1-Methylnaphthalene*
Acenaphthene*	2-Methylnaphthalene*
Acenaphthylene*	Naphthalene*
Fluorene*	Phenanthrene*

50,000 ppm diesel #2 in methylene chloride, 1 mL/ampul
cat.# 31673 (ea.)

*Concentration differs from lot to lot. See online data pack for certified concentrations.



Hydrocarbons, Polycyclic Aromatic (PAHs), *cont.*

Miscellaneous

MA EPH Aromatic Hydrocarbon Standard

(17 components)

Acenaphthene (83-32-9)	Dibenz(a,h)anthracene (53-70-3)
Acenaphthylene (208-96-8)	Fluoranthene (206-44-0)
Anthracene (120-12-7)	Fluorene (86-73-7)
Benz(a)anthracene (56-55-3)	Indeno(1,2,3-cd)pyrene (193-39-5)
Benzo(a)pyrene (50-32-8)	2-Methylnaphthalene (91-57-6)
Benzo(b)fluoranthene (205-99-2)	Naphthalene (91-20-3)
Benzo(k)fluoranthene (207-08-9)	Phenanthrene (85-01-8)
Benzo(ghi)perylene (191-24-2)	Pyrene (129-00-0)
Chrysene (218-01-9)	

1,000 µg/mL each in methylene chloride, 1 mL/ampul
cat.# 31458 (ea.)

NJDEP EPH 10/08 Rev. 2 Aromatics Matrix Spike Mix

(18 components)

Acenaphthene (83-32-9)	Dibenz(a,h)anthracene (53-70-3)
Acenaphthylene (208-96-8)	Fluoranthene (206-44-0)
Anthracene (120-12-7)	Fluorene (86-73-7)
Benz(a)anthracene (56-55-3)	Indeno(1,2,3-cd)pyrene (193-39-5)
Benzo(a)pyrene (50-32-8)	2-Methylnaphthalene (91-57-6)
Benzo(b)fluoranthene (205-99-2)	Naphthalene (91-20-3)
Benzo(ghi)perylene (191-24-2)	Phenanthrene (85-01-8)
Benzo(k)fluoranthene (207-08-9)	Pyrene (129-00-0)
Chrysene (218-01-9)	1,2,3-Trimethylbenzene (526-73-8)

200 µg/mL each in acetone:toluene (50:50), 5 mL/ampul
cat.# 30543 (ea.)

MA Fractionation Surrogate Spike Mix (2 components)

2-Bromonaphthalene (580-13-2)
2-Fluorobiphenyl (321-60-8)

4,000 µg/mL each in hexane, 1 mL/ampul
cat.# 31480 (ea.)

WA EPH Aromatic Hydrocarbon Standard

(18 components)

Acenaphthene (83-32-9)	Dibenz(a,h)anthracene (53-70-3)
Acenaphthylene (208-96-8)	Fluoranthene (206-44-0)
Anthracene (120-12-7)	Fluorene (86-73-7)
Benz(a)anthracene (56-55-3)	Indeno(1,2,3-cd)pyrene (193-39-5)
Benzo(a)pyrene (50-32-8)	2-Methylnaphthalene (91-57-6)
Benzo(b)fluoranthene (205-99-2)	Naphthalene (91-20-3)
Benzo(k)fluoranthene (207-08-9)	Phenanthrene (85-01-8)
Benzo(ghi)perylene (191-24-2)	Pyrene (129-00-0)
Chrysene (218-01-9)	1,2,3-Trimethylbenzene (526-73-8)

1,000 µg/mL each in methylene chloride, 1 mL/ampul
cat.# 31469 (ea.)

MA Fractionation Check Mix (31 components)

PAHs:

Acenaphthene (83-32-9)
Acenaphthylene (208-96-8)
Anthracene (120-12-7)
Benz(a)anthracene (56-55-3)
Benzo(a)pyrene (50-32-8)
Benzo(b)fluoranthene (205-99-2)
Benzo(k)fluoranthene (207-08-9)
Benzo(ghi)perylene (191-24-2)
Chrysene (218-01-9)
Dibenz(a,h)anthracene (53-70-3)
Fluoranthene (206-44-0)
Fluorene (86-73-7)
Indeno(1,2,3-cd)pyrene (193-39-5)
2-Methylnaphthalene (91-57-6)
Naphthalene (91-20-3)
Phenanthrene (85-01-8)
Pyrene (129-00-0)

Hydrocarbons:

n-Nonane (C9) (111-84-2)
n-Decane (C10) (124-18-5)
n-Dodecane (C12) (112-40-3)
n-Tetradecane (C14) (629-59-4)
n-Hexadecane (C16) (544-76-3)
n-Octadecane (C18) (593-45-3)
n-Nonadecane (C19) (629-92-5)
n-Eicosane (C20) (112-95-8)
n-Docosane (C22) (629-97-0)
n-Tetracosane (C24) (646-31-1)
n-Hexacosane (C26) (630-01-3)
n-Octacosane (C28) (630-02-4)
n-Triacontane (C30) (638-68-6)
n-Hexatriacontane (C36) (630-06-8)

25 µg/mL each in hexane, 1 mL/ampul
cat.# 31481 (ea.)

WA EPH Aromatic Hydrocarbon Mix (6 components)

Acenaphthene (83-32-9)	Pyrene (129-00-0)
Benzo(ghi)perylene (191-24-2)	Toluene (108-88-3)
Naphthalene (91-20-3)	1,2,3-Trimethylbenzene (526-73-8)

1,000 µg/mL each in methylene chloride, 1 mL/ampul
cat.# 31488 (ea.)

Naphthalene-d8

Naphthalene-d8 (1146-65-2)

2,000 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31043 (ea.)

NJDEP EPH 10/08 Rev. 2 Aromatics Fractionation Check Mix (16 components)

Acenaphthene (83-32-9)	Chrysene (218-01-9)
Acenaphthylene (208-96-8)	Dibenz(a,h)anthracene (53-70-3)
Anthracene (120-12-7)	Fluoranthene (206-44-0)
Benz(a)anthracene (56-55-3)	Fluorene (86-73-7)
Benzo(a)pyrene (50-32-8)	Indeno(1,2,3-cd)pyrene (193-39-5)
Benzo(b)fluoranthene (205-99-2)	Phenanthrene (85-01-8)
Benzo(ghi)perylene (191-24-2)	Pyrene (129-00-0)
Benzo(k)fluoranthene (207-08-9)	1,2,3-Trimethylbenzene (526-73-8)

400 µg/mL each in hexane:toluene (50:50), 5 mL/ampul
cat.# 30545 (ea.)

Method 525.2 Fortification Recovery Standard

p-Terphenyl-d14 (1718-51-0)

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



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Hydrocarbons, Polycyclic Aromatic (PAHs), *cont.*

Miscellaneous, *cont.*

SV Internal Standard Mix (6 components)

Each	15-pk.	25-pk.
Acenaphthene-d10 (15067-26-2) Chrysene-d12 (1719-03-5) 1,4-Dichlorobenzene-d4 (3855-82-1)	Naphthalene-d8 (1146-65-2) Perylene-d12 (1520-96-3) Phenanthrene-d10 (1517-22-2)	
2,000 µg/mL each in methylene chloride, 1 mL/ampul 31206	31206.15	31206.25
4,000 µg/mL each in methylene chloride, 1 mL/ampul 31006	31006.15	31006.25

Revised SV Internal Standard Mix (7 components)

Each	15-pk.	25-pk.
Acenaphthene-d10 (15067-26-2) Chrysene-d12 (1719-03-5) 1,4-Dichlorobenzene-d4 (3855-82-1) 1,4-Dioxane-d8 (17647-74-4)	Naphthalene-d8 (1146-65-2) Perylene-d12 (1520-96-3) Phenanthrene-d10 (1517-22-2)	
2,000 µg/mL each in methylene chloride, 1 mL/ampul 31885	31885.15	31885.25
4,000 µg/mL each in methylene chloride, 1 mL/ampul 31886	—	—

B/N Surrogate Mix (4/89 SOW) (3 components)

Each	15-pk.	25-pk.
2-Fluorobiphenyl (321-60-8) Nitrobenzene-d5 (4165-60-0)	<i>p</i> -Terphenyl-d14 (1718-51-0)	
1,000 µg/mL each in methylene chloride, 1 mL/ampul 31024	31024.15	31024.25
5,000 µg/mL each in methylene chloride, 1 mL/ampul 31062	31062.15	—
5,000 µg/mL each in methylene chloride, 5 mL/ampul 31086	—	—
5,000 µg/mL each in methylene chloride, 10 mL/ampul 33028	—	33028.25

Revised B/N Surrogate Mix (4 components)

Each	15-pk.	25-pk.
2-Fluorobiphenyl (321-60-8) Nitrobenzene-d5 (4165-60-0)	<i>p</i> -Terphenyl-d14 (1718-51-0) Pyrene-d10 (1718-52-1)	
1,000 µg/mL each in methylene chloride, 1 mL/ampul 31887	31887.15	
5,000 µg/mL each in methylene chloride, 1 mL/ampul 31888	31888.15	
5,000 µg/mL each in methylene chloride, 5 mL/ampul 31889	—	

Hydrocarbons, Petroleum

Fuels & Products

Aviation Gas

Aviation Gas Standard

100-octane, low-lead fuel used in piston-type aircraft.

Aviation gas (8006-69-1)

50,000 µg/mL in P&T methanol, 1 mL/ampul
cat.# 30207 (ea.)

Hydrocarbons, Petroleum, *cont.*

Fuels & Products, *cont.*

BTEX

See page 484.

Creosote Oil

Creosote Oil Standard

- For total petroleum hydrocarbon pattern recognition of creosote oil.
- High concentration—50,000 µg/mL in methylene chloride.

Creosote oil, a widely used wood preservative produced by distilling coal tar, contains chemicals that are classified as carcinogens (e.g., benzo(a)pyrene).

Creosote oil (8001-58-9)

50,000 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31838 (ea.)

Diesel

See pages 484–485.

Fuel Oil

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. The 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.

Fuel oil #4 (68476-31-3)

5,000 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31216 (ea.)

50,000 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31244 (ea.)

Reference Standards Documentation Search

Search by cat. # or lot

- SDSs
- Certificates
- Data packs

www.restek.com/documentation



Hydrocarbons, Petroleum, *cont.*

Fuels & Products, *cont.*

Fuel Oil, *cont.*

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.

Fuel oil #6 (68553-00-4)

5,000 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31218 (ea.)

50,000 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31248 (ea.)

Fuel Oil Degradation Mix (4 components)

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.

Heptadecane (C17) (629-78-7)

Octadecane (C18) (593-45-3)

Pristane (2,6,10,14-tetramethylpentadecane) (1921-70-6)

Phytane (2,6,10,14-tetramethylhexadecane) (638-36-8)

2,000 µg/mL each in methylene chloride, 1 mL/ampul
cat.# 31240 (ea.)

¹Interpretation of Gas Chromatographic Data in Subsurface Hydrocarbon Investigations, R. Senn and M. Johnson, Ground Water Monitoring Review, Winter 1987.

Gasoline

See page 489.

Hydraulic Oil

Hydraulic Oil Standard

- For total petroleum hydrocarbon pattern recognition of hydraulic oil.
- High concentration—50,000 µg/mL in methylene chloride.

Hydraulic oil (64741-89-5)

50,000 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31839 (ea.)

Jet Fuel

JP-5 Military Fuel Standard

JP-5 Military fuel (8008-20-6)

50,000 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31252 (ea.)

JP-8 Military Fuel Standard

JP-8 Military fuel (94114-58-6)

5,000 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31262 (ea.)

50,000 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31254 (ea.)

Jet Fuel A Standard

Jet fuel A (64742-47-8)

5,000 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31215 (ea.)

50,000 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31242 (ea.)

50,000 µg/mL in methylene chloride, 5 mL/ampul
cat.# 31243 (ea.)

Kerosene

Kerosene Standard

Prepared from a single-source (one-refinery) product.

Kerosene: unweathered (84742-81-0)

5,000 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31229 (ea.)

Kerosene Composite Standard

Kerosene composite (84742-81-0)

5,000 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31094 (ea.)

50,000 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31256 (ea.)

50,000 µg/mL in methylene chloride, 5 mL/ampul
cat.# 31257 (ea.)

Leaking Underground Storage Tank (LUST)

See pages 497–510.




Restek® Safe Cracker

Included with every reference standard shipment for added convenience.



Hydrocarbons, Petroleum, *cont.*

Fuels & Products, *cont.*

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 (Unweathered)

5,000 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31225 (ea.)

50,000 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31260 (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.

Stoddard solvent (8052-41-3)

10,000 µg/mL in P&T methanol, 1 mL/ampul
cat.# 30487 (ea.)

Motor Oil

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.

Motor oil composite (64742-65-0)

50,000 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31464 (ea.)

Used Motor Oil Composite Standard

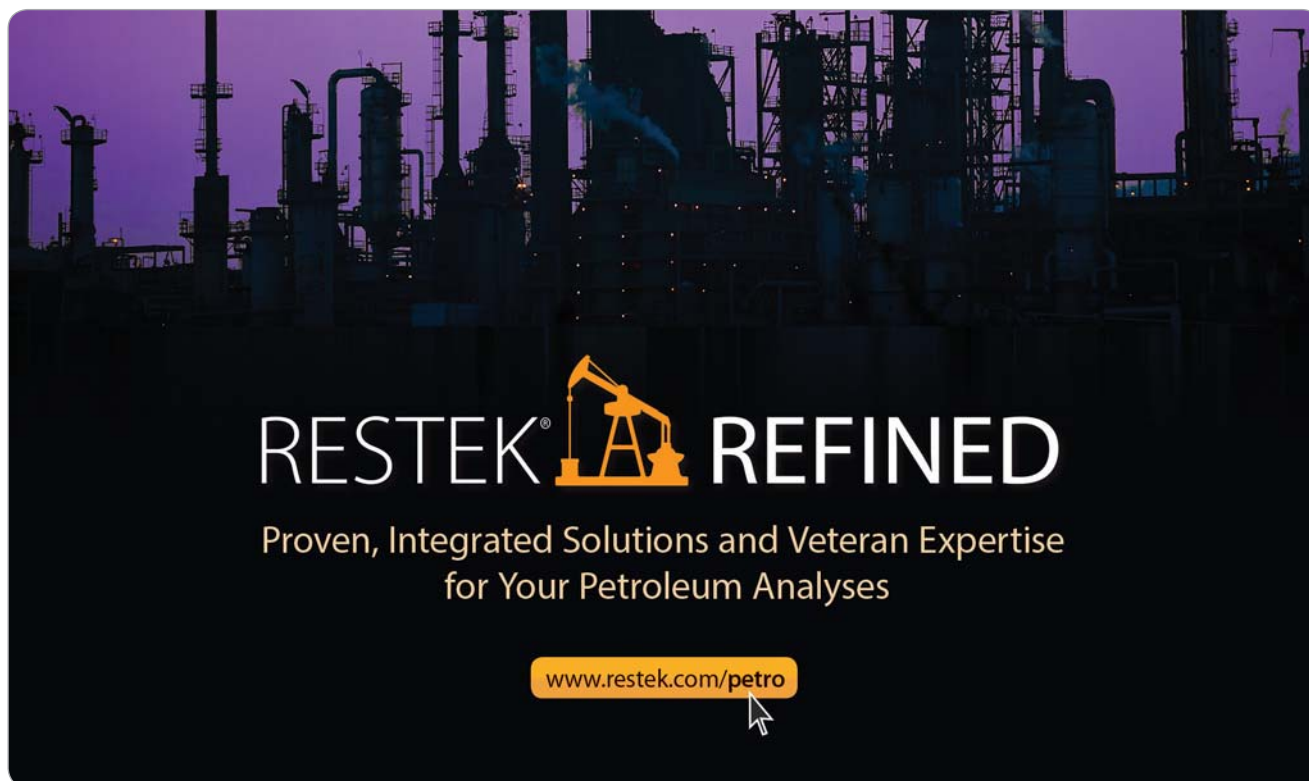
Prepared from an equal-volume blend from five gasoline-powered vehicles (belonging to Restek employees). After blending, a precisely weighed amount of the composite is added to a volumetric flask to produce the standard.


Used motor oil composite (64742-65-0)

50,000 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31465 (ea.)

Stoddard Solvent

See cat.# 30487 (left).



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Hydrocarbons, Petroleum, *cont.*

Retention Time Markers

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)

n-Hexane (C6) (110-54-3) *n*-Octacosane (C28) (630-02-4)
n-Decane (C10) (124-18-5) *n*-Triacontane (C30) (638-68-6)
n-Dodecane (C12) (112-40-3) *n*-Tetracontane (C40) (4181-95-7)
n-Tetracosane (C24) (646-31-1)

25 µg/mL each in methylene chloride, 1 mL/ampul
 cat.# 31200 (ea.)

Retention Time Marker (3 components)

n-Hexane (C6) (110-54-3) *n*-Dodecane (C12) (112-40-3)
n-Decane (C10) (124-18-5)

1,000 µg/mL each in P&T methanol, 1 mL/ampul
 cat.# 30483 (ea.)

TNRCC 1005 Retention Time Markers Mix (4 components)

n-Hexane (C6) (110-54-3) *n*-Octacosane (C28) (630-02-4)
n-Dodecane (C12) (112-40-3) *n*-Pentatriacontane (C35) (630-07-9)

200 µg/mL each in pentane, 1 mL/ampul
 cat.# 31698 (ea.)

TNRCC 1006 Retention Time Marker Mix (9 components)

n-Hexane (C6) (110-54-3) *n*-Hexadecane (C16) (544-76-3)
n-Heptane (C7) (142-82-5) *n*-Heneicosane (C21) (629-94-7)
n-Octane (C8) (111-65-9) *n*-Octacosane (C28) (630-02-4)
n-Decane (C10) (124-18-5) *n*-Pentatriacontane (C35) (630-07-9)
n-Dodecane (C12) (112-40-3)

200 µg/mL in pentane, 1 mL/ampul
 cat.# 31814 (ea.)

Retention Time Marker—Alaska (4 components)

n-Hexane (C6) (110-54-3) *n*-Pentacosane (C25) (629-99-2)
n-Decane (C10) (124-18-5) *n*-Hexatriacontane (C36) (630-06-8)

1,000 µg/mL in methylene chloride, 1 mL/ampul
 cat.# 31819 (ea.)

Alternate Boiling Point/Carbon Number Distribution Marker Stock Standard (9 components)

n-Hexane (C6) (110-54-3) *n*-Heneicosane (C21) (629-94-7)
n-Octane (C8) (111-65-9) *n*-Octacosane (C28) (630-02-4)
n-Decane (C10) (124-18-5) *n*-Pentatriacontane (C35) (630-07-9)
n-Dodecane (C12) (112-40-3) *n*-Hexatriacontane (C36) (630-06-8)
n-Hexadecane (C16) (544-76-3)

200 µg/mL each in pentane, 1 mL/ampul
 cat.# 31639 (ea.)

CCME F1 Retention Time Marker (3 components)

n-Hexane (C6) (110-54-3)
n-Decane (C10) (124-18-5)
 Toluene (108-88-3)

2,000 µg/mL each in methanol, 1 mL/ampul
 cat.# 30611 (ea.)



Sky[®]
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True Blue Performance

Exceptionally inert Sky[®] inlet liners with state-of-the-art deactivation improve trace-level analysis—**and now come with a 100% satisfaction guarantee!***

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* For details on our 100% satisfaction guarantee, visit www.restek.com/sky

Hydrocarbons, Petroleum, *cont.*

Total Petroleum Hydrocarbons (TPH)

Method 418.1 (Total Recoverable Petroleum Hydrocarbons [TRPH])

418.1 Calibration Mix (3 components)

Method 418.1 is an infrared spectrophotometric method for determining Total Recoverable Petroleum Hydrocarbons (TRPH). Dilute this mixture 1:200 to make the stock mixture specified in section 6.5.2 of Method 418.1.

Chlorobenzene (108-90-7)	25.0% (v/v)
<i>n</i> -Hexadecane (C16) (544-76-3)	37.5%
2,2,4-Trimethylpentane (isooctane) (540-84-1)	37.5%
1 mL/ampul	
cat.# 30080 (ea.)	

Miscellaneous

Glycols Standard (2 components)

Ethylene glycol (107-21-1)	
Propylene glycol (57-55-6)	
50,000 µg/mL each in DI water, 1 mL/ampul	
cat.# 30471 (ea.)	

NW TPH-Dx Surrogate Mix Standards

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

Compound	CAS #	Solvent	Conc.	cat.#
2-Fluorobiphenyl	321-60-8	D	10,000	31096
<i>o</i> -Terphenyl	84-15-1	D	10,000	31097
<i>p</i> -Terphenyl	92-94-4	D	10,000	31095
Pentacosane (C25)	629-99-2	D	10,000	31487

D = methylene chloride

TX TPH Locator Mix (3 components)

<i>n</i> -Hexane (C6) (110-54-3)	<i>n</i> -Octacosane (C28) (630-02-4)
<i>n</i> -Decane (C10) (124-18-5)	
200 µg/mL each in pentane, 1 mL/ampul	
cat.# 31482 (ea.)	

TX TPH Calibration Mix (2 components)

Diesel fuel #2 composite (68334-30-5)	
Unleaded gasoline composite (8006-61-9)	
10,000 µg/mL each in pentane, 1 mL/ampul	
cat.# 31483 (ea.)	

TX TPH Matrix Spike Mix (2 components)

Diesel fuel #2 composite (68334-30-5)	
Unleaded gasoline composite (8006-61-9)	
10,000 µg/mL each in P&T methanol, 1 mL/ampul	
cat.# 31484 (ea.)	

Miscellaneous, *cont.*

CCME PHC Calibration Mix (3 components)

- Meets CCME 2001 Petroleum Hydrocarbons in Soil Method—Tier 1.
- Primary reference calibration standards for quantification of four fractions.

<i>n</i> -Decane (C10) (124-18-5)	<i>n</i> -Tetraatriacontane (C34) (14167-59-0)
<i>n</i> -Hexadecane (C16) (544-76-3)	
5,000 µg/mL each in toluene, 1 mL/ampul	
cat.# 31684 (ea.)	

α,α,α -Trifluorotoluene

α,α,α -Trifluorotoluene (98-08-8)
2,000 µg/mL in P&T methanol, 1 mL/ampul
cat.# 30048 (ea.)
2,500 µg/mL in P&T methanol, 1 mL/ampul
cat.# 30068 (ea.)
10,000 µg/mL in P&T methanol, 1 mL/ampul
cat.# 30083 (ea.)

1-Chlorooctane

1-Chlorooctane (111-85-3)
10,000 µg/mL in P&T methanol, 1 mL/ampul
cat.# 30084 (ea.)

1-Chlorooctadecane

1-Chlorooctadecane (3386-33-2)
10,000 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31098 (ea.)

Weathered Petrochemical Solutions

See pages 480–481.

Compound Index for Reference Standards

See pages 586–592.



Isocyanates

ASTM Method D5836-03/OSHA 42, OSHA 47, NIOSH 5522 (Analysis of Isocyanates in Indoor Air by LC)

ASTM D5836 and OSHA 42 are test methods for determining 2,4-toluene diisocyanate (2,4-TDI) and 2,6-TDI in the workplace atmosphere. OSHA 47 is for 4,4'-methylenediphenyl isocyanate (4,4'-MDI) in indoor air, and NIOSH Method 5522 is for 2,4-TDI; 2,6-TDI; 4,4'-MDI; and 1,6-hexamethylene diisocyanate (1,6-HDI) in air. Restek offers the 1-(2-pyridyl) piperazine (1-2pp) derivative.

Isocyanates Singles

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

Compound	CAS #	Solvent	Conc.	cat.#
2,6-TDIP	195625-39-9	DMSO	1,000	33000
2,4-TDIP	72375-21-4	DMSO	1,000	33001
1,6-HDIP	72375-27-0	DMSO	1,000	33002
4,4'-MDIP	72375-24-7	DMSO	1,000	33003

DMSO = dimethyl sulfoxide

Jet Fuel

See page 514.

Kerosene

See page 514.

Ketones

VOA Calibration Mix #1 (ketones) (4 components)

Acetone (67-64-1)
2-Butanone (MEK) (78-93-3)
2-Hexanone (591-78-6)
4-Methyl-2-pentanone (MIBK) (108-10-1)

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

Ketones Mix, 524.2 Rev. 4.1 (5 components)

Acetone (67-64-1)
2-Butanone (MEK) (78-93-3)
1,1-Dichloro-2-propanone (513-88-2)
2-Hexanone (591-78-6)
4-Methyl-2-pentanone (MIBK) (108-10-1)

5,000 µg/mL each in P&T methanol:water (90:10), 1 mL/ampul
cat.# 30602 (ea.)

Quantity Discounts Available

- Buy 3 Standards, Get 10% Off
- Buy 5 Standards, Get 20% Off

Not available for all standards. Contact your local Restek® representative for more details.

Ketones, cont.

Aldehyde-Ketone-DNPH TO-11A Calibration Mix

(15 components)

Acetaldehyde-DNPH (1019-57-4)	Formaldehyde-DNPH (1081-15-8)
Acetone-DNPH (1567-89-1)	Hexaldehyde-DNPH (1527-97-5)
Acrolein-DNPH (888-54-0)	Isovaleraldehyde-DNPH (2256-01-1)
Benzaldehyde-DNPH (1157-84-2)	Propionaldehyde-DNPH (725-00-8)
<i>n</i> -Butyraldehyde-DNPH (1527-98-6)	<i>m</i> -Tolualdehyde-DNPH (2880-05-9)
Crotonaldehyde-DNPH (1527-96-4)	<i>o</i> -Tolualdehyde-DNPH (1773-44-0)
2,5-Dimethylbenzaldehyde-DNPH (152477-96-8)	<i>p</i> -Tolualdehyde-DNPH (2571-00-8)
	Valeraldehyde-DNPH (2057-84-3)

15 µg/mL each in acetonitrile, 1 mL/ampul*
cat.# 31808 (ea.)

*The reported concentrations reflect the amount of aldehyde or ketone in the mixture. The concentration of derivatized aldehyde or ketone is not reported.

Leaking Underground Storage Tank (LUST)

See pages 497-510.

Nitriles

8240 Nitriles Mix (7 components)

Acrylonitrile (107-13-1)	Methyl methacrylate (80-62-6)
Ethyl methacrylate (97-63-2)	Propionitrile (107-12-0)
Malononitrile (109-77-3)	Styrene (100-42-5)
Methacrylonitrile (126-98-7)	

2,000 µg/mL each in P&T methanol, 1 mL/ampul
cat.# 30215 (ea.)

Method 603 (Acrolein & Acrylonitrile)

Acrolein/Acrylonitrile (2 components)

Acrolein (107-02-8)
Acrylonitrile (107-13-1)

2,000 µg/mL each in DI water, 1 mL/ampul
cat.# 30600 (ea.)

Must ship overnight on ice.

This product has a limited shelf life. We recommend that you order only the ampul quantity that meets your immediate needs.

Acrolein

Acrolein (107-02-8)

5,000 µg/mL in P&T methanol, 1 mL/ampul
cat.# 30645 (ea.)

5,000 µg/mL in water, 1 mL/ampul
cat.# 30646 (ea.)

This product has a limited shelf life. We recommend that you order only the ampul quantity that meets your immediate needs.

Acrylonitrile

Acrylonitrile (107-13-1)

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

Nitroaromatics & Nitramines

See pages 486-487.

Nitrosamines

Method 521 (Nitrosamines)

Nitrosamine Calibration Mix, Method 521

(7 components)

N-Nitrosodiethylamine (55-18-5) N-Nitrosomethylethylamine (10595-95-6)
 N-Nitrosodimethylamine (62-75-9) N-Nitrosopiperidine (100-75-4)
 N-Nitrosodi-*n*-butylamine (924-16-3) N-Nitrosopyrrolidine (930-55-2)
 N-Nitrosodi-*n*-propylamine (621-64-7)

1,000 µg/mL each in methylene chloride, 1 mL/ampul
 cat.# 31898 (ea.)

N-Nitrosodimethylamine-d6

N-Nitrosodimethylamine-d6 (17829-05-9)

1,000 µg/mL in methylene chloride, 1 mL/ampul
 cat.# 33910 (ea.)

N-Nitrosodi-*n*-propylamine-d14

N-Nitrosodi-*n*-propylamine-d14 (93951-96-3)

1,000 µg/mL in methylene chloride, 1 mL/ampul
 cat.# 33911 (ea.)

Method 522 (1,4-Dioxane)

Tetrahydrofuran-d8

Tetrahydrofuran-d8 (1693-74-9)

2,000 µg/mL in P&T methanol, 1 mL/ampul
 cat.# 30112 (ea.)

1,4-Dioxane-d8

1,4-Dioxane-d8 (17647-74-4)

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

1,4-Dioxane

1,4-Dioxane (123-91-1)

2,000 µg/mL in P&T methanol, 1 mL/ampul
 cat.# 30287 (ea.)

2,000 µg/mL in methylene chloride, 1 mL/ampul

cat.# 31853 (ea.)

1.9 mg/mL in dimethyl sulfoxide, 1 mL/ampul

cat.# 36294 (ea.)

Method 607 (Nitrosamines)

607 Nitrosamines Calibration Mix (3 components)

N-Nitrosodimethylamine (62-75-9) N-Nitrosodiphenylamine (86-30-6)
 N-Nitroso-di-*n*-propylamine (621-64-7)

2,000 µg/mL each in methanol, 1 mL/ampul
 cat.# 31032 (ea.)

Oil & Grease

Method 1664 (Oil & Grease)

Method 1664 Oil & Grease Standard (2 components)

n-Hexadecane (C16) (544-76-3)
 Stearic acid (57-11-4)

2,000 µg/mL each in acetone, 10 mL/ampul
 cat.# 31954 (ea.)

Method 1664 Oil & Grease Mix (2 components)

n-Hexadecane (C16) (544-76-3)
 Stearic acid (57-11-4)

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



EPA 521 & 522 Cartridge



- Activated charcoal for extraction of nitrosamines and dioxane in drinking water.
- Batch tested to ensure low background and consistent recoveries.
- High-quality polypropylene tubes and frits to minimize interference.
- Specially treated charcoal and frits to minimize fines that result from inconsistent recoveries.

See page 398.

Disks are also available on page 402.



Organometallics/Organotin

Complete data pack available for audit compliance.

Butyltin Chloride Calibration Mixture (4 components)

n-Butyltin trichloride (1118-46-3) Tetrabutyltin (1461-25-2)
Dibutyltin dichloride (683-18-1) Tributyltin chloride (1461-22-9)

2,000 µg/mL each in methylene chloride, 1 mL/ampul
cat.# 31472 (ea.)

Tributyltin Chloride Calibration Mixture

Tributyltin chloride (1461-22-9)
2,000 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31478 (ea.)

Phenyltin Chloride Calibration Mixture (4 components)

Diphenyltin dichloride (1135-99-5) Tetraphenyltin (595-90-4)
Phenyltin trichloride (1124-19-2) Triphenyltin chloride (639-58-7)

2,000 µg/mL each in methylene chloride, 1 mL/ampul
cat.# 31473 (ea.)

Tri-*n*-propyltin Chloride Surrogate

Tri-*n*-propyltin chloride
2,000 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31476 (ea.)

Tripentyltin Chloride Surrogate

Tripentyltin chloride (3342-67-4)
2,000 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31477 (ea.)

Tetra-*n*-propyltin Internal Standard

Tetra-*n*-propyltin (2176-98-9)
2,000 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31474 (ea.)

Oxygenates/Ethers

California Oxygenates Mix (5 components)

tert-Amyl methyl ether (TAME) (994-05-8) 2,000 µg/mL
tert-Butanol (TBA) (75-65-0) 10,000
Diisopropyl ether (DIPE) (108-20-3) 2,000
Ethyl-*tert*-butyl ether (ETBE) (637-92-3) 2,000
Methyl *tert*-butyl ether (MTBE) (1634-04-4) 2,000

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

Oxygenates (6 components)

tert-Amyl ethyl ether (TAE) (919-94-8) 2,000 µg/mL
tert-Amyl methyl ether (TAME) (994-05-8) 2,000
tert-Butanol (TBA) (75-65-0) 10,000
Diisopropyl ether (DIPE) (108-20-3) 2,000
Ethyl-*tert*-butyl ether (ETBE) (637-92-3) 2,000
Methyl *tert*-butyl ether (MTBE) (1634-04-4) 2,000

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

Single-Component Oxygenates

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

Compound	CAS #	Solvent	Conc.	cat.#
<i>tert</i> -Amyl alcohol	75-85-4	PTM	10,000	30631
<i>tert</i> -Amyl ethyl ether (TAE)	919-94-8	PTM	2,000	30617
<i>tert</i> -Amyl methyl ether (TAME)	994-05-8	PTM	2,000	30629
<i>tert</i> -Butanol (TBA)	75-65-0	PTM	50,000	30470
<i>tert</i> -Butanol- <i>d</i> ₉	25725-11-5	PTM	20,000	30618
Diisopropyl ether (DIPE)	108-20-3	PTM	2,000	30627
Ethanol	64-17-5	PTM	2,000	30288
Ethanol	64-17-5	W	10,000	30466
Ethyl- <i>tert</i> -butyl ether (ETBE)	637-92-3	PTM	2,000	30628
Methanol	67-56-1	W	10,000	30467
Methyl <i>tert</i> -butyl ether (MTBE)	1634-04-4	PTM	2,000	30402

PTM = purge-and-trap grade methanol; W = DI water



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Pesticides, Carbamate

Method 531.1, 531.2 (Carbamates)

531.1 Internal Standard

4-Bromo-3,5-dimethylphenyl-N-methylcarbamate (BDMC) (672-99-1)

100 µg/mL in methanol, 1 mL/ampul

cat.# 32274 (ea.)

531.1 Performance Check Mix (4 components)

Aldicarb sulfoxide	100 µg/mL	3-Hydroxycarbofuran	2
BDMC	10	Methiocarb	20

In methanol, 1 mL/ampul

cat.# 32275 (ea.)

531.1 Carbamate Pesticide Calibration Mixture

(10 components)

Aldicarb (116-06-3)	3-Hydroxycarbofuran (16655-82-6)
Aldicarb sulfone (1646-88-4)	Methiocarb (2032-65-7)
Aldicarb sulfoxide (1646-87-3)	Methomyl (16752-77-5)
Carbaryl (Sevin) (63-25-2)	Oxamyl (23135-22-0)
Carbofuran (1563-66-2)	Propoxur (Baygon) (114-26-1)

100 µg/mL each in methanol, 1 mL/ampul

cat.# 32273 (ea.)

531.2 Carbamate Pesticide Calibration Mixture

(11 components)

- Complete set of materials for N-methylcarbamoyloximes and N-methylcarbamates.
- New mix satisfies latest update of EPA Method 531.2.
- Formulated in acetonitrile for stability and convenience for LC analysis.

Aldicarb (116-06-3)	Methiocarb (2032-65-7)
Aldicarb sulfone (1646-88-4)	Methomyl (16752-77-5)
Aldicarb sulfoxide (1646-87-3)	1-Naphthol (90-15-3)
Carbaryl (Sevin) (63-25-2)	Oxamyl (23135-22-0)
Carbofuran (1563-66-2)	Propoxur (Baygon) (114-26-1)
3-Hydroxycarbofuran (16655-82-6)	

100 µg/mL in acetonitrile, 1 mL/ampul

cat.# 32435 (ea.)

Pesticides, Chlordane & Toxaphene

Chlordane, Toxaphene Solutions

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

Compound	CAS #	Solvent	Conc.	cat.#
Chlordane	57-74-9	H	1,000	32021
Chlordane	57-74-9	I	5,000	32072
Chlordane	57-74-9	M	2,000	32016
Toxaphene	8001-35-2	H	1,000	32005
Toxaphene	8001-35-2	I	5,000	32071
Toxaphene	8001-35-2	M	2,000	32015

H = hexane; I = isoctane; M = methanol

Pesticides, Chlorinated Disinfection By-Products, Pesticides & Herbicides

Method 551 (Chlorinated Disinfection By-Products, Pesticides & Herbicides)

551.1 Surrogate Standard

Decafluorobiphenyl (434-90-2)

1,000 µg/mL in acetone, 1 mL/ampul

cat.# 31855 (ea.)

Method 551.1 Pesticide/Herbicide Mix (16 components)

Alachlor (15972-60-8)	Heptachlor epoxide (isomer B) (1024-57-3)
Atrazine (1912-24-9)	Hexachlorobenzene (118-74-1)
Bromacil (314-40-9)	Hexachlorocyclopentadiene (77-47-4)
Cyanazine (Bladex) (21725-46-2)	Methoxychlor (72-43-5)
Endrin (72-20-8)	Metolachlor (51218-45-2)
Endrin aldehyde (7421-93-4)	Simazine (122-34-9)
Endrin ketone (53494-70-5)	Trifluralin (1582-09-8)
γ-BHC (Lindane) (58-89-9)	
Heptachlor (76-44-8)	

1,000 µg/mL each in acetone, 1 mL/ampul

cat.# 32438 (ea.)

Chloral Hydrate

Chloral hydrate (302-17-0)

1,000 µg/mL in acetonitrile, 1 mL/ampul

cat.# 30609 (ea.)

Disinfection By-Product Mix (7 components)

Bromochloroacetonitrile (83463-62-1)	1,1-Dichloro-2-propanone (513-88-2)
Chloropicrin (76-06-2)	Trichloroacetonitrile (545-06-2)
Dibromoacetonitrile (3252-43-5)	1,1,1-Trichloro-2-propanone (918-00-3)
Dichloroacetonitrile (3018-12-0)	

2,000 µg/mL each in acetone, 1 mL/ampul

cat.# 30616 (ea.)

Reference Standards Documentation Search

Search by cat. # or lot #

- SDSs
- Certificates
- Data packs

www.restek.com/documentation



Pesticides, Chlorinated/Organochlorine/Organohalide

Method 508 (Chlorinated Pesticides)

508.1 Internal Standard

Pentachloronitrobenzene (82-68-8)

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

cat.# 32091 (ea.)

508.1 Surrogate

4,4'-Dibromobiphenyl (92-86-4)

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

cat.# 32092 (ea.)

508.1 GC Degradation Check Mix (2 components)

4,4'-DDT (50-29-3)

Endrin (72-20-8)

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

cat.# 32093 (ea.)

508 Performance Check Mix (4 components)

δ-BHC (319-86-8)

0.4 µg/mL

DCPA methyl ester (Chlorthal-dimethyl)

Chlorothalonil (1897-45-6)

0.5

(1861-32-1)

0.5

Chlorpyrifos (2921-88-2)

0.02

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

cat.# 32045 (ea.)

508.1 Calibration Mix #1 (17 components)

Aldrin (309-00-2)

Endosulfan I (959-98-8)

α-BHC (319-84-6)

Endosulfan II (33213-65-9)

β-BHC (319-85-7)

Endosulfan sulfate (1031-07-8)

δ-BHC (319-86-8)

Endrin (72-20-8)

γ-BHC (Lindane) (58-89-9)

Endrin aldehyde (7421-93-4)

4,4'-DDD (72-54-8)

Heptachlor (76-44-8)

4,4'-DDE (72-55-9)

Heptachlor epoxide (isomer B)

4,4'-DDT (50-29-3)

(1024-57-3)

Dieldrin (60-57-1)

Methoxychlor (72-43-5)

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

cat.# 32094 (ea.)

508.1 Calibration Mix #2 (11 components)

Chlorobenzilate (510-15-6)

Etridiazole (2593-15-9)

cis-Chlordane (5103-71-9)

Hexachlorobenzene (118-74-1)

trans-Chlordane (5103-74-2)

cis-Permethrin* (52645-53-1)

Chloroneb (2675-77-6)

trans-Permethrin* (52645-53-1)

DCPA methyl ester (Chlorthal-dimethyl)

Propachlor (1918-16-7)

(1861-32-1)

Trifluralin (1582-09-8)

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

cat.# 32095 (ea.)

*500 µg/mL total permethrin. Exact content of each isomer is listed on certificate of analysis.

508.1 Calibration Mix #3 (8 components)

Alachlor (15972-60-8)

Hexachlorocyclopentadiene (77-47-4)

Atrazine (1912-24-9)

Metolachlor (51218-45-2)

Chlorothalonil (1897-45-6)

Metribuzin (21087-64-9)

Cyanazine (bladex) (21725-46-2)

Simazine (122-34-9)

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

cat.# 32096 (ea.)

Toxaphene Solutions

Toxaphene (8001-35-2)

1,000 µg/mL in hexane, 1 mL/ampul

cat.# 32005 (ea.)

2,000 µg/mL in methanol, 1 mL/ampul

cat.# 32015 (ea.)

5,000 µg/mL in isooctane, 1 mL/ampul

cat.# 32071 (ea.)

Organochlorine Pesticide System Evaluation Mix

(2 components)

- Designed for daily assessment of system performance.
- Reveals active sites in the injection port and/or GC column.
- Prepared in MTBE—low expansion volume helps minimize backflash.

4,4'-DDT (50-29-3)

200 µg/mL

Endrin (72-20-8)

100 µg/mL

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

cat.# 32417 (ea.)

Decachlorobiphenyl, 508A

Decachlorobiphenyl (BZ #209) (2051-24-3)

200 µg/mL in acetone, 1 mL/ampul

cat.# 32029 (ea.)

200 µg/mL in acetone, 5 mL/ampul

cat.# 32030 (ea.)

10 µg/mL in isooctane, 1 mL/ampul

cat.# 32289 (ea.)

508.1 Pesticide Kit

Contains 1 mL each of these mixtures.

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

cat.# 32097 (kit)

kit



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Pesticides, Chlorinated/Organochlorine/Organohalide, *cont.*

Method 508 (Chlorinated Pesticides), *cont.*

Endrin Standard

Endrin (72-20-8)
1,000 µg/mL in acetone, 1 mL/ampul
cat.# 32463 (ea.)

Endrin Ketone Standard

Endrin ketone (53494-70-5)
1,000 µg/mL in acetone, 1 mL/ampul
cat.# 32464 (ea.)

Endosulfan I Standard

Endosulfan I (959-98-8)
1,000 µg/mL in acetone, 1 mL/ampul
cat.# 32465 (ea.)

Endosulfan II Standard

Endosulfan II (33213-65-9)
1,000 µg/mL in acetone, 1 mL/ampul
cat.# 32466 (ea.)

Endosulfan Sulfate Standard

Endosulfan sulfate (1031-07-8)
1,000 µg/mL in acetone, 1 mL/ampul
cat.# 32467 (ea.)

Endrin Aldehyde Standard

Endrin aldehyde (7421-93-4)
1,000 µg/mL in acetone, 1 mL/ampul
cat.# 32468 (ea.)

Method 505 (Organohalide Pesticides & PCBs)

505 Organohalide Pesticide Mix (16 components)

Aldrin (309-00-2)	Heptachlor epoxide (isomer B) (1024-57-3)
Alachlor (15972-60-8)	Hexachlorobenzene (118-74-1)
Atrazine (1912-24-9)	Hexachlorocyclopentadiene (77-47-4)
γ-BHC (Lindane) (58-89-9)	Methoxychlor (72-43-5)
cis-Chlordane (5103-71-9)	cis-Nonachlor (5103-73-1)
trans-Chlordane (5103-74-2)	trans-Nonachlor (39765-80-5)
Dieldrin (60-57-1)	Simazine (122-34-9)
Endrin (72-20-8)	
Heptachlor (76-44-8)	

200 µg/mL each in methanol, 1 mL/ampul
cat.# 32024 (ea.)

Toxaphene Solutions

See cat.#s 32005, 32015, and 32071 on page 521.

Method 608 (Organochlorine Pesticides & PCBs)

608 Calibration Mix (16 components)

Aldrin (309-00-2)	Endosulfan I (959-98-8)
α-BHC (319-84-6)	Endosulfan II (33213-65-9)
β-BHC (319-85-7)	Endosulfan sulfate (1031-07-8)
δ-BHC (319-86-8)	Endrin (72-20-8)
γ-BHC (Lindane) (58-89-9)	Endrin aldehyde (7421-93-4)
4,4'-DDD (72-54-8)	Heptachlor (76-44-8)
4,4'-DDE (72-55-9)	Heptachlor epoxide (isomer B) (1024-57-3)
4,4'-DDT (50-29-3)	
Dieldrin (60-57-1)	

200 µg/mL each in hexane:toluene (1:1), 1 mL/ampul
cat.# 32022 (ea.)

608 Complete Kit

Contains 1 mL each of these mixtures.

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

Contains 1 mL each of these mixtures.

cat.# 32060 (kit)

kit



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Pesticides, Chlorinated/Organochlorine/Organohalide, *cont.*

Method 8080, 8081 (Chlorinated Pesticides)

Organochlorine Pesticide Mix AB #1 (20 components)

Aldrin (309-00-2)	Endosulfan I (959-98-8)
α -BHC (319-84-6)	Endosulfan II (33213-65-9)
β -BHC (319-85-7)	Endosulfan sulfate (1031-07-8)
δ -BHC (319-86-8)	Endrin (72-20-8)
γ -BHC (Lindane) (58-89-9)	Endrin aldehyde (7421-93-4)
<i>cis</i> -Chlordane (5103-71-9)	Endrin ketone (53494-70-5)
<i>trans</i> -Chlordane (5103-74-2)	Heptachlor (76-44-8)
4,4'-DDD (72-54-8)	Heptachlor epoxide (isomer B) (1024-57-3)
4,4'-DDE (72-55-9)	Methoxychlor (72-43-5)
4,4'-DDT (50-29-3)	
Dieldrin (60-57-1)	

200 μ g/mL each in hexane:toluene (1:1), 1 mL/ampul
cat.# 32291 (ea.)

Organochlorine Pesticide Mix AB #2 (20 components)

Aldrin (309-00-2)	8 μ g/mL	Endosulfan I (959-98-8)	8
α -BHC (319-84-6)	8	Endosulfan II (33213-65-9)	16
β -BHC (319-85-7)	8	Endosulfan sulfate (1031-07-8)	16
δ -BHC (319-86-8)	8	Endrin (72-20-8)	16
γ -BHC (Lindane) (58-89-9)	8	Endrin aldehyde (7421-93-4)	16
<i>cis</i> -Chlordane (5103-71-9)	8	Endrin ketone (53494-70-5)	16
<i>trans</i> -Chlordane (5103-74-2)	8	Heptachlor (76-44-8)	8
4,4'-DDD (72-54-8)	16	Heptachlor epoxide (isomer B) (1024-57-3)	8
4,4'-DDE (72-55-9)	16	Methoxychlor (72-43-5)	80
4,4'-DDT (50-29-3)	16		
Dieldrin (60-57-1)	16		

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

cat.# 32292 (ea.)

Organochlorine Pesticide Mix AB #3 (20 components)

Aldrin (309-00-2)	Endosulfan I (959-98-8)
α -BHC (319-84-6)	Endosulfan II (33213-65-9)
β -BHC (319-85-7)	Endosulfan sulfate (1031-07-8)
δ -BHC (319-86-8)	Endrin (72-20-8)
γ -BHC (Lindane) (58-89-9)	Endrin aldehyde (7421-93-4)
<i>cis</i> -Chlordane (5103-71-9)	Endrin ketone (53494-70-5)
<i>trans</i> -Chlordane (5103-74-2)	Heptachlor (76-44-8)
4,4'-DDD (72-54-8)	Heptachlor epoxide (isomer B) (1024-57-3)
4,4'-DDE (72-55-9)	Methoxychlor (72-43-5)
4,4'-DDT (50-29-3)	
Dieldrin (60-57-1)	

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

cat.# 32415 (ea.)

Pesticide Surrogate Mix (2 components)

Decachlorobiphenyl (2051-24-3)
2,4,5,6-Tetrachloro-*m*-xylene (877-09-8)

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

cat.# 32000 (ea.)

200 μ g/mL each in acetone, 5 mL/ampul

cat.# 32457 (ea.)

Pesticide Surrogate Mix (2 components)

Decachlorobiphenyl (2051-24-3) 200 μ g/mL
2,4,5,6-Tetrachloro-*m*-xylene (877-09-8) 100

In acetone, 1 mL/ampul

cat.# 32453 (ea.)

TCLP Pesticide Mix (5 components)

γ -BHC (Lindane) (58-89-9) Heptachlor epoxide (isomer B) (1024-57-3)
Endrin (72-20-8)
Heptachlor (76-44-8) Methoxychlor (72-43-5)

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

cat.# 32013 (ea.)

TCLP Toxaphene Mix

Toxaphene (8001-35-2)

2,000 μ g/mL in methanol, 1 mL/ampul

cat.# 32015 (ea.)

TCLP Chlordane Mix

Chlordane (57-74-9)

2,000 μ g/mL in methanol, 1 mL/ampul

cat.# 32016 (ea.)

SOM01.1 (Pesticides), QA Mixes

Pesticide Surrogate Mix (2 components)

Decachlorobiphenyl (2051-24-3) 200 μ g/mL
2,4,5,6-Tetrachloro-*m*-xylene (877-09-8) 100

In acetone, 1 mL/ampul

cat.# 32453 (ea.)

Organochlorine Pesticide Resolution Check Mix (with surrogates) (22 components)

Aldrin (309-00-2)	10 μ g/mL	Endosulfan I (959-98-8)	10
α -BHC (319-84-6)	10	Endosulfan II (33213-65-9)	20
β -BHC (319-85-7)	10	Endosulfan sulfate (1031-07-8)	20
δ -BHC (319-86-8)	10	Endrin (72-20-8)	20
γ -BHC (Lindane) (58-89-9)	10	Endrin aldehyde (7421-93-4)	20
<i>cis</i> -Chlordane (5103-71-9)	10	Endrin ketone (53494-70-5)	20
<i>trans</i> -Chlordane (5103-74-2)	10	Heptachlor (76-44-8)	10
Decachlorobiphenyl (SS) (2051-24-3)	20	Heptachlor epoxide (isomer B) (1024-57-3)	10
Dieldrin (60-57-1)	20	Methoxychlor (72-43-5)	100
4,4'-DDD (72-54-8)	20	2,4,5,6-Tetrachloro- <i>m</i> -xylene (SS) (877-09-8)	10
4,4'-DDE (72-55-9)	20		
4,4'-DDT (50-29-3)	20		

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

cat.# 32454 (ea.)

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See **pages 72–73**.



Pesticides, Chlorinated/Organochlorine/Organohalide, *cont.*

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

Pesticide Surrogate Mix (2 components)

See cat.#s 32000 and 32457 on page 524.

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

2,4,5,6-Tetrachloro-*m*-xylene (877-09-8)

200 µg/mL in acetone, 1 mL/ampul

cat.# 32027 (ea.)

200 µg/mL in acetone, 5 mL/ampul

cat.# 32028 (ea.)

Decachlorobiphenyl (BZ #209)

Decachlorobiphenyl (BZ #209) (2051-24-3)

200 µg/mL in acetone, 1 mL/ampul

cat.# 32029 (ea.)

200 µg/mL in acetone, 5 mL/ampul

cat.# 32030 (ea.)

10 µg/mL in isooctane, 1 mL/ampul

cat.# 32289 (ea.)

Dibutylchlorendate

Dibutylchlorendate (1770-80-5)

200 µg/mL in acetone, 1 mL/ampul

cat.# 32025 (ea.)

Florisil® Cartridge Check Standard (2,4,5-Trichlorophenol)

2,4,5-Trichlorophenol (95-95-4)

1,000 µg/mL in acetone, 1 mL/ampul

cat.# 32017 (ea.)

Organochlorine Pesticide System Evaluation Mix

(2 components)

- Designed for daily assessment of system performance.
- Reveals active sites in the injection port and/or GC column.
- Prepared in MTBE—low expansion volume helps minimize backflash.

4,4'-DDT (50-29-3) 200 µg/mL
Endrin (72-20-8) 100 µg/mL

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

cat.# 32417 (ea.)

Pesticide Performance Evaluation Mix (6 components)

α-BHC (319-84-6)	1 µg/mL	4,4'-DDT (50-29-3)	10
β-BHC (319-85-7)	1	Endrin (72-20-8)	5
γ-BHC (Lindane) (58-89-9)	1	Methoxychlor (72-43-5)	25

In hexane, 1 mL/ampul

cat.# 32002 (ea.)

Pesticide Performance Evaluation Mix w/Surrogates

(8 components)

α-BHC (319-84-6)	1 µg/mL	Endrin (72-20-8)	5
β-BHC (319-85-7)	1	Methoxychlor (72-43-5)	25
γ-BHC (Lindane) (58-89-9)	1	2,4,5,6-Tetrachloro- <i>m</i> -xylene (SS) (877-09-8)	2
4,4'-DDT (50-29-3)	10		
Decachlorobiphenyl (SS) (2051-24-3)	2		

In hexane, 1 mL/ampul

cat.# 32074 (ea.)



tech tip

Working with solutions containing decachlorobiphenyl

Decachlorobiphenyl has poor solubility in most organic solvents. The maximum concentration that can be prepared in acetone, hexane, or isooctane is 200 µg/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 (6 components)

Aldrin (309-00-2)	25 µg/mL	Dieldrin (60-57-1)	50
γ-BHC (Lindane) (58-89-9)	25	Endrin (72-20-8)	50
4,4'-DDT (50-29-3)	50	Heptachlor (76-44-8)	25

In acetone, 1 mL/ampul

cat.# 32018 (ea.)



For complete listing of PCB reference standards, see pages 530–531.

Low-Concentration Pesticides Mixtures, QA Mixes

L/C Pesticide Lab Control Sample (7 components)

γ-BHC (Lindane) (58-89-9)	10 µg/mL	Endosulfan sulfate (1031-07-8)	20
<i>trans</i> -Chlordane (5103-74-2)	10	Endrin (72-20-8)	20
4,4'-DDE (72-55-9)	20	Heptachlor epoxide (isomer B) (1024-57-3)	10
Dieldrin (60-57-1)	20		

In acetone, 1 mL/ampul

cat.# 32040 (ea.)

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See pages 568–571.

Pesticides, Chlorinated/Organochlorine/Organohalide, *cont.*

CLP Pesticides Mixtures, Calibration Mixes

Pesticide Standard Mix A (9 components)

α -BHC (319-84-6)	5 μ g/mL	Endosulfan I (959-98-8)	5
γ -BHC (Lindane) (58-89-9)	5	Endrin (72-20-8)	10
4,4'-DDD (72-54-8)	10	Heptachlor (76-44-8)	5
4,4'-DDT (50-29-3)	10	Methoxychlor (72-43-5)	50
Dieldrin (60-57-1)	10		

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

cat.# 32297 (ea.)

Pesticide Standard Mix B (11 components)

Aldrin (309-00-2)	5 μ g/mL	Endosulfan II (33213-65-9)	10
β -BHC (319-85-7)	5	Endosulfan sulfate (1031-07-8)	10
δ -BHC (319-86-8)	5	Endrin aldehyde (7421-93-4)	10
<i>cis</i> -Chlordane (5103-71-9)	5	Endrin ketone (53494-70-5)	10
<i>trans</i> -Chlordane (5103-74-2)	5	Heptachlor epoxide (isomer B)	
4,4'-DDE (72-55-9)	10	(1024-57-3)	5

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

cat.# 32298 (ea.)

Organochlorine Pesticide Mix AB #1 (20 components)

Aldrin (309-00-2)	Endosulfan I (959-98-8)
α -BHC (319-84-6)	Endosulfan II (33213-65-9)
β -BHC (319-85-7)	Endosulfan sulfate (1031-07-8)
δ -BHC (319-86-8)	Endrin (72-20-8)
γ -BHC (Lindane) (58-89-9)	Endrin aldehyde (7421-93-4)
<i>cis</i> -Chlordane (5103-71-9)	Endrin ketone (53494-70-5)
<i>trans</i> -Chlordane (5103-74-2)	Heptachlor (76-44-8)
4,4'-DDD (72-54-8)	Heptachlor epoxide (isomer B)
4,4'-DDE (72-55-9)	(1024-57-3)
4,4'-DDT (50-29-3)	Methoxychlor (72-43-5)
Dieldrin (60-57-1)	

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

cat.# 32291 (ea.)

Organochlorine Pesticide Mix AB #2 (20 components)

Aldrin (309-00-2)	8 μ g/mL	Endosulfan I (959-98-8)	8
α -BHC (319-84-6)	8	Endosulfan II (33213-65-9)	16
β -BHC (319-85-7)	8	Endosulfan sulfate (1031-07-8)	16
δ -BHC (319-86-8)	8	Endrin (72-20-8)	16
γ -BHC (Lindane) (58-89-9)	8	Endrin aldehyde (7421-93-4)	16
<i>cis</i> -Chlordane (5103-71-9)	8	Endrin ketone (53494-70-5)	16
<i>trans</i> -Chlordane (5103-74-2)	8	Heptachlor (76-44-8)	8
4,4'-DDD (72-54-8)	16	Heptachlor epoxide (isomer B)	
4,4'-DDE (72-55-9)	16	(1024-57-3)	8
4,4'-DDT (50-29-3)	16	Methoxychlor (72-43-5)	80
Dieldrin (60-57-1)	16		

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

cat.# 32292 (ea.)

Organochlorine Pesticide Mix AB #3 (20 components)

Aldrin (309-00-2)	Endosulfan I (959-98-8)
α -BHC (319-84-6)	Endosulfan II (33213-65-9)
β -BHC (319-85-7)	Endosulfan sulfate (1031-07-8)
δ -BHC (319-86-8)	Endrin (72-20-8)
γ -BHC (Lindane) (58-89-9)	Endrin aldehyde (7421-93-4)
<i>cis</i> -Chlordane (5103-71-9)	Endrin ketone (53494-70-5)
<i>trans</i> -Chlordane (5103-74-2)	Heptachlor (76-44-8)
4,4'-DDD (72-54-8)	Heptachlor epoxide (isomer B)
4,4'-DDE (72-55-9)	(1024-57-3)
4,4'-DDT (50-29-3)	Methoxychlor (72-43-5)
Dieldrin (60-57-1)	

2,000 μ g/mL each in hexane:toluene (1:1), 1 mL/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 (319-84-6)	8 μ g/mL	Endosulfan I (959-98-8)	8
γ -BHC (Lindane) (58-89-9)	8	Endrin (72-20-8)	16
4,4'-DDD (72-54-8)	16	Heptachlor (76-44-8)	8
4,4'-DDT (50-29-3)	16	Methoxychlor (72-43-5)	80
Decachlorobiphenyl (SS) (2051-24-3)	16	2,4,5,6-Tetrachloro- <i>m</i> -xylene (SS)	
Dieldrin (60-57-1)	16	(877-09-8)	8

In hexane, 1 mL/ampul

cat.# 32003 (ea.)

Pesticide Standard Mix B w/Surrogates (13 components)

Aldrin (309-00-2)	8 μ g/mL	Endosulfan sulfate (1031-07-8)	16
β -BHC (319-85-7)	8	Endrin aldehyde (7421-93-4)	16
δ -BHC (319-86-8)	8	Endrin ketone (53494-70-5)	16
<i>cis</i> -Chlordane (5103-71-9)	8	Heptachlor epoxide (isomer B)	
<i>trans</i> -Chlordane (5103-74-2)	8	(1024-57-3)	8
4,4'-DDE (72-55-9)	16	2,4,5,6-Tetrachloro- <i>m</i> -xylene (SS)	
Decachlorobiphenyl (SS) (2051-24-3)	16	(877-09-8)	8
Endosulfan II (33213-65-9)	16		

In hexane, 1 mL/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.

Contains 1 mL each of these mixtures.

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

cat.# 32404 (kit)

kit

Chlordane & Toxaphene Solutions

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

Compound	CAS #	Solvent	Conc.	cat.#
Chlordane	57-74-9	H	1,000	32021
Chlordane	57-74-9	I	5,000	32072
Chlordane	57-74-9	M	2,000	32016
Toxaphene	8001-35-2	H	1,000	32005
Toxaphene	8001-35-2	I	5,000	32071
Toxaphene	8001-35-2	M	2,000	32015

H = hexane; I = isooctane; M = methanol

Pesticides, Nitrogen & Phosphorus

Method 507 (Nitrogen & Phosphorus Pesticides)

Organonitrogen Pesticide Mix #1 (Rev), Method 525.2 (37 components)

Alachlor (15972-60-8)	Molinat (2212-67-1)
Ametryn (834-12-8)	Napropamide (Devrinol) (15299-99-7)
Atraton (1610-17-9)	Norflurazon (27314-13-2)
Atrazine (1912-24-9)	Pebulate (1114-71-2)
Bromacil (314-40-9)	Prometon (1610-18-0)
Butachlor (23184-66-9)	Prometryne (7287-19-6)
Butylate (2008-41-5)	Propachlor (1918-16-7)
Chlorpropham (101-21-3)	Propazine (139-40-2)
Cyanazine (Bladex) (21725-46-2)	Propyzamide (23950-58-5)
Cycloate (1134-23-2)	Simazine (122-34-9)
Diphenamid (957-51-7)	Simetryn (1014-70-6)
EPTC (759-94-4)	Tebuthiuron (34014-18-1)
Etridiazole (2593-15-9)	Terbacil (5902-51-2)
Fenarimol (60168-88-9)	Terbutryn (886-50-0)
Fluridone (Sonar) (59756-60-4)	Triadimefon (43121-43-3)
Hexazinone (Velpar) (51235-04-2)	Tricyclazole (Beam) (41814-78-2)
Metolachlor (51218-45-2)	Trifluralin (1582-09-8)
Metribuzin (21087-64-9)	Vernolate (1929-77-7)
MGK-264 (113-48-4)	

500 µg/mL each in acetone, 1 mL/ampul

cat.# 33012 (ea.)

Organophosphorus Pesticide Mix #1 (Rev), Method 525.2 (7 components)

Chlorpyrifos (2921-88-2)	Methyl paraoxon (Parathion methyl-O-analog) (950-35-6)
Dichlorvos (DDVP) (62-73-7)	Mevinphos (7786-34-7)
Disulfoton sulfone (2497-06-5)	Stirofos (tetrachlorvinphos) (961-11-5)
Ethoprop (ethoprophos) (13194-48-4)	

500 µg/mL each in acetone, 1 mL/ampul

cat.# 33013 (ea.)

Method 525.2 Nitrogen/Phosphorus Pesticide Mix #2 (6 components)

Carboxin (5234-68-4)	Fenamiphos (22224-92-6)
Diazinon (333-41-5)	Merphos (150-50-5)
Disulfoton (298-04-4)	Terbufos (13071-79-9)

1,000 µg/mL each in acetone, 1 mL/ampul

cat.# 32423 (ea.)

Compound Index for Reference Standards

See pages 586–592.



Pesticides, Organophosphorus

Method 8140, 8141 (Organophosphorus Pesticides)

The preparation of accurate and stable OP standards is complicated by their sensitivity to light, pH, heat, and water. Restek has overcome these issues through our ongoing research into OP pesticide mixtures to save your lab time and effort.

- Solvents are assayed to ensure low water content.
- Reference mixtures are stored in deactivated amber ampuls, under an inert atmosphere.
- Purity is determined by a combination of methods: GC-FID, HPLC, GC-ECD, GC-MS, LC-MS, refractive index, and melting point.

8140/8141 Internal Standards & Surrogates

NPD Detector:

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

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

1,000 µg/mL in acetone, 1 mL/ampul

cat.# 32279 (ea.)

1,000 µg/mL in acetone, 1 mL/ampul

cat.# 32282 (ea.)

FPD Detector:

Internal Standard: None recommended

Surrogate: Tributylphosphate (cat.# 32280) and Triphenylphosphate (cat.# 32281)

1,000 µg/mL in acetone, 1 mL/ampul

cat.# 32280 (ea.)

1,000 µg/mL in acetone, 1 mL/ampul

cat.# 32281 (ea.)

8140/8141 OP Pesticide Calibration Mix A

(20 components)

Azinphos methyl (86-50-0)	Fenthion (55-38-9)
Chlorpyrifos (2921-88-2)	Merphos (150-50-5)
Coumaphos (56-72-4)	Methyl parathion (298-00-0)
Demeton, O & S (8065-48-3)	Mevinphos (7786-34-7)
Diazinon (333-41-5)	Naled (300-76-5)
Dichlorvos (DDVP) (62-73-7)	Phorate (298-02-2)
Disulfoton (298-04-4)	Prothiofos (34643-46-4)
Ethoprophos (13194-48-4)	Stirofos (tetrachlorvinphos) (961-11-5)
Fenchlorphos (Ronnel) (299-84-3)	Sulprofos (35400-43-2)
Fensulfthion (115-90-2)	Trichloronate (327-98-0)

200 µg/mL each in hexane:acetone (95:5), 1 mL/ampul

cat.# 32277 (ea.)

8141 OP Pesticide Calibration Mix B (7 components)

Dimethoate (60-51-5)	Parathion (ethyl parathion) (56-38-2)
EPN (2104-64-5)	Sulfotepp (3689-24-5)
Malathion (121-75-5)	TEPP (tetraethylpyrophosphate) (107-49-3)
Monocrotophos (6923-22-4)	

200 µg/mL each in hexane:acetone (95:5), 1 mL/ampul

cat.# 32278 (ea.)

Pesticides, Organophosphorus, *cont.*

International-Specific

Canadian Drinking Water OP Pesticides Mix

(9 components)

Azinphos methyl (86-50-0)	Parathion (ethyl parathion) (56-38-2)
Chlorpyrifos (2921-88-2)	Phorate (298-02-2)
Diazinon (333-41-5)	Temephos (Abate) (3383-96-8)
Dimethoate (60-51-5)	Terbufos (13071-79-9)
Malathion (121-75-5)	
1,000 µg/mL each in acetonitrile, 1 mL/ampul	
cat.# 31867 (ea.)	

Organophosphorus Pesticide Mix, European Formulation (16 components)

Acephate (30560-19-1)	200 µg/mL	Methamidophos (10265-92-6)	500
Azinphos methyl (86-50-0)	400	Methidathion (950-37-8)	200
Chlorpyrifos (2921-88-2)	100	Omethoate (1113-02-6)	1,000
Demeton-S-methyl (919-86-8)	200	Pirimiphos methyl (29232-93-7)	100
Dichlorvos (DDVP) (62-73-7)	500	Profenofos (41198-08-7)	200
Dimethoate (60-51-5)	200	Prothiofos (34643-46-4)	200
Ethion (563-12-2)	200	Pyrazophos (13457-18-6)	500
Malathion (121-75-5)	200	Tolclofos-methyl (57018-04-9)	100
In acetone, 1 mL/ampul			
cat.# 32418 (ea.)			

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See **page 74** for details.



Pesticides, Pesticides & Flame Retardants

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

Method 525.2 Internal Standard Mix (3 components)

Acenaphthene-d10 (15067-26-2)	Phenanthrene-d10 (1517-22-2)
Chrysene-d12 (1719-03-5)	
1,000 µg/mL each in acetone, 1 mL/ampul	
cat.# 31825 (ea.)	

Method 525.2 Surrogate Standard Mix (4 components)

2-Nitro- <i>m</i> -xylene (81-20-9)	Pyrene-d10 (1718-52-1)
Perylene-d12 (1520-96-3)	Triphenylphosphate (115-86-6)
1,000 µg/mL each in acetone, 1 mL/ampul	
cat.# 31826 (ea.)	

PBDE Mix (5 components)

2,2',4,4',5,5'-Hexabromobiphenyl (59080-40-9)	
2,2',4,4',5,5'-Hexabromodiphenyl ether (BDE-153) (68631-49-2)	
2,2',4,4',5-Pentabromodiphenyl ether (BDE-99) (60348-60-9)	
2,2',4,4',6-Pentabromodiphenyl ether (BDE-100) (189084-64-8)	
2,2',4,4'-Tetrabromodiphenyl ether (BDE-47) (5436-43-1)	
50 µg/mL each in isoctane:ethyl acetate (4:1), 1 mL/ampul	
cat.# 33098 (ea.)	

Pesticides Mix #1, Method 527 (16 components)

Atrazine (1912-24-9)	Mirex (2385-85-5)
Bifenthrin (82657-04-3)	Nitrofen (1836-75-5)
Esbiol (Bioallethrin, S-cyclopentyl isomer) (28434-00-6)	Norflurazon (27314-13-2)
Bromacil (314-40-9)	Oxychlorane (27304-13-8)
Esfenvalarate (66230-04-4)	Prometryne (7287-19-6)
Fenvalarate (51630-58-1)	Propazine (139-40-2)
Hexazinone (Velpar) (51235-04-2)	Thiobencarb (28249-77-6)
Kepona (143-50-0)	Vinclozolin (50471-44-8)
500 µg/mL each in ethyl acetate, 1 mL/ampul	
cat.# 33007 (ea.)	

Pesticides Mix #2, Method 527 (5 components)

Chlorpyrifos (2921-88-2)	Parathion (Ethyl parathion) (56-38-2)
Dimethoate (60-51-5)	Terbufos sulfone (56070-16-7)
Malathion (121-75-5)	
500 µg/mL each in ethyl acetate, 1 mL/ampul	
cat.# 33008 (ea.)	

Pesticides, Phenylurea

Method 532 (Phenylurea Pesticides)

Phenylurea Pesticide Mixture (8 components)

Diflubenuron (35367-38-5)	Propanil (709-98-8)
Diuron (330-54-1)	Siduron (1982-49-6)
Fluometuron (2164-17-2)	Tebuthiuron (34014-18-1)
Linuron (330-55-2)	Thidiazuron (51707-55-2)
200 µg/mL each in acetonitrile:acetone (90:10), 1 mL/ampul	
cat.# 32434 (ea.)	

Pesticides, State-Specific

Minnesota Department of Agriculture List 1 Pesticides

Minnesota Ag List 1 Pesticides Mix A (16 components)

Acetochlor (34256-82-1)	Metolachlor (51218-45-2)
Alachlor (15972-60-8)	Metribuzin (21087-64-9)
Atrazine (1912-24-9)	Pendimethalin (40487-42-1)
Cyanazine (Bladex) (21725-46-2)	Prometon (1610-18-0)
Desethylatrazine (6190-65-4)	Propachlor (1918-16-7)
Desisopropylatrazine (1007-28-9)	Propazine (139-40-2)
Dimethenamid (87674-68-8)*	Simazine (122-34-9)
Ethalfuralin (55283-68-6)	Trifluralin (1582-09-8)

200 ppm each in acetone, 1 mL/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 website at: www.mda.state.mn.us

Minnesota Ag List 1 Pesticides Mix B (6 components)

Chlorpyrifos (2921-88-2)	Phorate (298-02-2)
EPTC (759-94-4)	Terbufos (13071-79-9)
Fonofos (944-22-9)	Triallate (2303-17-5)

200 ppm each in acetone, 1 mL/ampul

cat.# 32407 (ea.)

Minnesota Ag List 1 Pesticide Kit

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

Contains 1 mL each of these mixtures.

cat.# 32408 (kit)

kit

Quantity Discounts Available

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Phenols

Method 528 (Phenols)

- Reference materials for U.S. EPA Method 528.
- Fortification solution formulated based on MS sensitivity to each analyte.

Internal Standard Mix, EPA 528 (2 components)

3-Nitro- <i>o</i> -xylene (83-41-0)	1,000 µg/mL
2,3,4,5-Tetrachlorophenol (4901-51-3)	2,000

In methylene chloride, 1 mL/ampul

cat.# 31696 (ea.)

Phenol Calibration Mix, EPA 528 (12 components)

4-Chloro-3-methylphenol (59-50-7)	2-Methylphenol (<i>o</i> -cresol) (95-48-7)
2-Chlorophenol (95-57-8)	2-Nitrophenol (88-75-5)
2,4-Dichlorophenol (120-83-2)	4-Nitrophenol (100-02-7)
2,4-Dimethylphenol (105-67-9)	Pentachlorophenol (87-86-5)
4,6-Dinitro-2-methylphenol (Dinitro- <i>o</i> -cresol) (534-52-1)	Phenol (108-95-2)
2,4-Dinitrophenol (51-28-5)	2,4,6-Trichlorophenol (88-06-2)

2,000 µg/mL each in methylene chloride, 1 mL/ampul

cat.# 31694 (ea.)

Method 604 (Phenols)

604 Phenols Calibration Mix (11 components)

4-Chloro-3-methylphenol (59-50-7)	2,4-Dinitrophenol (51-28-5)
2-Chlorophenol (95-57-8)	2-Nitrophenol (88-75-5)
2,4-Dichlorophenol (120-83-2)	4-Nitrophenol (100-02-7)
2,4-Dimethylphenol (105-67-9)	Pentachlorophenol (87-86-5)
4,6-Dinitro-2-methylphenol (Dinitro- <i>o</i> -cresol) (534-52-1)	Phenol (108-95-2)
	2,4,6-Trichlorophenol (88-06-2)

2,000 µg/mL each in methanol, 1 mL/ampul

cat.# 31029 (ea.)

Method 8040 (Phenols)

8040 Surrogate Mix (2 components)

2-Fluorophenol (367-12-4)
2,4,6-Tribromophenol (118-79-6)

2,000 µg/mL each in isopropanol, 1 mL/ampul

cat.# 31090 (ea.)

8040 Phenols Mix #1 (9 components)

4-Chloro-3-methylphenol (59-50-7)	2-Nitrophenol (88-75-5)
2,4-Dichlorophenol (120-83-2)	4-Nitrophenol (100-02-7)
4,6-Dinitro-2-methylphenol (Dinitro- <i>o</i> -cresol) (534-52-1)	Pentachlorophenol (87-86-5)
3-Methylphenol (<i>m</i> -cresol) (108-39-4)	Phenol (108-95-2)
	2,4,6-Trichlorophenol (88-06-2)

2,000 µg/mL each in isopropanol, 1 mL/ampul

cat.# 31088 (ea.)

8040 Phenols Mix #2 (9 components)

<i>sec</i> -Butyl-4,6-dinitrophenol (dinoseb) (88-85-7)	2,4-Dinitrophenol (51-28-5)
2-Chlorophenol (95-57-8)	2-Methylphenol (<i>o</i> -cresol) (95-48-7)
2,6-Dichlorophenol (87-65-0)	4-Methylphenol (<i>p</i> -cresol) (106-44-5)
2,4-Dimethylphenol (105-67-9)	2,3,4,6-Tetrachlorophenol (58-90-2)
	2,4,5-Trichlorophenol (95-95-4)

2,000 µg/mL each in isopropanol, 1 mL/ampul

cat.# 31089 (ea.)

Phthalates (Phthalate Esters)

Method 506 (Phthalate & Adipate Esters)

506 Calibration Mix (7 components)

Benzyl butyl phthalate (85-68-7)	Diethylphthalate (84-66-2)
Bis(2-ethylhexyl)adipate (103-23-1)	Dimethylphthalate (131-11-3)
Bis(2-ethylhexyl)phthalate (117-81-7)	Di- <i>n</i> -octyl phthalate (117-84-0)
Di- <i>n</i> -butylphthalate (84-74-2)	

1,000 µg/mL in isoctane, 1 mL/ampul

cat.# 31845 (ea.)

Method 606 (Phthalate Esters)

606 Phthalate Esters Calibration Mix (6 components)

Bis(2-ethylhexyl)phthalate (117-81-7)	Diethylphthalate (84-66-2)
Benzyl butyl phthalate (85-68-7)	Dimethylphthalate (131-11-3)
Di- <i>n</i> -butyl phthalate (84-74-2)	Di- <i>n</i> -octyl phthalate (117-84-0)

2,000 µg/mL each in methanol, 1 mL/ampul

cat.# 31031 (ea.)

Method 8061A (Phthalate Esters)

Benzyl Benzoate (Internal Standard)

Benzyl benzoate (120-51-4)

5,000 µg/mL in hexane, 1 mL/ampul

cat.# 31847 (ea.)

EPA Method 8061A Phthalate Esters Mixture

(15 components)

Benzyl butyl phthalate (85-68-7)	Diethylphthalate (84-66-2)
Bis(2- <i>n</i> -butoxyethyl)phthalate (117-83-9)	Di- <i>n</i> -hexyl phthalate (84-75-3)
Bis(2-ethoxyethyl)phthalate (605-54-9)	Dimethylphthalate (131-11-3)
Bis(2-ethylhexyl)phthalate (117-81-7)	Di-nonyl phthalate (84-76-4)
Bis(2-methoxyethyl)phthalate (117-82-8)	Di- <i>n</i> -octyl phthalate (117-84-0)
Bis(4-methyl-2-pentyl)phthalate (146-50-9)	Dipentylphthalate (131-18-0)
Di- <i>n</i> -butylphthalate (84-74-2)	Phthalic acid dicyclohexyl ester (84-61-7)
	Phthalic acid diisobutyl ester (84-69-5)

1,000 µg/mL each in hexane:acetone (80:20), 1 mL/ampul

cat.# 33227 (ea.)

Polychlorinated Biphenyls (PCBs)

PCB Aroclors

608 Complete Kit

Contains 1 mL each of these mixtures.

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: chlordanes

Contains 1 mL each of these mixtures.

cat.# 32060 (kit)

kit

PCB Kit #1

1,000 µg/mL each in hexane, 1 mL/ampul

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

cat.# 32089 (kit)

kit

PCB Kit #2

200 µg/mL each in isoctane, 1 mL/ampul

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

cat.# 32090 (kit)

kit

PCB Kit #3

1,000 µg/mL each in hexane, 1 mL/ampul

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

cat.# 32400 (kit)

kit

PCB Kit #4

200 µg/mL each in isoctane, 1 mL/ampul

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

cat.# 32401 (kit)

kit

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See pages 464–465.



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Polychlorinated Biphenyls (PCBs), *cont.*

PCB Aroclors, *cont.*

Aroclor Solutions

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

Compound	CAS #	Solvent	Conc.	cat.#
Aroclor 1016	12674-11-2	H	1,000	32006
Aroclor 1016	12674-11-2	I	200	32064
Aroclor 1016	12674-11-2	TO	500 mg/kg	32076
Aroclor 1221	11104-28-2	H	1,000	32007
Aroclor 1221	11104-28-2	I	200	32065
Aroclor 1232	11141-16-5	H	1,000	32008
Aroclor 1232	11141-16-5	I	200	32066
Aroclor 1242	53469-21-9	H	1,000	32009
Aroclor 1242	53469-21-9	I	200	32067
Aroclor 1242	53469-21-9	TO	50 mg/kg	32081
Aroclor 1242	53469-21-9	TO	500 mg/kg	32082
Aroclor 1248	12672-29-6	H	1,000	32010
Aroclor 1248	12672-29-6	I	200	32068
Aroclor 1254	11097-69-1	H	1,000	32011
Aroclor 1254	11097-69-1	I	200	32069
Aroclor 1254	11097-69-1	TO	50 mg/kg	32085
Aroclor 1254	11097-69-1	TO	500 mg/kg	32086
Aroclor 1260	11096-82-5	H	1,000	32012
Aroclor 1260	11096-82-5	I	200	32070
Aroclor 1260	11096-82-5	TO	50 mg/kg	32087
Aroclor 1260	11096-82-5	TO	500 mg/kg	32088
Aroclor 1262	37324-23-5	H	1,000	32409
Aroclor 1268	11100-14-4	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 = isooctane; TO = transformer oil (PCB-free)

please note

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

PCB Congeners

Method 525.2 (Semivolatile Organics)

Method 525.2 PCB Congener Mix (8 components)

2-Chlorobiphenyl (BZ #1) (2051-60-7)
 2,3-Dichlorobiphenyl (BZ #5) (16605-91-7)
 2,4,5-Trichlorobiphenyl (BZ #29) (15862-07-4)
 2,2',4,4'-Tetrachlorobiphenyl (BZ #47) (2437-79-8)
 2,2',3',4,6-Pentachlorobiphenyl (BZ #98) (60233-25-2)
 2,2',4,4',5,6'-Hexachlorobiphenyl (BZ #154) (60145-22-4)
 2,2',3,3',4,4',6-Heptachlorobiphenyl (BZ #171) (52663-71-5)
 2,2',3,3',4,4',5,6'-Octachlorobiphenyl (BZ #200) (40186-71-8)

200 µg/mL each in acetone, 1 mL/ampul

cat.# 32420 (ea.)

PCB Congeners, *cont.*

Method 8082, 8082A (PCBs)

PCB Congener Mix, Method 8082A (19 components)

2-Chlorobiphenyl (BZ #1) (2051-60-7)
 2,3-Dichlorobiphenyl (BZ #5) (16605-91-7)
 2,2',5-Trichlorobiphenyl (BZ #18) (37680-65-2)
 2,4',5-Trichlorobiphenyl (BZ #31) (16606-02-3)
 2,2',3,5'-Tetrachlorobiphenyl (BZ #44) (41464-39-5)
 2,2',5,5'-Tetrachlorobiphenyl (BZ #52) (35693-99-3)
 2,3',4,4'-Tetrachlorobiphenyl (BZ #66) (32598-10-0)
 2,2',3,4,5'-Pentachlorobiphenyl (BZ #87) (38380-02-8)
 2,2',4,5,5'-Pentachlorobiphenyl (BZ #101) (37680-73-2)
 2,3,3',4',6-Pentachlorobiphenyl (BZ #110) (38380-03-9)
 2,2',3,4,4',5'-Hexachlorobiphenyl (BZ #138) (35065-28-2)
 2,2',3,4,5,5'-Hexachlorobiphenyl (BZ #141) (52712-04-6)
 2,2',3,5,5',6-Hexachlorobiphenyl (BZ #151) (52663-63-5)
 2,2',4,4',5,5'-Hexachlorobiphenyl (BZ #153) (35065-27-1)
 2,2',3,3',4,4',5-Heptachlorobiphenyl (BZ #170) (35065-30-6)
 2,2',3,4,4',5,5'-Heptachlorobiphenyl (BZ #180) (35065-29-3)
 2,2',3,4,4',5,6-Heptachlorobiphenyl (BZ #183) (52663-69-1)
 2,2',3,4',5,5',6-Heptachlorobiphenyl (BZ #187) (52663-68-0)
 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl (BZ #206) (40186-72-9)

100 µg/mL each in isooctane, 1 mL/ampul

cat.# 32416 (ea.)

Miscellaneous

PCB Congeners

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

Compound	CAS #	Solvent	Conc.	cat.#
decachlorobiphenyl (BZ #209)	2051-24-3	I	10	32289

I = isooctane

PCB Congener Standard #1 (6 components)

2,4,4'-Trichlorobiphenyl (BZ #28) (7012-37-5)
 2,2',5,5'-Tetrachlorobiphenyl (BZ #52) (35693-99-3)
 2,2',4,5,5'-Pentachlorobiphenyl (BZ #101) (37680-73-2)
 2,2',3,4,4',5'-Hexachlorobiphenyl (BZ #138) (35065-28-2)
 2,2',4,4',5,5'-Hexachlorobiphenyl (BZ #153) (35065-27-1)
 2,2',3,4,4',5'-Heptachlorobiphenyl (BZ #180) (35065-29-3)

10 µg/mL each in isooctane, 1 mL/ampul

cat.# 32290 (ea.)

PCB Congener Standard #2 (7 components)

2,4,4'-Trichlorobiphenyl (BZ #28) (7012-37-5)
 2,2',5,5'-Tetrachlorobiphenyl (BZ #52) (35693-99-3)
 2,2',4,5,5'-Pentachlorobiphenyl (BZ #101) (37680-73-2)
 2,3',4,4',5-Pentachlorobiphenyl (BZ #118) (31508-00-6)
 2,2',3,4,4',5'-Hexachlorobiphenyl (BZ #138) (35065-28-2)
 2,2',4,4',5,5'-Hexachlorobiphenyl (BZ #153) (35065-27-1)
 2,2',3,4,4',5,5'-Heptachlorobiphenyl (BZ #180) (35065-29-3)

10 µg/mL each in isooctane, 1 mL/ampul

cat.# 32294 (ea.)



Polycyclic Aromatic Hydrocarbons (PAHs)

See pages 511–513.

Semivolatile Organics/Base, Neutral & Acid Extractables (BNAs)

Individual Semivolatile Surrogate and Internal Standards for EPA Methods

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

Compound	CAS #	Solvent	Conc.	cat.#
Anthracene-d10	1719-06-08	D	2,000	31037
Decafluorobiphenyl	434-90-2	D	2,000	31041
Decafluorobiphenyl	434-90-2	A	1,000	31855
4,4'-Dibromooctafluorobiphenyl	10386-84-2	D	2,000	31040
2-Fluorobiphenyl	321-60-8	D	2,000	31091
2-Fluorophenol	367-12-4	D	2,000	31047
Naphthalene-d8	1146-65-2	D	2,000	31043
N-Nitrosodimethylamine-d6	17829-05-9	D	1,000	33910
Pentafluorophenol	771-61-9	D	2,000	31048
Phenanthrene-d10	1517-22-2	D	2,000	31045
Phenol-d6	13127-88-3	D	2,000	31049
p-Terphenyl-d14	1718-51-0	D	1,000	31828
2,4,6-Tribromophenol	118-79-6	M	1,000	31401

A = acetone; D = methylene chloride; M = methanol

SV Internal Standard Mix (6 components)

Acenaphthene-d10 (15067-26-2) Naphthalene-d8 (1146-65-2)
 Chrysene-d12 (1719-03-5) Perylene-d12 (1520-96-3)
 1,4-Dichlorobenzene-d4 (3855-82-1) Phenanthrene-d10 (1517-22-2)

Each	15-pk.	25-pk.
2,000 µg/mL each in methylene chloride, 1 mL/ampul		
31206	31206.15	31206.25
4,000 µg/mL each in methylene chloride, 1 mL/ampul		
31006	31006.15	31006.25

Method 525, 525.1, 525.2 (Semivolatile Organics)

Method 525.2 Internal Standard Mix (3 components)

Acenaphthene-d10 (15067-26-2) Phenanthrene-d10 (1517-22-2)
 Chrysene-d12 (1719-03-5)
 1,000 µg/mL each in acetone, 1 mL/ampul
 cat.# 31825 (ea.)

Method 525.2 Surrogate Standard Mix (4 components)

2-Nitro-*m*-xylene (81-20-9) Pyrene-d10 (1718-52-1)
 Perylene-d12 (1520-96-3) Triphenylphosphate (115-86-6)
 1,000 µg/mL each in acetone, 1 mL/ampul
 cat.# 31826 (ea.)

Method 525.2 Herbicide Mix (3 components)

Acetochlor (34256-82-1) Metolachlor (51218-45-2)
 Alachlor (15972-60-8)
 100 µg/mL in methanol, 1 mL/ampul
 cat.# 33211 (ea.)

Method 525.2 Semivolatile Mix (revised)

(28 components)

Acenaphthylene (208-96-8) Di-*n*-butylphthalate (84-74-2)
 Anthracene (120-12-7) 2,4-Dinitrotoluene (121-14-2)
 Benz(a)anthracene (56-55-3) 2,6-Dinitrotoluene (606-20-2)
 Benzo(a)pyrene (50-32-8) Di-*n*-octylphthalate (117-84-0)
 Benzo(b)fluoranthene (205-99-2) Fluoranthene (206-44-0)
 Benzo(ghi)perylene (191-24-2) Fluorene (86-73-7)
 Benzo(k)fluoranthene (207-08-9) Hexachlorobenzene (118-74-1)
 Benzyl butyl phthalate (85-68-7) Hexachlorocyclopentadiene (77-47-4)
 Bis(2-ethylhexyl)adipate (103-23-1) Indeno(1,2,3-cd)pyrene (193-39-5)
 Bis(2-ethylhexyl)phthalate (117-81-7) Isophorone (78-59-1)
 Chrysene (218-01-9) Naphthalene (91-20-3)
 Dibenz(a,h)anthracene (53-70-3) Pentachlorophenol (87-86-5)*
 Diethylphthalate (84-66-2) Phenanthrene (85-01-8)
 Dimethylphthalate (131-11-3) Pyrene (129-00-0)

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

*pentachlorophenol at 4,000 µg/mL.

Method 525.2 PCB Congener Mix (8 components)

2-Chlorobiphenyl (BZ #1) (2051-60-7)
 2,3-Dichlorobiphenyl (BZ #5) (16605-91-7)
 2,4,5-Trichlorobiphenyl (BZ #29) (15862-07-4)
 2,2',4,4'-Tetrachlorobiphenyl (BZ #47) (2437-79-8)
 2,2',3',4,6-Pentachlorobiphenyl (BZ #98) (60233-25-2)
 2,2',4,4',5,6'-Hexachlorobiphenyl (BZ #154) (60145-22-4)
 2,2',3,3',4,4',6-Heptachlorobiphenyl (BZ #171) (52663-71-5)
 2,2',3,3',4,5',6,6'-Octachlorobiphenyl (BZ #200) (40186-71-8)

200 µg/mL each in acetone, 1 mL/ampul
 cat.# 32420 (ea.)



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See pages 464–465 or visit www.restek.com/iso

Semivolatile Organics/Base, Neutral & Acid Extractables (BNAs), *cont.*

Method 525, 525.1, 525.2 (Semivolatile Organics), *cont.*

Organochlorine Pesticide Mix AB # 3 (20 components)

Aldrin (309-00-2)	Endosulfan I (959-98-8)
α -BHC (319-84-6)	Endosulfan II (33213-65-9)
β -BHC (319-85-7)	Endosulfan sulfate (1031-07-8)
δ -BHC (319-86-8)	Endrin (72-20-8)
γ -BHC (Lindane) (58-89-9)	Endrin aldehyde (7421-93-4)
<i>cis</i> -Chlordane (5103-71-9)	Endrin ketone (53494-70-5)
<i>trans</i> -Chlordane (5103-74-2)	Heptachlor (76-44-8)
4,4'-DDD (72-54-8)	Heptachlor epoxide (isomer B)
4,4'-DDE (72-55-9)	(1024-57-3)
4,4'-DDT (50-29-3)	Methoxychlor (72-43-5)
Dieldrin (60-57-1)	

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

Organophosphorus Pesticide Mix #1 (Rev), Method 525.2 (7 components)

Chlorpyrifos (2921-88-2)	Methyl paraoxon (Parathion methyl-O-analog) (950-35-6)
Dichlorvos (DDVP) (62-73-7)	Mevinphos (7786-34-7)
Disulfoton sulfone (2497-06-5)	Stirofos (tetrachlorvinphos) (961-11-5)
Ethoprop (ethoprophos) (13194-48-4)	

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

cat.# 33013 (ea.)

Organonitrogen Pesticide Mix #1 (Rev), Method 525.2

(37 components)

Alachlor (15972-60-8)	Molinate (2212-67-1)
Ametryn (834-12-8)	Napropamide (Devrinol) (15299-99-7)
Atraton (1610-17-9)	Norflurazon (27314-13-2)
Atrazine (1912-24-9)	Pebulate (1114-71-2)
Bromacil (314-40-9)	Prometon (1610-18-0)
Butachlor (23184-66-9)	Prometryne (7287-19-6)
Butylate (2008-41-5)	Propachlor (1918-16-7)
Chlorpropham (101-21-3)	Propazine (139-40-2)
Cyanazine (Bladex) (21725-46-2)	Propyzamide (23950-58-5)
Cycloate (1134-23-2)	Simazine (122-34-9)
Diphenamid (957-51-7)	Simetryn (1014-70-6)
EPTC (759-94-4)	Tebuthiuron (34014-18-1)
Etridiazole (2593-15-9)	Terbacil (5902-51-2)
Fenarimol (60168-88-9)	Terbutryn (886-50-0)
Fluridone (Sonar) (59756-60-4)	Triadimefon (43121-43-3)
Hexazinone (Velpar) (51235-04-2)	Tricyclazole (Beam) (41814-78-2)
Metolachlor (51218-45-2)	Trifluralin (1582-09-8)
Metribuzin (21087-64-9)	Vernolate (1929-77-7)
MGK-264 (113-48-4)	

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

cat.# 33012 (ea.)

Method 525.2 Nitrogen/Phosphorus Pesticide Mix #2

(6 components)

Carboxin (5234-68-4)	Fenamiphos (22224-92-6)
Diazinon (333-41-5)	Merphos (150-50-5)
Disulfoton (298-04-4)	Terbufos (13071-79-9)

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

cat.# 32423 (ea.)

Organochlorine Pesticide Mix #2 (Rev), Method 525.2 (8 components)

Chlorobenzilate (510-15-6)	Heptachlor epoxide (isomer A)
Chloroneb (2675-77-6)	(28044-83-9)
Chlorothalonil (1897-45-6)	<i>trans</i> -Nonachlor (39765-80-5)
DCPA methyl ester (Chlorthal-dimethyl)	<i>cis</i> -Permethrin (61949-76-6)
(1861-32-1)	<i>trans</i> -Permethrin (61949-77-7)

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

cat.# 33011 (ea.)

Method 525.2 Fortification Recovery Standard

p-Terphenyl-d14 (1718-51-0)

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

cat.# 31828 (ea.)

Method 525.2 GC-MS Performance Check Mix

(3 components)

4,4'-DDT (50-29-3)
DFTPP (decafluorotriphenylphosphine) (5074-71-5)
Endrin (72-20-8)

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

cat.# 31827 (ea.)



Semivolatile Organics/Base, Neutral & Acid Extractables (BNAs), *cont.*

Method 625 (Semivolatiles)

Semivolatiles MegaMix® Standard, EPA Method 625 (54 components)



Acenaphthene (83-32-9)	2,4-Dinitrophenol (51-28-5)
Acenaphthylene (208-96-8)	2,4-Dinitrotoluene (121-14-2)
Anthracene (120-12-7)	2,6-Dinitrotoluene (606-20-2)
Benz(a)anthracene (56-55-3)	Di- <i>n</i> -octylphthalate (117-84-0)
Benzo(a)pyrene (50-32-8)	Diphenylamine (122-39-4)*
Benzo(b)fluoranthene (205-99-2)	Fluoranthene (206-44-0)
Benzo(ghi)perylene (191-24-2)	Fluorene (86-73-7)
Benzo(k)fluoranthene (207-08-9)	Hexachlorobenzene (118-74-1)
Benzyl butyl phthalate (85-68-7)	Hexachloro-1,3-butadiene (87-68-3)
Bis(2-chloroethoxy)methane (111-91-1)	Hexachlorocyclopentadiene (77-47-4)*
Bis(2-chloroethyl)ether (111-44-4)	Hexachloroethane (67-72-1)
Bis(2-ethylhexyl)phthalate (117-81-7)	Indeno(1,2,3- <i>cd</i>)pyrene (193-39-5)
4-Bromophenyl phenyl ether (101-55-3)	Isophorone (78-59-1)
4-Chloro-3-methylphenol (59-50-7)	Naphthalene (91-20-3)
2-Chloronaphthalene (91-58-7)	Nitrobenzene (98-95-3)
2-Chlorophenol (95-57-8)	2-Nitrophenol (88-75-5)
4-Chlorophenyl phenyl ether (7005-72-3)	4-Nitrophenol (100-02-7)
Chrysene (218-01-9)	N-Nitrosodimethylamine (62-75-9)*
Dibenz(a,h)anthracene (53-70-3)	N-Nitroso-di- <i>n</i> -propylamine (621-64-7)
1,2-Dichlorobenzene (95-50-1)	2,2'-Oxybis(1-chloropropane) (108-60-1)
1,3-Dichlorobenzene (541-73-1)	Pentachlorophenol (87-86-5)
1,4-Dichlorobenzene (106-46-7)	Phenanthrene (85-01-8)
2,4-Dichlorophenol (120-83-2)	Phenol (108-95-2)
Diethylphthalate (84-66-2)	Pyrene (129-00-0)
2,4-Dimethylphenol (105-67-9)	1,2,4-Trichlorobenzene (120-82-1)
Dimethylphthalate (131-11-3)	2,4,6-Trichlorophenol (88-06-2)
Di- <i>n</i> -butylphthalate (84-74-2)	
4,6-Dinitro-2-methylphenol (Dinitro- <i>o</i> -cresol) (534-52-1)	

1,000 µg/mL each in methylene chloride, 1 mL/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 537); β-BHC, δ-BHC, endosulfan I, endosulfan II, endrin are in cat.# 32291 (page 524) and cat.# 32415 (page 537).

Method 625 (Semivolatiles), *cont.*

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. See page 523.

Contains 1 mL each of these mixtures.

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

cat.# 31036 (kit)

kit

TCLP

TCLP B/N Mix (7 components)

1,4-Dichlorobenzene (106-46-7)	Hexachloroethane (67-72-1)
2,4-Dinitrotoluene (121-14-2)	Nitrobenzene (98-95-3)
Hexachlorobenzene (118-74-1)	Pyridine (110-86-1)
Hexachlorobutadiene (87-68-3)	

2,000 µg/mL each in acetone, 1 mL/ampul

cat.# 31028 (ea.)

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 1 mL and 5 mL packaging.

See Method 8270, pages 535–538.

also available

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 32–33** for more information.



Semivolatile Organics/Base, Neutral & Acid Extractables (BNAs), *cont.*

Method 8270C, 8270D (Semivolatile Organic Compounds)

SV Internal Standard Mix (6 components)

- High purity for consistent results.
- Free quality assurance data package available online.
- Highest concentrations commercially available.

Each	15-pk.	25-pk.
Acenaphthene-d10 (15067-26-2) Chrysene-d12 (1719-03-5) 1,4-Dichlorobenzene-d4 (3855-82-1)	Naphthalene-d8 (1146-65-2) Perylene-d12 (1520-96-3) Phenanthrene-d10 (1517-22-2)	
2,000 µg/mL each in methylene chloride, 1 mL/ampul 31206	31206.15	31206.25
4,000 µg/mL each in methylene chloride, 1 mL/ampul 31006	31006.15	31006.25

Revised SV Internal Standard Mix (7 components)

Each	15-pk.	25-pk.
Acenaphthene-d10 (15067-26-2) Chrysene-d12 (1719-03-5) 1,4-Dichlorobenzene-d4 (3855-82-1) 1,4-Dioxane-d8 (17647-74-4)	Naphthalene-d8 (1146-65-2) Perylene-d12 (1520-96-3) Phenanthrene-d10 (1517-22-2)	
2,000 µg/mL each in methylene chloride, 1 mL/ampul 31885	31885.15	31885.25
4,000 µg/mL each in methylene chloride, 1 mL/ampul 31886	—	—

B/N Surrogate Mix (4/89 SOW) (3 components)

- High purity for consistent results.
- Free quality assurance data package available online.
- Highest concentrations commercially available.
- Convenient 1 mL, 5 mL, and 10 mL package sizes reduce cost per sample extract.

Each	15-pk.	25-pk.
2-Fluorobiphenyl (321-60-8) Nitrobenzene-d5 (4165-60-0)	<i>p</i> -Terphenyl-d14 (1718-51-0)	
1,000 µg/mL each in methylene chloride, 1 mL/ampul 31024	31024.15	31024.25
5,000 µg/mL each in methylene chloride, 1 mL/ampul 31062	31062.15	—
5,000 µg/mL each in methylene chloride, 5 mL/ampul 31086	—	—
5,000 µg/mL each in methylene chloride, 10 mL/ampul 33028	—	33028.25

Revised B/N Surrogate Mix (4 components)

Each	15-pk.
2-Fluorobiphenyl (321-60-8) Nitrobenzene-d5 (4165-60-0)	<i>p</i> -Terphenyl-d14 (1718-51-0) Pyrene-d10 (1718-52-1)
1,000 µg/mL each in methylene chloride, 1 mL/ampul 31887	31887.15
5,000 µg/mL each in methylene chloride, 1 mL/ampul 31888	31888.15
5,000 µg/mL each in methylene chloride, 5 mL/ampul 31889	—

Acid Surrogate Mix (4/89 SOW) (3 components)

- Highest concentrations commercially available.
- Convenient 1 mL, 5 mL, and 10 mL package sizes.
- Reduces laboratory cost per sample extract.

Each	15-pk.	25-pk.
2-Fluorophenol (367-12-4) Phenol-d6 (13127-88-3)	2,4,6-Tribromophenol (118-79-6)	
2,000 µg/mL each in methanol, 1 mL/ampul 31025	31025.15	31025.25
10,000 µg/mL each in methanol, 1 mL/ampul 31063	31063.15	—
10,000 µg/mL each in methanol, 5 mL/ampul 31087	—	—
10,000 µg/mL each in methanol, 10 mL/ampul 33029	—	33029.25

B/N Matrix Spike Mix (6 components)

- Highest concentrations commercially available.
- Convenient 1 mL, 5 mL, and 10 mL package sizes.
- Reduces laboratory cost per sample extract.

Each	15-pk.
Acenaphthene (83-32-9) 1,4-Dichlorobenzene (106-46-7) 2,4-Dinitrotoluene (121-14-2)	N-Nitroso-di- <i>n</i> -propylamine (621-64-7) Pyrene (129-00-0) 1,2,4-Trichlorobenzene (120-82-1)
1,000 µg/mL each in methanol, 1 mL/ampul 31004	31004.15
5,000 µg/mL each in methanol, 1 mL/ampul 31074	—
5,000 µg/mL each in methanol, 5 mL/ampul 31084	—

Acid Matrix Spike Mix (5 components)

- Highest concentrations commercially available.
- Convenient 1 mL, 5 mL, and 10 mL package sizes.
- Reduces laboratory cost per sample extract.

Each	15-pk.
4-Chloro-3-methylphenol (59-50-7) 2-Chlorophenol (95-57-8) 4-Nitrophenol (100-02-7)	Pentachlorophenol (87-86-5) Phenol (108-95-2)
2,000 µg/mL each in methanol, 1 mL/ampul 31014	31014.15
10,000 µg/mL each in methanol, 1 mL/ampul 31061	31061.15
10,000 µg/mL each in methanol, 5 mL/ampul 31071	—



Semivolatile Organics/Base, Neutral & Acid Extractables (BNAs), *cont.*

Method 8270C, 8270D (Semivolatile Organic Compounds), *cont.*

GC-MS Tuning Mixture (4 components)

Benzidine (92-87-5)
4,4'-DDT (50-29-3)
Decafluorotriphenylphosphine (DFTPP) (5074-71-5)
Pentachlorophenol (87-86-5)

1,000 µg/mL each in methylene chloride, 1 mL/ampul
cat.# 31615 (ea.)

SV Tuning Compound

Decafluorotriphenylphosphine (DFTPP) (5074-71-5)

2,500 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31001 (ea.)

PFTBA (MS Tuning Compound)

Perfluorotributylamine (PFTBA) (311-89-7)

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

No data pack available.

8270 B/N Calibration Check Mix (7 components)

Acenaphthene (83-32-9)	Diphenylamine (122-39-4)
Benzo(a)pyrene (50-32-8)	Fluoranthene (206-44-0)
1,4-Dichlorobenzene (106-46-7)	Hexachlorobutadiene (87-68-3)
Di- <i>n</i> -octyl phthalate (117-84-0)	

2,000 µg/mL each in methylene chloride, 1 mL/ampul
cat.# 31616 (ea.)

8270 Acid Calibration Check Mix (6 components)

4-Chloro-3-methylphenol (59-50-7)	Pentachlorophenol (87-86-5)
2,4-Dichlorophenol (120-83-2)	Phenol (108-95-2)
2-Nitrophenol (88-75-5)	2,4,6-Trichlorophenol (88-06-2)

2,000 µg/mL each in methylene chloride, 1 mL/ampul
cat.# 31617 (ea.)

SV System Performance Check Mix (SPCC)

(4 components)

2,4-Dinitrophenol (51-28-5)	4-Nitrophenol (100-02-7)
Hexachlorocyclopentadiene (77-47-4)	N-Nitroso-di- <i>n</i> -propylamine (621-64-7)

2,000 µg/mL each in methylene chloride, 1 mL/ampul
cat.# 31689 (ea.)

also available

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 75**.



8270 MegaMix® Standard (76 components)

MEGAMIX®

- Fewest mixtures needed for calibration and matrix spikes.
- Mixtures formulated for maximum stability.
- Contains most routinely analyzed compounds.

Acenaphthene (83-32-9)	2,4-Dinitrophenol (51-28-5)
Acenaphthylene (208-96-8)	2,4-Dinitrotoluene (121-14-2)
Aniline (62-53-3)	2,6-Dinitrotoluene (606-20-2)
Anthracene (120-12-7)	Di- <i>n</i> -octyl phthalate (117-84-0)
Azobenzene (103-33-3) ¹	Diphenylamine (122-39-4) ²
Benzo(a)anthracene (56-55-3)	Fluoranthene (206-44-0)
Benzo(a)pyrene (50-32-8)	Fluorene (86-73-7)
Benzo(b)fluoranthene (205-99-2)	Hexachlorobenzene (118-74-1)
Benzo(ghi)perylene (191-24-2)	Hexachlorobutadiene (87-68-3)
Benzo(k)fluoranthene (207-08-9)	Hexachlorocyclopentadiene (77-47-4)
Benzyl alcohol (100-51-6)	Hexachloroethane (67-72-1)
Benzyl butyl phthalate (85-68-7)	Indeno(1,2,3- <i>cd</i>)pyrene (193-39-5)
Bis(2-chloroethoxy)methane (111-91-1)	Isophorone (78-59-1)
Bis(2-chloroethyl)ether (111-44-4)	1-Methylnaphthalene (90-12-0)
Bis(2-ethylhexyl)adipate (103-23-1)	2-Methylnaphthalene (91-57-6)
Bis(2-ethylhexyl)phthalate (117-81-7)	2-Methylphenol (<i>o</i> -cresol) (95-48-7)
4-Bromophenyl phenyl ether (101-55-3)	3-Methylphenol (<i>m</i> -cresol) (108-39-4)*
Carbazole (86-74-8)	4-Methylphenol (<i>p</i> -cresol) (106-44-5)*
4-Chloroaniline (106-47-8)	Naphthalene (91-20-3)
4-Chloro-3-methylphenol (59-50-7)	2-Nitroaniline (88-74-4)
2-Chloronaphthalene (91-58-7)	3-Nitroaniline (99-09-2)
2-Chlorophenol (95-57-8)	4-Nitroaniline (100-01-6)
4-Chlorophenyl phenyl ether (7005-72-3)	Nitrobenzene (98-95-3)
Chrysene (218-01-9)	2-Nitrophenol (88-75-5)
Dibenz(a,h)anthracene (53-70-3)	4-Nitrophenol (100-02-7)
Dibenzofuran (132-64-9)	N-Nitrosodimethylamine (62-75-9)
1,2-Dichlorobenzene (95-50-1)	N-Nitroso-di- <i>n</i> -propylamine (621-64-7)
1,3-Dichlorobenzene (541-73-1)	2,2'-Oxybis(1-chloropropane) (108-60-1)
1,4-Dichlorobenzene (106-46-7)	Pentachlorophenol (87-86-5)
2,4-Dichlorophenol (120-83-2)	Phenanthrene (85-01-8)
Diethylphthalate (84-66-2)	Phenol (108-95-2)
2,4-Dimethylphenol (105-67-9)	Pyrene (129-00-0)
Dimethylphthalate (131-11-3)	Pyridine (110-86-1)
Di- <i>n</i> -butyl phthalate (84-74-2)	2,3,4,6-Tetrachlorophenol (58-90-2)
1,2-Dinitrobenzene (528-29-0)	2,3,5,6-Tetrachlorophenol (935-95-5)
1,3-Dinitrobenzene (99-65-0)	1,2,4-Trichlorobenzene (120-82-1)
1,4-Dinitrobenzene (100-25-4)	2,2',4,5-Trichlorophenol (95-95-4)
4,6-Dinitro-2-methylphenol (Dinitro- <i>o</i> -cresol) (534-52-1)	2,4,6-Trichlorophenol (88-06-2)

1,000 µg/mL each in methylene chloride, 1 mL/ampul*
cat.# 31850 (ea.)

*3-methylphenol and 4-methylphenol concentration is 500 µg/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)

MEGAMIX®

Same as 8270 MegaMix® standard list above.

Each	15-pk.
200 µg/mL each in methanol:methylene chloride (80:20), 5 mL/ampul*	
31687	31687.15
200 µg/mL each in methanol:methylene chloride (80:20), 10 mL/ampul*	
33073	—

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



8270 MegaMix® standard and 8270 matrix spike mix include 3-methylphenol and 4-methylphenol at 1/2 x concentration of other components.

Semivolatile Organics/Base, Neutral & Acid Extractables (BNAs), *cont.*Method 8270C, 8270D (Semivolatile Organic Compounds), *cont.***8270 Calibration Mix #3** (23 components)

Aramite (140-57-8)	Hexachlorobutadiene (87-68-3)
Bis(2-chloroethyl)ether (111-44-4)	Hexachlorocyclopentadiene (77-47-4)
Bis(2-chloroethoxy)methane (111-91-1)	Hexachloroethane (67-72-1)
4-Bromophenyl phenyl ether (101-55-3)	Hexachloropropene (1888-71-7)
Chlorobenzilate (510-15-6)	Isodrin (465-73-6)
2-Chloronaphthalene (91-58-7)	Kepona (143-50-0)
4-Chlorophenyl phenyl ether (7005-72-3)	2,2'-Oxybis(1-chloropropane) (108-60-1)
1,2-Dichlorobenzene (95-50-1)	Pentachlorobenzene (608-93-5)
1,3-Dichlorobenzene (541-73-1)	Pentachloronitrobenzene (quintozene) (82-68-8)
1,4-Dichlorobenzene (106-46-7)	1,2,4,5-Tetrachlorobenzene (95-94-3)
1,3-Dinitrobenzene (99-65-0)	1,2,4-Trichlorobenzene (120-82-1)
Hexachlorobenzene (118-74-1)	

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

8270 Calibration Mix #4 (22 components)

Acetophenone (98-86-2)	2,6-Dinitrotoluene (606-20-2)
Azobenzene (103-33-3)*	Ethyl methanesulfonate (62-50-0)
Benzyl alcohol (100-51-6)	Isophorone (78-59-1)
Bis(2-ethylhexyl)phthalate (117-81-7)	Isosafrole (<i>cis</i> & <i>trans</i>) (120-58-1)
Benzyl butyl phthalate (85-68-7)	Methyl methanesulfonate (66-27-3)
Dibenzofuran (132-64-9)	1,4-Naphthoquinone (130-15-4)
Diethylphthalate (84-66-2)	Nitrobenzene (98-95-3)
Dimethylphthalate (131-11-3)	4-Nitroquinoline-N-oxide (56-57-5)
Di- <i>n</i> -butyl phthalate (84-74-2)	Phenacetin (62-44-2)
Di- <i>n</i> -octyl phthalate (117-84-0)	Safrole (94-59-7)
2,4-Dinitrotoluene (121-14-2)	1,3,5-Trinitrobenzene (99-35-4)

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

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

3-Methylcholanthrene Standard

3-Methylcholanthrene (56-49-5)

2,000 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31996 (ea.)

8270 Calibration Mix #5, Revised (18 components)

Acenaphthene (83-32-9)	Dibenz(a,h)anthracene (53-70-3)
Acenaphthylene (208-96-8)	Fluoranthene (206-44-0)
Anthracene (120-12-7)	Fluorene (86-73-7)
Benz(a)anthracene (56-55-3)	Indeno(1,2,3-cd)pyrene (193-39-5)
Benzo(a)pyrene (50-32-8)	1-Methylnaphthalene (90-12-0)
Benzo(b)fluoranthene (205-99-2)	2-Methylnaphthalene (91-57-6)
Benzo(ghi)perylene (191-24-2)	Naphthalene (91-20-3)
Benzo(k)fluoranthene (207-08-9)	Phenanthrene (85-01-8)
Chrysene (218-01-9)	Pyrene (129-00-0)

2,000 µg/mL each in methylene chloride, 1 mL/ampul
cat.# 31995 (ea.)

8270 Calibration Mix #6 (10 components)

Diallate (<i>cis</i> & <i>trans</i>) (2303-16-4)	Phorate (298-02-2)
Dimethoate (60-51-5)	Propyzamide (23950-58-5)
Disulfoton (298-04-4)	O,O,O-Triethyl phosphorothioate (126-68-1)
Famphur (52-85-7)	Zinophos (Thionazine) (297-97-2)
Methyl parathion (298-00-0)	
Parathion (ethyl parathion) (56-38-2)	

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

Aramite

Aramite (140-57-8)

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

1,2-Diphenylhydrazine

1,2-Diphenylhydrazine (122-66-7)

1,000 µg/mL in methanol, 1 mL/ampul
cat.# 31497 (ea.)

No data pack available.

Note that 1,2-diphenylhydrazine is an unstable compound that will oxidize to azobenzene, thereby decreasing the concentration of 1,2-diphenylhydrazine over time. For accurate calibration results, it is recommended that the concentrations of 1,2-diphenylhydrazine and azobenzene be combined. Please contact Restek® Technical Service if you have any questions about this issue.

TCLP Acid Mix (6 components)

2-Methylphenol (<i>o</i> -cresol) (95-48-7)	Pentachlorophenol (87-86-5)
3-Methylphenol (<i>m</i> -cresol) (108-39-4)	2,4,5-Trichlorophenol (95-95-4)
4-Methylphenol (<i>p</i> -cresol) (106-44-5)	2,4,6-Trichlorophenol (88-06-2)

2,000 µg/mL each in methanol, 1 mL/ampul
cat.# 31027 (ea.)

TCLP B/N Mix (7 components)

1,4-Dichlorobenzene (106-46-7)	Hexachloroethane (67-72-1)
2,4-Dinitrotoluene (121-14-2)	Nitrobenzene (98-95-3)
Hexachlorobenzene (118-74-1)	Pyridine (110-86-1)
Hexachlorobutadiene (87-68-3)	

2,000 µg/mL each in acetone, 1 mL/ampul
cat.# 31028 (ea.)

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

Contains 1 mL each of these mixtures.

31618: 8270 Calibration Mix #1
31619: 8270 Calibration Mix #2
31620: 8270 Calibration Mix #3
31621: 8270 Calibration Mix #4
31995: 8270 Calibration Mix #5, Revised
31996: 3-Methylcholanthrene Standard
31623: 8270 Calibration Mix #6
32459: Appendix IX Mix #1, Revised (Methapyrilene is not included in this revised standard.)
32460: Methapyrilene Standard

cat.# 31627 (kit)

kit

8270 Calibration Kit (2,000 µg/mL)

Contains 1 mL each of these mixtures.

31618: 8270 Calibration Mix #1
31619: 8270 Calibration Mix #2
31620: 8270 Calibration Mix #3
31621: 8270 Calibration Mix #4
31995: 8270 Calibration Mix #5, Revised
31996: 3-Methylcholanthrene Standard

cat.# 31626 (kit)

kit

Semivolatile Organics/Base, Neutral & Acid Extractables (BNAs), *cont.*

SOM01.1 (Semivolatiles), QA Mixes

SOM01.1 Deuterated Monitoring Compound Mix SIM Compounds (2 components)

Fluoranthene-d10 (93951-69-0)
2-Methylnaphthalene-d10 (7297-45-2)
2,000 µg/mL each in methylene chloride, 1 mL/ampul
cat.# 33913 (ea.)

04.2, 04.1, 4/89, and 3/90 SOW (Semivolatiles), QA Mixes

SV Internal Standard Mix (6 components)

Acenaphthene-d10 (15067-26-2) Naphthalene-d8 (1146-65-2)
Chrysene-d12 (1719-03-5) Perylene-d12 (1520-96-3)
1,4-Dichlorobenzene-d4 (3855-82-1) Phenanthrene-d10 (1517-22-2)

Each	15-pk.	25-pk.
2,000 µg/mL each in methylene chloride, 1 mL/ampul 31206	31206.15	31206.25
4,000 µg/mL each in methylene chloride, 1 mL/ampul 31006	31006.15	31006.25

Revised SV Internal Standard Mix (7 components)

Acenaphthene-d10 (15067-26-2) Naphthalene-d8 (1146-65-2)
Chrysene-d12 (1719-03-5) Perylene-d12 (1520-96-3)
1,4-Dichlorobenzene-d4 (3855-82-1) Phenanthrene-d10 (1517-22-2)
1,4-Dioxane-d8 (17647-74-4)

Each	15-pk.	25-pk.
2,000 µg/mL each in methylene chloride, 1 mL/ampul 31885	31885.15	31885.25
4,000 µg/mL each in methylene chloride, 1 mL/ampul 31886	—	—

Acid Surrogate Standard Mix (3/90 SOW) (4 components)

2-Chlorophenol-d4 (93951-73-6) Phenol-d6 (13127-88-3)
2-Fluorophenol (367-12-4) 2,4,6-Tribromophenol (118-79-6)

1,500 µg/mL each in methanol, 1 mL/ampul cat.# 31003 (ea.)		
7,500 µg/mL each in methanol, 1 mL/ampul cat.# 31073 (ea.)		
7,500 µg/mL each in methanol, 5 mL/ampul cat.# 31083 (ea.)		

Acid Surrogate Mix (4/89 SOW) (3 components)

2-Fluorophenol (367-12-4) 2,4,6-Tribromophenol (118-79-6)
Phenol-d6 (13127-88-3)

Each	15-pk.	25-pk.
2,000 µg/mL each in methanol, 1 mL/ampul 31025	31025.15	31025.25
10,000 µg/mL each in methanol, 1 mL/ampul 31063	31063.15	—
10,000 µg/mL each in methanol, 5 mL/ampul 31087	—	—
10,000 µg/mL each in methanol, 10 mL/ampul 33029	—	33029.25

04.2, 04.1, 4/89, and 3/90 SOW (Semivolatiles), QA Mixes, *cont.***Revised B/N Surrogate Mix** (4 components)

2-Fluorobiphenyl (321-60-8) *p*-Terphenyl-d14 (1718-51-0)
Nitrobenzene-d5 (4165-60-0) Pyrene-d10 (1718-52-1)

Each	15-pk.
1,000 µg/mL each in methylene chloride, 1 mL/ampul 31887	31887.15
5,000 µg/mL each in methylene chloride, 1 mL/ampul 31888	31888.15
5,000 µg/mL each in methylene chloride, 5 mL/ampul 31889	—

CLP 04.1 BNA Surrogate Mix (8 components)

2-Chlorophenol-d4 (93951-73-6) 1,500 µg/mL Nitrobenzene-d5 (4165-60-0) 1,000
Phenol-d6 (13127-88-3) 1,500
1,2-Dichlorobenzene-d4 (2199-69-1) 1,000 *p*-Terphenyl-d14 (1718-51-0) 1,000
2,4,6-Tribromophenol (118-79-6) 1,500
2-Fluorobiphenyl (321-60-8) 1,000
2-Fluorophenol (367-12-4) 1,500

In methylene chloride, 1 mL/ampul
cat.# 31493 (ea.)

B/N Surrogate Standard Mix (3/90 SOW) (4 components)

1,2-Dichlorobenzene-d4 (2199-69-1) Nitrobenzene-d5 (4165-60-0)
2-Fluorobiphenyl (321-60-8) *p*-Terphenyl-d14 (1718-51-0)

1,000 µg/mL each in methylene chloride, 1 mL/ampul cat.# 31002 (ea.)		
5,000 µg/mL each in methylene chloride, 1 mL/ampul cat.# 31072 (ea.)		
5,000 µg/mL each in methylene chloride, 5 mL/ampul cat.# 31082 (ea.)		

B/N Surrogate Mix (4/89 SOW) (3 components)

2-Fluorobiphenyl (321-60-8) *p*-Terphenyl-d14 (1718-51-0)
Nitrobenzene-d5 (4165-60-0)

Each	15-pk.	25-pk.
1,000 µg/mL each in methylene chloride, 1 mL/ampul 31024	31024.15	31024.25
5,000 µg/mL each in methylene chloride, 1 mL/ampul 31062	31062.15	—
5,000 µg/mL each in methylene chloride, 5 mL/ampul 31086	—	—
5,000 µg/mL each in methylene chloride, 10 mL/ampul 33028	—	33028.25

Acid Matrix Spike Mix (5 components)

4-Chloro-3-methylphenol (59-50-7) Pentachlorophenol (87-86-5)
2-Chlorophenol (95-57-8) Phenol (108-95-2)
4-Nitrophenol (100-02-7)

1,500 µg/mL each in methanol, 1 mL/ampul cat.# 31005 (ea.)		
7,500 µg/mL each in methanol, 1 mL/ampul cat.# 31075 (ea.)		
7,500 µg/mL each in methanol, 5 mL/ampul cat.# 31085 (ea.)		



Semivolatile Organics/Base, Neutral & Acid Extractables (BNAs), *cont.*

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

CLP 04.1 B/N Matrix Spike Mix (4 components)

Acenaphthene (83-32-9) N-Nitroso-di-*n*-propylamine (621-64-7)
 2,4-Dinitrotoluene (121-14-2) Pyrene (129-00-0)
 1,000 µg/mL each in methanol, 1 mL/ampul
 cat.# 31492 (ea.)

B/N Matrix Spike Mix (6 components)

Acenaphthene (83-32-9) N-Nitroso-di-*n*-propylamine (621-64-7)
 1,4-Dichlorobenzene (106-46-7) Pyrene (129-00-0)
 2,4-Dinitrotoluene (121-14-2) 1,2,4-Trichlorobenzene (120-82-1)

Each	15-pk.
1,000 µg/mL each in methanol, 1 mL/ampul 31004	31004.15
5,000 µg/mL each in methanol, 1 mL/ampul 31074	—
5,000 µg/mL each in methanol, 5 mL/ampul 31084	—

Low-Concentration Semivolatiles, QA Mixes

SV Tuning Compound

Decafluorotriphenylphosphine (DFTPP) (5074-71-5)
 2,500 µg/mL in methylene chloride, 1 mL/ampul
 cat.# 31001 (ea.)

PFTBA (MS Tuning Compound)

Perfluorotributylamine (PFTBA) (311-89-7)
 Neat, 1 mL/ampul
 cat.# 30482 (ea.)

No data pack available.



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 Restek's line of
 certified reference
 materials from ordinary
 reference standards?

10 Critical Steps...

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We maintain an active inventory of more than 1,500 different CRMs. If it's in our catalog, your next standard is likely in stock and waiting for your order.

Semivolatile Organics/Base, Neutral & Acid Extractables (BNAs), *cont.*04.2 and 04.1 (Semivolatiles),
Calibration Mixes, *cont.***CLP 04.1 Phenols Calibration Mix** (14 components)

4-Chloro-3-methylphenol (59-50-7)	4-Methylphenol (<i>p</i> -cresol) (106-44-5)
2-Chlorophenol (95-57-8)	2-Nitrophenol (88-75-5)
2,4-Dichlorophenol (120-83-2)	4-Nitrophenol (100-02-7)
2,4-Dimethylphenol (105-67-9)	Pentachlorophenol (87-86-5)
4,6-Dinitro-2-methylphenol	Phenol (108-95-2)
(Dinitro- <i>o</i> -cresol) (534-52-1)	2,4,5-Trichlorophenol (95-95-4)
2,4-Dinitrophenol (51-28-5)	2,4,6-Trichlorophenol (88-06-2)
2-Methylphenol (<i>o</i> -cresol) (95-48-7)	

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

Benzidine Mix (2 components)

Benzidine (92-87-5)
3,3'-Dichlorobenzidine (91-94-1)

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

4/89 and 3/90 SOW (Semivolatiles),
Calibration Mixes**SV Calibration Mix #1** (5 components)

Benzyl alcohol (100-51-6)	3-Nitroaniline (99-09-2)
4-Chloroaniline (106-47-8)	4-Nitroaniline (100-01-6)
2-Nitroaniline (88-74-4)	

2,000 µg/mL each in methylene chloride, 1 mL/ampul
cat.# 31007 (ea.)

SV Calibration Mix #2 (15 components)

Benzoic acid (65-85-0)	2-Methylphenol (<i>o</i> -cresol) (95-48-7)
4-Chloro-3-methylphenol (59-50-7)	4-Methylphenol (<i>p</i> -cresol) (106-44-5)
2-Chlorophenol (95-57-8)	2-Nitrophenol (88-75-5)
2,4-Dichlorophenol (120-83-2)	4-Nitrophenol (100-02-7)
2,4-Dimethylphenol (105-67-9)	Pentachlorophenol (87-86-5)
4,6-Dinitro-2-methylphenol	Phenol (108-95-2)
(Dinitro- <i>o</i> -cresol) (534-52-1)	2,4,5-Trichlorophenol (95-95-4)
2,4-Dinitrophenol (51-28-5)	2,4,6-Trichlorophenol (88-06-2)

2,000 µg/mL each in methylene chloride, 1 mL/ampul
cat.# 31008 (ea.)

SV Calibration Mix #3 (14 components)

Bis(2-chloroethoxy)methane (111-91-1)	Dimethylphthalate (131-11-3)
Bis(2-chloroethyl)ether (111-44-4)	Di- <i>n</i> -butylphthalate (84-74-2)
Bis(2-ethylhexyl)phthalate (117-81-7)	Di- <i>n</i> -octylphthalate (117-84-0)
4-Bromophenyl phenyl ether (101-55-3)	N-Nitrosodimethylamine (62-75-9)
Benzyl butyl phthalate (85-68-7)	N-Nitroso-di- <i>n</i> -propylamine (621-64-7)
2-Chloronaphthalene (91-58-7)	N-Nitrosodiphenylamine (86-30-6)
4-Chlorophenyl phenyl ether (7005-72-3)	2,2'-Oxybis(1-chloropropane) (108-60-1)

2,000 µg/mL each in methylene chloride, 1 mL/ampul
cat.# 31009 (ea.)

4/89 and 3/90 SOW (Semivolatiles),
Calibration Mixes, *cont.***SV Calibration Mix #4** (13 components)

Carbazole (86-74-8)	Hexachlorocyclopentadiene (77-47-4)
Dibenzofuran (132-64-9)	Hexachloroethane (67-72-1)
Diethyl phthalate (84-66-2)	Isophorone (78-59-1)
2,4-Dinitrotoluene (121-14-2)	2-Methylnaphthalene (91-57-6)
2,6-Dinitrotoluene (606-20-2)	Nitrobenzene (98-95-3)
Hexachlorobenzene (118-74-1)	1,2,4-Trichlorobenzene (120-82-1)
Hexachlorobutadiene (87-68-3)	

2,000 µg/mL each in methylene chloride, 1 mL/ampul
cat.# 31010 (ea.)

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

Acenaphthene (83-32-9)	Chrysene (218-01-9)
Acenaphthylene (208-96-8)	Dibenz(a,h)anthracene (53-70-3)
Anthracene (120-12-7)	Fluoranthene (206-44-0)
Benz(a)anthracene (56-55-3)	Fluorene (86-73-7)
Benzo(a)pyrene (50-32-8)	Indeno(1,2,3-cd)pyrene (193-39-5)
Benzo(b)fluoranthene (205-99-2)	Naphthalene (91-20-3)
Benzo(k)fluoranthene (207-08-9)	Phenanthrene (85-01-8)
Benzo(ghi)perylene (191-24-2)	Pyrene (129-00-0)

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

SV Calibration Mix #6 (18 components)

Aldrin (309-00-2)	Endosulfan II (33213-65-9)
α-BHC (319-84-6)	Endosulfan sulfate (1031-07-8)
β-BHC (319-85-7)	Endrin (72-20-8)
δ-BHC (319-86-8)	Endrin aldehyde (7421-93-4)
γ-BHC (Lindane) (58-89-9)	Endrin ketone (53494-70-5)
4,4'-DDD (72-54-8)	Heptachlor (76-44-8)
4,4'-DDE (72-55-9)	Heptachlor epoxide (isomer B) (1024-57-3)
4,4'-DDT (50-29-3)	Methoxychlor (72-43-5)
Dieldrin (60-57-1)	
Endosulfan I (959-98-8)	

2,000 µg/mL each in toluene:hexane (1:1), 1 mL/ampul
cat.# 31012 (ea.)

SV Calibration Mix #7 (3 components)

1,2-Dichlorobenzene (95-50-1)	1,4-Dichlorobenzene (106-46-7)
1,3-Dichlorobenzene (541-73-1)	

2,000 µg/mL each in methylene chloride, 1 mL/ampul
cat.# 31013 (ea.)

3,3'-Dichlorobenzidine

3,3'-Dichlorobenzidine (91-94-1)

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

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

605 Benzidines Calibration Mix (2 components)

Benzidine (92-87-5)
3,3'-Dichlorobenzidine (91-94-1)

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

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



Semivolatile Organics/Base, Neutral & Acid Extractables (BNAs), *cont.*4/89 and 3/90 SOW (Semivolatiles),
Calibration Mixes, *cont.***8270 Benzidines Mix** (3 components)Benzidine (92-87-5) 3,3'-Dimethylbenzidine (*o*-tolidine)
3,3'-Dichlorobenzidine (91-94-1) (119-93-7)2,000 µg/mL each in methanol, 1 mL/ampul
cat.# 31688 (ea.)2,000 µg/mL each in methylene chloride, 1 mL/ampul
cat.# 31852 (ea.)**CLP Semivolatile Calibration Kit #2**
(without pesticides)Contains 1 mL each of these mixtures.
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

cat.# 31462 (kit)

kit

Semivolatile Calibration Kit #3 (with benzidine)Contains 1 mL each of these mixtures.
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)

cat.# 31463 (kit)

kit

03.2 (Semivolatiles), Calibration Mixes

OLC 03.2 SVOA Deuterated Monitoring Compounds
(DMC) (16 components)Acenaphthylene-d8 (93951-97-4) Fluorene-d10 (81103-79-9)
Anthracene-d10 (1719-06-8) 4-Methylphenol-d8 (190780-66-6)
Benzo(a)pyrene-d12 (63466-71-7) Nitrobenzene-d5 (4165-60-0)
Bis-(2-chloroethyl)ether-d8 (93952-02-4) 2-Nitrophenol-d4 (93951-78-1)
4-Chloroaniline-d4 (191656-33-4) 4-Nitrophenol-d4 (93951-79-2)
2-Chlorophenol-d4 (93951-73-6) Phenol-d5 (4165-62-2)
2,4-Dichlorophenol-d3 (93951-74-7) Pyrene-d10 (1718-52-1)2,000 µg/mL each in methylene chloride, 1 mL/ampul
cat.# 31810 (ea.)**N-Nitrosodimethylamine-d6**

N-Nitrosodimethylamine-d6 (17829-05-9)

1,000 µg/mL in methylene chloride, 1 mL/ampul
cat.# 33910 (ea.)03.2 (Semivolatiles), Calibration Mixes, *cont.***Fortification Mix** (7 components)4,6-Dinitro-2-methylphenol 3-Nitroaniline (99-09-2)
(Dinitro-*o*-cresol) (534-52-1) 4-Nitroaniline (100-01-6)
2,4-Dinitrophenol (51-28-5) 4-Nitrophenol (100-02-7)
2-Nitroaniline (88-74-4) 2,4,5-Trichlorophenol (95-95-4)2,000 µg/mL each in methylene chloride, 1 mL/ampul
cat.# 31811 (ea.)**3,3'-Dichlorobenzidine**

3,3'-Dichlorobenzidine (91-94-1)

2,000 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31835 (ea.)**Hexachlorophene**

Hexachlorophene (70-30-4)

2,000 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31811 (ea.)Low-Concentration Semivolatiles,
Calibration Mixes**L/C Phenol Mix A** (6 components)4,6-Dinitro-2-methylphenol Pentachlorophenol (87-86-5)
(Dinitro-*o*-cresol) (534-52-1) 2,4,6-Tribromophenol (SS) (118-79-6)
2,4-Dinitrophenol (51-28-5) 2,4,5-Trichlorophenol (95-95-4)
4-Nitrophenol (100-02-7)2,000 µg/mL each in methylene chloride, 1 mL/ampul
cat.# 31208 (ea.)

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

L/C Aniline Mix A (3 components)2-Nitroaniline (88-74-4) 4-Nitroaniline (100-01-6)
3-Nitroaniline (99-09-2)2,000 µg/mL each in methylene chloride, 1 mL/ampul
cat.# 31210 (ea.)

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

L/C Aniline Mix B

4-Chloroaniline (106-47-8)

2,000 µg/mL in methylene chloride, 1 mL/ampul
cat.# 31211 (ea.)**Additional Required Low-Concentration**
Semivolatile Mixes:31024: B/N Surrogate Mix (4/89 SOW) page 535
31009: SV Calibration Mix #3 page 542
31010: SV Calibration Mix #4 page 542
31011: SV Calibration Mix #5 page 542
31026: 3,3'-dichlorobenzidine page 542
31001: SV Tuning Compound (DFTPP) page 536

Note: Pesticides are not included in the EPA CLP semivolatile analytical method.



Semivolatile Organics/Base, Neutral & Acid Extractables (BNAs), *cont.*

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 (5 components)

Bis(2-ethylhexyl) phthalate (117-81-7)	10 mg/mL
Corn oil (8001-30-7)	250
Methoxychlor (72-43-5)	2.0
Perylene (198-55-0)	0.2
Sulfur (7704-34-9)	0.8

In methylene chloride, 1 mL/ampul

cat.# 32019 (ea.)

In methylene chloride, 5 mL/ampul

cat.# 32023 (ea.)

No data pack available.

Revised GPC Calibration Mix (5 components)

Bis(2-ethylhexyl) phthalate (117-81-7)	5 mg/mL
Corn oil (8001-30-7)	250
Methoxychlor (72-43-5)	1.0
Perylene (198-55-0)	0.2
Sulfur (7704-34-9)	0.8

In methylene chloride, 1 mL/ampul

cat.# 32041 (ea.)

In methylene chloride, 5 mL/ampul

cat.# 32042 (ea.)

No data pack available.

did you know?

Our **Pesticide Matrix Spike Mix** (cat.# 32018, **page 525**) can be used as a GPC calibration verification solution.

Compound Index for Reference Standards

See **pages 586–592**.



Toxicity Characteristic Leaching Procedure (TCLP)

Method 1311 (Toxicity Characteristic Leaching Procedure [TCLP])

TCLP VOA Mix (11 components)

Benzene (71-43-2)	1,2-Dichloroethane (107-06-2)
2-Butanone (MEK) (78-93-3)	1,1-Dichloroethene (75-35-4)
Carbon tetrachloride (56-23-5)	Tetrachloroethene (127-18-4)
Chlorobenzene (108-90-7)	Trichloroethene (79-01-6)
Chloroform (67-66-3)	Vinyl chloride (75-01-4)
1,4-Dichlorobenzene (106-46-7)	

2,000 µg/mL each in P&T methanol:water (90:10), 1 mL/ampul

cat.# 30024 (ea.)

TCLP Acid Mix (6 components)

2-Methylphenol (<i>o</i> -cresol) (95-48-7)	Pentachlorophenol (87-86-5)
3-Methylphenol (<i>m</i> -cresol) (108-39-4)	2,4,5-Trichlorophenol (95-95-4)
4-Methylphenol (<i>p</i> -cresol) (106-44-5)	2,4,6-Trichlorophenol (88-06-2)

2,000 µg/mL each in methanol, 1 mL/ampul

cat.# 31027 (ea.)

TCLP B/N Mix (7 components)

1,4-Dichlorobenzene (106-46-7)	Hexachloroethane (67-72-1)
2,4-Dinitrotoluene (121-14-2)	Nitrobenzene (98-95-3)
Hexachlorobenzene (118-74-1)	Pyridine (110-86-1)
Hexachlorobutadiene (87-68-3)	

2,000 µg/mL each in acetone, 1 mL/ampul

cat.# 31028 (ea.)

TCLP Pesticide Mix (5 components)

γ-BHC (Lindane) (58-89-9)	Heptachlor epoxide (isomer B) (1024-57-3)
Endrin (72-20-8)	Methoxychlor (72-43-5)
Heptachlor (76-44-8)	

2,000 µg/mL each in methanol, 1 mL/ampul

cat.# 32013 (ea.)

TCLP Herbicide Mix (2 components)

2,4-D (free acid) (94-75-7)
2,4,5-TP (Silvex) (free acid) (93-72-1)

2,000 µg/mL each in methanol, 1 mL/ampul

cat.# 32014 (ea.)

TCLP Toxaphene Mix

Toxaphene (8001-35-2)

2,000 µg/mL in methanol, 1 mL/ampul

cat.# 32015 (ea.)

TCLP Chlordane Mix

Chlordane (57-74-9)

2,000 µg/mL in methanol, 1 mL/ampul

cat.# 32016 (ea.)

Volatile Organics

Individual VOA Surrogate and Internal Standards for EPA Methods

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

Compound	CAS #	Solvent	Conc.	cat. #
Benzene-d6	1076-43-3	PTM	2,000	30025
2-Bromochlorobenzene	694-80-4	PTM	2,000	30228
4-Bromochlorobenzene	106-39-8	PTM	2,000	30230
Bromochloromethane	74-97-5	PTM	2,000	30225
2-Bromo-1-chloropropane	3017-95-6	PTM	2,000	30226
1-Bromo-4-fluorobenzene (BFB)	460-00-4	PTM	2,000	30026
Chlorobenzene-d5	3114-55-4	PTM	2,000	30223
1-Chloro-2-fluorobenzene	348-51-6	PTM	2,000	30040
1,2-Dichlorobenzene-d4	2199-69-1	PTM	2,000	30049
1,4-Dichlorobutane	110-56-5	PTM	2,000	30227
1,2-Dichloroethane-d4	17060-07-0	PTM	2,000	30027
1,4-Difluorobenzene	540-36-3	PTM	2,000	30032
Ethylbenzene-d5	20302-26-5	PTM	2,000	30028
Ethylbenzene-d10	25837-05-2	PTM	2,000	30029
Fluorobenzene	462-06-6	PTM	2,000	30030
Pentafluorobenzene	363-72-4	PTM	2,000	30031
Toluene-d8	2037-26-5	PTM	2,000	30224
α,α,α-Trifluorotoluene	98-08-8	PTM	2,000	30048

PTM = Purge-and-trap grade methanol

Method 501.1, 501.2, 501.3 (Trihalomethanes)

See page 545.

Antifoam Agent for Purge-and-Trap Samples

Foam generated as purge gas passes through a sample can enter the analytical trap—and possibly the GC column. Our silica-containing antifoam agent is effective over a wide pH range and will not conflict with chromatography of target analytes. To use properly, see the instructions on the product certificate or on the product page (search “31822” at www.restek.com).

Neat, 1 mL/ampul

cat. # 31822 (ea.)

No data pack available.

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— Buy 5 Standards, Get 20% Off

Not available for all standards. Contact your local Restek® representative for more details.

Method 502.1, 502.2 (Volatile Halogenated Organics)

502.2 Internal Standard #1

1-Chloro-2-fluorobenzene (348-51-6)

2,000 µg/mL in P&T methanol, 1 mL/ampul

cat. # 30040 (ea.)

502.2 Internal Standard Mix #2 (2 components)

2-Bromo-1-chloropropane (3017-95-6)

Fluorobenzene (462-06-6)

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

cat. # 30041 (ea.)

8021/502.2 Surrogate Mix #1 (3 components)

1-Bromo-2-chloroethane (107-04-0)

Fluorobenzene (462-06-6)

1-Chloro-3-fluorobenzene (625-98-9)

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

cat. # 30463 (ea.)

Volatiles MegaMix® Standard With Gases



(60 components)

Benzene (71-43-2)
 Bromobenzene (108-86-1)
 Bromochloromethane (74-97-5)
 Bromodichloromethane (75-27-4)
 Bromoform (75-25-2)
 Bromomethane (methyl bromide) (74-83-9)
n-Butylbenzene (104-51-8)
sec-Butylbenzene (135-98-8)
tert-Butylbenzene (98-06-6)
 Carbon tetrachloride (56-23-5)
 Chlorobenzene (108-90-7)
 Chloroethane (ethyl chloride) (75-00-3)
 Chloroform (67-66-3)
 Chloromethane (methyl chloride) (74-87-3)
 2-Chlorotoluene (95-49-8)
 4-Chlorotoluene (106-43-4)
 Dibromochloromethane (124-48-1)
 1,2-Dibromo-3-chloropropane (DBCP) (96-12-8)
 1,2-Dibromoethane (EDB) (106-93-4)
 Dibromomethane (74-95-3)
 1,2-Dichlorobenzene (95-50-1)
 1,3-Dichlorobenzene (541-73-1)
 1,4-Dichlorobenzene (106-46-7)
 Dichlorodifluoromethane (CFC-12) (75-71-8)
 1,1-Dichloroethane (75-34-3)
 1,2-Dichloroethane (107-06-2)
 1,1-Dichloroethene (75-35-4)
cis-1,2-Dichloroethene (156-59-2)
trans-1,2-Dichloroethene (156-60-5)
 1,2-Dichloropropane (78-87-5)
 1,3-Dichloropropane (142-28-9)
 2,2-Dichloropropane (594-20-7)
 1,1-Dichloropropene (563-58-6)
cis-1,3-Dichloropropene (10061-01-5)
trans-1,3-Dichloropropene (10061-02-6)
 Ethylbenzene (100-41-4)
 Hexachloro-1,3-butadiene (hexachlorobutadiene) (87-68-3)
 Isopropylbenzene (cumene) (98-82-8)
 4-Isopropyltoluene (*p*-Cymene) (99-87-6)
 Methylene chloride (dichloromethane) (75-09-2)
 Naphthalene (91-20-3)
n-Propylbenzene (103-65-1)
 Styrene (100-42-5)
 1,1,1,2-Tetrachloroethane (630-20-6)
 1,1,2,2-Tetrachloroethane (79-34-5)
 Tetrachloroethene (127-18-4)
 Toluene (108-88-3)
 1,2,3-Trichlorobenzene (87-61-6)
 1,2,4-Trichlorobenzene (120-82-1)
 1,1,1-Trichloroethane (71-55-6)
 1,1,2-Trichloroethane (79-00-5)
 Trichloroethene (79-01-6)
 Trichlorofluoromethane (CFC-11) (75-69-4)
 1,2,3-Trichloropropane (96-18-4)
 1,2,4-Trimethylbenzene (95-63-6)
 1,3,5-Trimethylbenzene (108-67-8)
 Vinyl chloride (75-01-4)
m-Xylene (108-38-3)
o-Xylene (95-47-6)
p-Xylene (106-42-3)

200 µg/mL each in P&T methanol, 1 mL/ampul

cat. # 30603 (ea.)

Volatile Organics

Method 502.1, 502.2 (Volatile Halogenated Organics), *cont.***502.2 MegaMix® Standard** (54 components)

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

Benzene (71-43-2)	1,1-Dichloropropene (563-58-6)
Bromobenzene (108-86-1)	<i>cis</i> -1,3-Dichloropropene (10061-01-5)
Bromochloromethane (74-97-5)	<i>trans</i> -1,3-Dichloropropene (10061-02-6)
Bromodichloromethane (75-27-4)	Ethylbenzene (100-41-4)
Bromoform (75-25-2)	Hexachloro-1,3-butadiene (hexachlorobutadiene) (87-68-3)
<i>n</i> -Butylbenzene (104-51-8)	Isopropylbenzene (cumene) (98-82-8)
<i>sec</i> -Butylbenzene (135-98-8)	4-Isopropyltoluene (<i>p</i> -cymene) (99-87-6)
<i>tert</i> -Butylbenzene (98-06-6)	Methylene chloride (dichloromethane) (75-09-2)
Carbon tetrachloride (56-23-5)	Naphthalene (91-20-3)
Chlorobenzene (108-90-7)	<i>n</i> -Propylbenzene (103-65-1)
Chloroform (67-66-3)	Styrene (100-42-5)
2-Chlorotoluene (95-49-8)	1,1,1,2-Tetrachloroethane (630-20-6)
4-Chlorotoluene (106-43-4)	1,1,2,2-Tetrachloroethane (79-34-5)
Dibromochloromethane (124-48-1)	Tetrachloroethene (127-18-4)
1,2-Dibromo-3-chloropropane (DBCP) (96-12-8)	Toluene (108-88-3)
1,2-Dibromoethane (EDB) (106-93-4)	1,2,3-Trichlorobenzene (87-61-6)
Dibromomethane (74-95-3)	1,2,4-Trichlorobenzene (120-82-1)
1,2-Dichlorobenzene (95-50-1)	1,1,1-Trichloroethane (71-55-6)
1,3-Dichlorobenzene (541-73-1)	1,1,2-Trichloroethane (79-00-5)
1,4-Dichlorobenzene (106-46-7)	Trichloroethene (79-01-6)
1,1-Dichloroethane (75-34-3)	1,2,3-Trichloropropane (96-18-4)
1,2-Dichloroethane (107-06-2)	1,2,4-Trimethylbenzene (95-63-6)
1,1-Dichloroethene (75-35-4)	1,3,5-Trimethylbenzene (108-67-8)
<i>cis</i> -1,2-Dichloroethene (156-59-2)	<i>m</i> -Xylene (108-38-3)
<i>trans</i> -1,2-Dichloroethene (156-60-5)	<i>o</i> -Xylene (95-47-6)
1,2-Dichloropropane (78-87-5)	<i>p</i> -Xylene (106-42-3)
1,3-Dichloropropane (142-28-9)	
2,2-Dichloropropane (594-20-7)	
200 µg/mL each in P&T methanol, 1 mL/ampul	
	cat.# 30432 (ea.)
2,000 µg/mL each in P&T methanol, 1 mL/ampul	
	cat.# 30431 (ea.)

502.2 Calibration Mix #1 (gases) (6 components)

Bromomethane (methyl bromide) (74-83-9)	Dichlorodifluoromethane (CFC-12) (75-71-8)
Chloroethane (ethyl chloride) (75-00-3)	Trichlorofluoromethane (CFC-11) (75-69-4)
Chloromethane (methyl chloride) (74-87-3)	Vinyl chloride (75-01-4)
200 µg/mL each in P&T methanol, 1 mL/ampul	
	cat.# 30439 (ea.)
2,000 µg/mL each in P&T methanol, 1 mL/ampul	
	cat.# 30042 (ea.)

502.2 Calibration Mix #2 (14 components)

Bromodichloromethane (75-27-4)	2,2-Dichloropropane (594-20-7)
Bromoform (75-25-2)	<i>cis</i> -1,3-Dichloropropene (10061-01-5)
Carbon tetrachloride (56-23-5)	<i>trans</i> -1,3-Dichloropropene (10061-02-6)
Chloroform (67-66-3)	Methylene chloride (dichloromethane) (75-09-2)
1,1-Dichloroethane (75-34-3)	1,1,1-Trichloroethane (71-55-6)
1,1-Dichloroethene (75-35-4)	Trichloroethene (79-01-6)
<i>trans</i> -1,2-Dichloroethene (156-60-5)	
1,3-Dichloropropane (142-28-9)	
2,000 µg/mL each in P&T methanol, 1 mL/ampul	
	cat.# 30043 (ea.)

502.2 Calibration Mix #3 (14 components)

Bromochloromethane (74-97-5)	1,2-Dichloropropane (78-87-5)
Dibromochloromethane (124-48-1)	1,1-Dichloropropene (563-58-6)
1,2-Dibromo-3-chloropropane (96-12-8)	1,1,1,2-Tetrachloroethane (630-20-6)
1,2-Dibromoethane (EDB) (106-93-4)	1,1,2,2-Tetrachloroethane (79-34-5)
Dibromomethane (74-95-3)	Tetrachloroethene (127-18-4)
1,2-Dichloroethane (107-06-2)	1,1,2-Trichloroethane (79-00-5)
<i>cis</i> -1,2-Dichloroethene (156-59-2)	1,2,3-Trichloropropane (96-18-4)
2,000 µg/mL each in P&T methanol, 1 mL/ampul	
	cat.# 30044 (ea.)

502.2 Calibration Mix #4 (9 components)

Benzene (71-43-2)	Styrene (100-42-5)
<i>tert</i> -Butylbenzene (98-06-6)	Toluene (108-88-3)
Chlorobenzene (108-90-7)	1,3,5-Trimethylbenzene (108-67-8)
Isopropylbenzene (cumene) (98-82-8)	<i>m</i> -Xylene (108-38-3)
<i>n</i> -Propylbenzene (103-65-1)	
2,000 µg/mL each in P&T methanol, 1 mL/ampul	
	cat.# 30045 (ea.)

502.2 Calibration Mix #5 (10 components)

Bromobenzene (108-86-1)	Ethylbenzene (100-41-4)
<i>n</i> -Butylbenzene (104-51-8)	1,2,4-Trichlorobenzene (120-82-1)
<i>sec</i> -Butylbenzene (135-98-8)	1,2,4-Trimethylbenzene (95-63-6)
2-Chlorotoluene (95-49-8)	<i>o</i> -Xylene (95-47-6)
1,3-Dichlorobenzene (541-73-1)	<i>p</i> -Xylene (106-42-3)
2,000 µg/mL each in P&T methanol, 1 mL/ampul	
	cat.# 30046 (ea.)

502.2 Calibration Mix #6 (7 components)

4-Chlorotoluene (106-43-4)	4-Isopropyltoluene (<i>p</i> -Cymene) (99-87-6)
1,2-Dichlorobenzene (95-50-1)	Naphthalene (91-20-3)
1,4-Dichlorobenzene (106-46-7)	1,2,3-Trichlorobenzene (87-61-6)
Hexachlorobutadiene (87-68-3)	
2,000 µg/mL each in P&T methanol, 1 mL/ampul	
	cat.# 30047 (ea.)

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

Contains 1 mL each of these mixtures.

- 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

cat.# 30444 (kit)

kit

**502.2 VOA Calibration Kit #2 (2,000 µg/mL)**

Contains 1 mL each of these mixtures.

- 30042: 502.2 Calibration Mix #1
- 30431: 502.2 MegaMix Standard

cat.# 30445 (kit)

kit

502.2 VOA Calibration Kit #3 (200 µg/mL)

Contains 1 mL each of these mixtures.

- 30439: 502.2 Calibration Mix #1
- 30432: 502.2 MegaMix Standard

cat.# 30446 (kit)

kit

Volatile Organics, *cont.*

Method 504.1 (Ethylene Dibromide/ Dibromochloropropane)

504.1 Calibration Mix (3 components)

1,2-Dibromo-3-chloropropane (96-12-8) 1,2,3-Trichloropropane (96-18-4)
1,2-Dibromoethane (EDB) (106-93-4)
200 µg/mL each in P&T methanol, 1 mL/ampul
cat.# 30239 (ea.)

Method 522 (1,4-Dioxane)

See page 519.

Method 524.1, 524.2 (Volatile Organics)

524 Internal Standard/Surrogate Mix (3 components)

1-Bromo-4-fluorobenzene (BFB) 1,2-Dichlorobenzene-d4 (2199-69-1)
(460-00-4) Fluorobenzene (462-06-6)
2,000 µg/mL each in P&T methanol, 1 mL/ampul
cat.# 30201 (ea.)

Surrogate Standard (2 components)

1-Bromo-4-fluorobenzene (BFB) (460-00-4)
 α,α,α -Trifluorotoluene (98-08-8)
2,500 µg/mL each in P&T methanol, 1 mL/ampul
cat.# 30484 (ea.)

524.2 Surrogate Standard (2 components)

1-Bromo-4-fluorobenzene (BFB) (460-00-4)
1,2-Dichlorobenzene-d4 (2199-69-1)
2,000 µg/mL in P&T methanol, 1 mL/ampul
cat.# 30607 (ea.)

PFTBA (MS Tuning Compound)

Perfluorotributylamine (PFTBA) (311-89-7)
Neat, 1 mL/ampul
cat.# 30482 (ea.)

No data pack available.

Antifoam Agent for Purge-and-Trap Samples

Foam generated as purge gas passes through a sample can enter the analytical trap—and possibly the GC column. Our silica-containing antifoam agent is effective over a wide pH range and will not conflict with chromatography of target analytes. To use properly, see the instructions on the product certificate or on the product page (search “31822” at www.restek.com).

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

No data pack available.

Method 524.1, 524.2 (Volatile Organics), *cont.*

Volatiles MegaMix® Standard With Gases

MEGAMIX®

(60 components)

Benzene (71-43-2) 1,3-Dichloropropane (142-28-9)
Bromobenzene (108-86-1) 2,2-Dichloropropane (594-20-7)
Bromochloromethane (74-97-5) 1,1-Dichloropropene (563-58-6)
Bromodichloromethane (75-27-4) *cis*-1,3-Dichloropropene (10061-01-5)
Bromoform (75-25-2) *trans*-1,3-Dichloropropene (10061-02-6)
Bromomethane (methyl bromide) (74-83-9) Ethylbenzene (100-41-4)
n-Butylbenzene (104-51-8) Hexachloro-1,3-butadiene
sec-Butylbenzene (135-98-8) (hexachlorobutadiene) (87-68-3)
tert-Butylbenzene (98-06-6) Isopropylbenzene (cumene) (98-82-8)
Carbon tetrachloride (56-23-5) 4-Isopropyltoluene (*p*-Cymene) (99-87-6)
Chlorobenzene (108-90-7) Methylene chloride (dichloromethane) (75-09-2)
Chloroethane (ethyl chloride) (75-00-3) Naphthalene (91-20-3)
Chloroform (67-66-3) *n*-Propylbenzene (103-65-1)
Chloromethane (methyl chloride) (74-87-3) Styrene (100-42-5)
2-Chlorotoluene (95-49-8) 1,1,1,2-Tetrachloroethane (630-20-6)
4-Chlorotoluene (106-43-4) 1,1,2,2-Tetrachloroethane (79-34-5)
Dibromochloromethane (124-48-1) Tetrachloroethene (127-18-4)
1,2-Dibromo-3-chloropropane (DBCP) (96-12-8) Toluene (108-88-3)
1,2-Dibromoethane (EDB) (106-93-4) 1,2,3-Trichlorobenzene (87-61-6)
Dibromomethane (74-95-3) 1,2,4-Trichlorobenzene (120-82-1)
1,2-Dichlorobenzene (95-50-1) 1,1,1-Trichloroethane (71-55-6)
1,3-Dichlorobenzene (54-1-73-1) 1,1,2-Trichloroethane (79-00-5)
1,4-Dichlorobenzene (106-46-7) Trichloroethene (79-01-6)
Dichlorodifluoromethane (CFC-12) (75-71-8) Trichlorofluoromethane (CFC-11) (75-69-4)
1,1-Dichloroethane (75-34-3) 1,2,3-Trichloropropane (96-18-4)
1,2-Dichloroethane (107-06-2) 1,2,4-Trimethylbenzene (95-63-6)
1,1-Dichloroethene (75-35-4) 1,3,5-Trimethylbenzene (108-67-8)
cis-1,2-Dichloroethene (156-59-2) Vinyl chloride (75-01-4)
trans-1,2-Dichloroethene (156-60-5) *m*-Xylene (108-38-3)
1,2-Dichloropropane (78-87-5) *o*-Xylene (95-47-6)
p-Xylene (106-42-3)

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

520.2 Calibration Mix #1 (gases) (6 components)

Bromomethane (methyl bromide) (74-83-9)
Chloroethane (ethyl chloride) (75-00-3)
Chloromethane (methyl chloride) (74-87-3)
Dichlorodifluoromethane (CFC-12) (75-71-8)
Trichlorofluoromethane (CFC-11) (75-69-4)
Vinyl chloride (75-01-4)

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

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

Ketones Mix, 524.2 Rev. 4.1 (5 components)

Acetone (67-64-1) 2-Hexanone (591-78-6)
2-Butanone (MEK) (78-93-3) 4-Methyl-2-pentanone (MIBK) (108-10-1)
1,1-Dichloro-2-propanone (513-88-2)

5,000 µg/mL each in P&T methanol:water (90:10), 1 mL/ampul
cat.# 30602 (ea.)

Oxygenates Standard (5 components)

tert-Amyl ethyl ether (TAE) (919-94-8) 2,000 µg/mL
tert-Amyl methyl ether (TAME) (994-05-8) 2,000
tert-Butanol (TBA) (75-65-0) 10,000
Diisopropyl ether (DIPE) (108-20-3) 2,000
Ethyl-*tert*-butyl ether (ETBE) (637-92-3) 2,000

In P&T methanol, 1 mL/ampul
cat.# 30619 (ea.)

Volatile Organics, *cont.*Method 524.1, 524.2 (Volatile Organics), *cont.*

Drinking Water VOA MegaMix® Standard,

MEGAMIX®

524.2 Rev. 4.1 (73 components)

Acrylonitrile (107-13-1)	<i>cis</i> -1,3-Dichloropropene (10061-01-5)
Allyl chloride (3-chloropropene) (107-05-1)	<i>trans</i> -1,3-Dichloropropene (10061-02-6)
Benzene (71-43-2)	Diethyl ether (ethyl ether) (60-29-7)
Bromobenzene (108-86-1)	Ethylbenzene (100-41-4)
Bromochloromethane (74-97-5)	Ethyl methacrylate (97-63-2)
Bromodichloromethane (75-27-4)	Hexachloro-1,3-butadiene (87-68-3)
Bromoform (75-25-2)	Hexachloroethane (67-72-1)
<i>n</i> -Butylbenzene (104-51-8)	Iodomethane (methyl iodide) (74-88-4)
<i>sec</i> -Butylbenzene (135-98-8)	Isopropylbenzene (cumene) (98-82-8)
<i>tert</i> -Butylbenzene (98-06-6)	4-Isopropyltoluene (<i>p</i> -cymene) (99-87-6)
Carbon disulfide (75-15-0)	Methacrylonitrile (126-98-7)
Carbon tetrachloride (56-23-5)	Methyl acrylate (96-33-3)
Chloroacetonitrile (107-14-2)	Methyl <i>tert</i> -butyl ether (MTBE) (1634-04-4)
Chlorobenzene (108-90-7)	Methylene chloride (dichloromethane) (75-09-2)
1-Chlorobutane (Butyl chloride) (109-69-3)	Methyl methacrylate (80-62-6)
Chlorodibromomethane (dibromochloromethane) (124-48-1)	Naphthalene (91-20-3)
Chloroform (67-66-3)	Nitrobenzene (98-95-3)
2-Chlorotoluene (95-49-8)	2-Nitropropane (79-46-9)
4-Chlorotoluene (106-43-4)	Pentachloroethane (76-01-7)
1,2-Dibromo-3-chloropropane (DBCP) (96-12-8)	Propionitrile (ethylcyanide) (107-12-0)
1,2-Dibromoethane (ethylene dibromide) (106-93-4)	<i>n</i> -Propylbenzene (103-65-1)
Dibromomethane (74-95-3)	Styrene (100-42-5)
1,2-Dichlorobenzene (95-50-1)	1,1,1,2-Tetrachloroethane (630-20-6)
1,3-Dichlorobenzene (541-73-1)	1,1,2,2-Tetrachloroethane (79-34-5)
1,4-Dichlorobenzene (106-46-7)	Tetrachloroethene (127-18-4)
<i>trans</i> -1,4-Dichloro-2-butene (110-57-6)	Tetrahydrofuran (109-99-9)
1,1-Dichloroethane (75-34-3)	Toluene (108-88-3)
1,2-Dichloroethane (107-06-2)	1,2,3-Trichlorobenzene (87-61-6)
1,1-Dichloroethene (75-35-4)	1,2,4-Trichlorobenzene (120-82-1)
<i>cis</i> -1,2-Dichloroethene (156-59-2)	1,1,1-Trichloroethane (71-55-6)
<i>trans</i> -1,2-Dichloroethene (156-60-5)	1,1,2-Trichloroethane (79-00-5)
1,2-Dichloropropane (78-87-5)	Trichloroethene (79-01-6)
1,3-Dichloropropane (142-28-9)	1,2,3-Trichloropropane (96-18-4)
2,2-Dichloropropane (594-20-7)	1,2,4-Trimethylbenzene (95-63-6)
1,1-Dichloropropene (563-58-6)	1,3,5-Trimethylbenzene (108-67-8)

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

cat.# 30601 (ea.)

524 Calibration Mix #7A (5 components)

Acetone (67-64-1)	4-Methyl-2-pentanone (MIBK) (108-10-1)
2-Butanone (MEK) (78-93-3)	Tetrahydrofuran (109-99-9)
2-Hexanone (591-78-6)	

2,000 µg/mL each in P&T methanol:water (90:10), 1 mL/ampul

cat.# 30300 (ea.)

524 Calibration Mix #7B (7 components)

Acrylonitrile (107-13-1)	Methyl acrylate (96-33-3)
Allyl chloride (3-chloropropene) (107-05-1)	Methyl methacrylate (80-62-6)
Ethyl methacrylate (97-63-2)	Nitrobenzene (98-95-3)
	Pentachloroethane (76-01-7)

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

cat.# 30304 (ea.)

524 Calibration Mix #7 Kit

Contains 1 mL each of these mixtures.

30300: 524 Calibration Mix #7A

30304: 524 Calibration Mix #7B

cat.# 30202 (kit)

kit

524 Calibration Mix #8 (12 components)

Carbon disulfide (75-15-0)	Hexachloroethane (67-72-1)
Chloroacetonitrile (107-14-2)	Iodomethane (methyl iodide) (74-88-4)
1-Chlorobutane (Butyl chloride) (109-69-3)	Methacrylonitrile (126-98-7)
<i>trans</i> -1,4-Dichloro-2-butene (110-57-6)	Methyl <i>tert</i> -butyl ether (MTBE) (1634-04-4)
1,1-Dichloro-2-propanone (513-88-2)	2-Nitropropane (79-46-9)
Diethyl ether (ethyl ether) (60-29-7)	Propionitrile (107-12-0)

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

cat.# 30203 (ea.)

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

Contains 1 mL each of these mixtures.

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

30300: 524 Calibration Mix #7A

30304: 524 Calibration Mix #7B

30203: 524 Calibration Mix #8

cat.# 30204 (kit)

kit

524 Rev. 4.0 VOA Kit #2 (2,000 µg/mL)

Contains 1 mL each of these mixtures.

30042: 502.2 Calibration Mix #1

30431: 502.2 MegaMix Standard

30300: 524 Calibration Mix #7A

30304: 524 Calibration Mix #7B

30203: 524 Calibration Mix #8

30201: 524 Surrogate/Internal Standard Mix

cat.# 30447 (kit)

kit

Compound Index
for Reference
Standards

See pages 586–592.



Volatile Organics, *cont.*

Method 524.3 (Purgeable Organics in Drinking Water)

UCMR3 Method 524.3 Standard (9 components)

Bromochloromethane (74-97-5)	600 µg/mL	Chlorodifluoromethane (CFC-22) (75-45-6)	800
Bromomethane (methyl bromide) (74-83-9)	2,000	Chloromethane (methyl chloride) (74-87-3)	2,000
1,3-Butadiene (106-99-0)	1,000	1,1-Dichloroethane (75-34-3)	300
<i>sec</i> -Butylbenzene (135-98-8)	400	<i>n</i> -Propylbenzene (103-65-1)	300
		1,2,3-Trichloropropane (96-18-4)	300

In P&T methanol, 1 mL/ampul

cat.# 30642 (ea.)

EPA 524.3 Reference Standards

- Full 82-component EPA 524.3 list using as few as three ampuls—reduce prep time and chances for error or contamination.
- EPA 524.3 VOA MegaMix® ampul includes oxygenates group—no need to order separately.
- Volatile gases prepared separately—replace shorter-life components without wasting money on full list.
- Two options for internal and surrogate standards—separate or combined mix.
- Certified reference materials (CRMs) manufactured and QC-tested in Restek's ISO-accredited labs—satisfy your ISO requirements.
- Also ideal for surface water and groundwater testing.

In support of the U.S. Safe Drinking Water Act (SDWA), Restek offers a complete set of EPA 524.3 reference standards for the monitoring of purgeable organic compounds in drinking water—using as few as three ampuls! In addition, this collection of certified reference materials (CRMs) also covers the seven volatile organic compounds (VOCs) included in the Unregulated Contaminant Monitoring Rule 3 (UCMR3), which requires monitoring of all public drinking water systems with 10,000 or more customers.

524.3 VOA MegaMix® Standard

(69 components)

Allyl chloride (3-chloropropene) (107-05-1)
tert-Amyl ethyl ether (TAEE) (919-94-8)
tert-Amyl methyl ether (TAME) (994-05-8)
 Benzene (71-43-2)
 Bromobenzene (108-86-1)
 Bromochloromethane (74-97-5)
 Bromodichloromethane (75-27-4)
 Bromoform (75-25-2)
tert-Butanol (TBA) (75-65-0)
n-Butylbenzene (104-51-8)
sec-Butylbenzene (135-98-8)
tert-Butylbenzene (98-06-6)
 Carbon disulfide (75-15-0)
 Carbon tetrachloride (56-23-5)
 Chlorobenzene (108-90-7)
 Chloroform (67-66-3)
 1-Chlorobutane (butyl chloride) (109-69-3)
 2-Chlorotoluene (95-49-8)
 4-Chlorotoluene (106-43-4)
 Dibromochloromethane (124-48-1)
 1,2-Dibromo-3-chloropropane (96-12-8)
 Dibromomethane (74-95-3)
 1,2-Dibromoethane (EDB) (106-93-4)
 1,2-Dichlorobenzene (95-50-1)
 1,3-Dichlorobenzene (541-73-1)
 1,4-Dichlorobenzene (106-46-7)
 1,1-Dichloroethane (75-34-3)
 1,2-Dichloroethane (107-06-2)
 1,1-Dichloroethene (75-35-4)
cis-1,2-Dichloroethene (156-59-2)
trans-1,2-Dichloroethene (156-60-5)
 1,2-Dichloropropane (78-87-5)
 1,3-Dichloropropane (142-28-9)
 1,1-Dichloropropene (563-58-6)

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

cat.# 30013 (ea.)

cis-1,3-Dichloropropene (10061-01-5)
trans-1,3-Dichloropropene (10061-02-6)
 Diethyl ether (ethyl ether) (60-29-7)
 Diisopropyl ether (DIPE) (108-20-3)
 Ethylbenzene (100-41-4)
 Ethyl-*tert*-butyl ether (ETBE) (637-92-3)
 Ethyl methacrylate (97-63-2)
 Hexachlorobutadiene (87-68-3)
 Hexachloroethane (67-72-1)
 Iodomethane (methyl iodide) (74-88-4)
 Isopropylbenzene (cumene) (98-82-8)
 4-Isopropyltoluene (*p*-cymene) (99-87-6)
 Methyl acetate (79-20-9)
 Methyl-*tert*-butyl ether (MTBE) (1634-04-4)
 Methylene chloride (dichloromethane) (75-09-2)
 Naphthalene (91-20-3)
 Pentachloroethane (76-01-7)
n-Propylbenzene (103-65-1)
 Styrene (100-42-5)
 Tetrachloroethene (127-18-4)
 1,1,1,2-Tetrachloroethane (630-20-6)
 1,1,2,2-Tetrachloroethane (79-34-5)
 Tetrahydrofuran (109-99-9)
 Toluene (108-88-3)
 1,2,3-Trichlorobenzene (87-61-6)
 1,2,4-Trichlorobenzene (120-82-1)
 1,1,1-Trichloroethane (71-55-6)
 1,1,2-Trichloroethane (79-00-5)
 Trichloroethene (79-01-6)
 1,2,3-Trichloropropane (96-18-4)
 1,2,4-Trimethylbenzene (95-63-6)
 1,3,5-Trimethylbenzene (108-67-8)
m-Xylene (108-38-3)
o-Xylene (95-47-6)
p-Xylene (106-42-3)

MEGAMIX®

524.3 Gas Calibration Mix (7 components)

Bromomethane (methyl bromide) (74-83-9)
 1,3-Butadiene (106-99-0)
 Chlorodifluoromethane (CFC-22) (75-45-6)
 Chloromethane (methyl chloride) (74-87-3)
 Dichlorodifluoromethane (CFC-12) (75-71-8)
 Trichlorofluoromethane (CFC-11) (75-69-4)
 Vinyl chloride (75-01-4)

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

cat.# 30014 (ea.)

524.3 Internal Standard Mix (3 components)

Chlorobenzene-d5 (3114-55-4) 1,4-Difluorobenzene (540-36-3)
 1,4-Dichlorobenzene-d4 (3855-82-1)

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

cat.# 30015 (ea.)

524.3 Surrogate Standard (3 components)

1-Bromo-4-fluorobenzene (BFB) (460-00-4) Methyl-*d*3-*tert*-butyl ether (29366-08-3)
 1,2-Dichlorobenzene-d4 (2199-69-1)

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

cat.# 30016 (ea.)

524.3 Internal Standard/Surrogate Mix (6 components)

1-Bromo-4-fluorobenzene (BFB) (460-00-4) 1,2-Dichlorobenzene-d4 (2199-69-1)
 Methyl-*d*3-*tert*-butyl ether (29366-08-3) 1,4-Dichlorobenzene-d4 (3855-82-1)
 Chlorobenzene-d5 (3114-55-4) 1,4-Difluorobenzene (540-36-3)

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

cat.# 30017 (ea.)

Volatile Organics, *cont.*

Method 601 (Purgeable Hydrocarbons)

VOA Purgeable Halocarbon Mix #1 (23 components)

Bromodichloromethane (75-27-4)	1,1-Dichloroethene (75-35-4)
Bromoform (75-25-2)	<i>trans</i> -1,2-Dichloroethene (156-60-5)
Carbon tetrachloride (56-23-5)	1,2-Dichloropropane (78-87-5)
Chlorobenzene (108-90-7)	<i>cis</i> -1,3-Dichloropropene (10061-01-5)
2-Chloroethyl vinyl ether (110-75-8)	<i>trans</i> -1,3-Dichloropropene (10061-02-6)
Chloroform (67-66-3)	Methylene chloride (dichloromethane) (75-09-2)
Dibromochloromethane (124-48-1)	1,1,2,2-Tetrachloroethane (79-34-5)
1,2-Dichlorobenzene (95-50-1)	Tetrachloroethene (127-18-4)
1,3-Dichlorobenzene (541-73-1)	1,1,1-Trichloroethane (71-55-6)
1,4-Dichlorobenzene (106-46-7)	1,1,2-Trichloroethane (79-00-5)
1,1-Dichloroethane (75-34-3)	Trichloroethene (79-01-6)
1,2-Dichloroethane (107-06-2)	

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

Method 603 (Acrolein & Acrylonitrile)

Acrolein/Acrylonitrile (2 components)

Acrolein (107-02-8)
Acrylonitrile (107-13-1)

2,000 µg/mL each in DI water, 1 mL/ampul
cat.# 30600 (ea.)

Must ship overnight on ice.
This product has a limited shelf life. We recommend that you order only the ampul quantity that meets your immediate needs.

Acrolein

Acrolein (107-02-8)
5,000 µg/mL in P&T methanol, 1 mL/ampul
cat.# 30645 (ea.)

5,000 µg/mL in water, 1 mL/ampul
cat.# 30646 (ea.)

This product has a limited shelf life. We recommend that you order only the ampul quantity that meets your immediate needs.

Acrylonitrile

Acrylonitrile (107-13-1)
2,000 µg/mL in P&T methanol, 1 mL/ampul
cat.# 30246 (ea.)

Reference Standards Search

Search by compound name, synonym, or CAS #.

www.restek.com/reference



Method 624 (Purgeable Halocarbons)

Volatiles MegaMix® Standard, EPA Method 624 (26 components)

MEGAMIX®

Benzene (71-43-2)	<i>trans</i> -1,2-Dichloroethene (156-60-5)
Bromodichloromethane (75-27-4)	1,2-Dichloropropane (78-87-5)
Bromoform (75-25-2)	<i>cis</i> -1,3-Dichloropropene (10061-01-5)
Carbon tetrachloride (56-23-5)	<i>trans</i> -1,3-Dichloropropene (10061-02-6)
Chlorobenzene (108-90-7)	Ethylbenzene (100-41-4)
2-Chloroethyl vinyl ether (110-75-8)	Methylene chloride (dichloromethane) (75-09-2)
Chloroform (67-66-3)	1,1,2,2-Tetrachloroethane (79-34-5)
Dibromochloromethane (124-48-1)	Tetrachloroethene (127-18-4)
1,2-Dichlorobenzene (95-50-1)	Toluene (108-88-3)
1,3-Dichlorobenzene (541-73-1)	1,1,1-Trichloroethane (71-55-6)
1,4-Dichlorobenzene (106-46-7)	1,1,2-Trichloroethane (79-00-5)
1,1-Dichloroethane (75-34-3)	Trichloroethene (79-01-6)
1,2-Dichloroethane (107-06-2)	
1,1-Dichloroethene (75-35-4)	

2,000 µg/mL each in P&T methanol, 1 mL/ampul
cat.# 30497 (ea.)

624 Internal Standard Mix (3 components)

Bromochloromethane (74-97-5) 1,4-Dichlorobutane (110-56-5)
2-Bromo-1-chloropropane (3017-95-6)

1,500 µg/mL each in P&T methanol, 1 mL/ampul
cat.# 30023 (ea.)

624 Surrogate Standard Mix (3 components)

1-Bromo-4-fluorobenzene (BFB) (460-00-4) Pentafluorobenzene (363-72-4)
Fluorobenzene (462-06-6)

2,000 µg/mL each in P&T methanol, 1 mL/ampul
cat.# 30243 (ea.)

Surrogate Standard (2 components)

1-Bromo-4-fluorobenzene (BFB) (460-00-4)
 α,α,α -Trifluorotoluene (98-08-8)

2,500 µg/mL each in P&T methanol, 1 mL/ampul
cat.# 30484 (ea.)

624 Calibration Mix #1 (gases) (5 components)

Bromomethane (methyl bromide) (74-83-9) Trichlorofluoromethane (CFC-11) (75-69-4)
Chloroethane (ethyl chloride) (75-00-3) Vinyl chloride (75-01-4)
Chloromethane (methyl chloride) (74-87-3)

2,000 µg/mL each in P&T methanol, 1 mL/ampul
cat.# 30020 (ea.)

624 Calibration Mix #2 (12 components)

Benzene (71-43-2) 1,2-Dichloropropane (78-87-5)
Carbon tetrachloride (56-23-5) Methylene chloride (dichloromethane) (75-09-2)
Chlorobenzene (108-90-7) Tetrachloroethene (127-18-4)
2-Chloroethyl vinyl ether (110-75-8) 1,1,2-Trichloroethane (79-00-5)
Dibromochloromethane (124-48-1) Trichloroethene (79-01-6)
1,1-Dichloroethane (75-34-3)
1,1-Dichloroethene (75-35-4)

2,000 µg/mL each in P&T methanol, 1 mL/ampul
cat.# 30021 (ea.)



Volatile Organics, *cont.*

Method 624 (Purgeable Halocarbons), *cont.*

624 Calibration Mix #3 (14 components)

Bromodichloromethane (75-27-4)	<i>trans</i> -1,2-Dichloroethene (156-60-5)
Bromoform (75-25-2)	<i>cis</i> -1,3-Dichloropropene (10061-01-5)
Chloroform (67-66-3)	<i>trans</i> -1,3-Dichloropropene (10061-02-6)
1,2-Dichlorobenzene (95-50-1)	Ethylbenzene (100-41-4)
1,3-Dichlorobenzene (541-73-1)	1,1,2,2-Tetrachloroethane (79-34-5)
1,4-Dichlorobenzene (106-46-7)	Toluene (108-88-3)
1,2-Dichloroethane (107-06-2)	1,1,1-Trichloroethane (71-55-6)

2,000 µg/mL each in P&T methanol, 1 mL/ampul
cat.# 30022 (ea.)

624 Complete Kit

Contains 1 mL each of these mixtures.
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

cat.# 30244 (kit)

kit

624 Kit

Contains 1 mL each of these mixtures.
30020: 624 Calibration Mix #1
30021: 624 Calibration Mix #2
30022: 624 Calibration Mix #3
30023: 624 Internal Standard Mix

cat.# 30055 (kit)

kit

Method 8010 (Halogenated Volatile Organics)

624 Internal Standard Mix (3 components)

Bromochloromethane (74-97-5)	1,4-Dichlorobutane (110-56-5)
2-Bromo-1-chloropropane (3017-95-6)	

1,500 µg/mL each in P&T methanol, 1 mL/ampul
cat.# 30023 (ea.)

502.2 Calibration Mix #1 (gases) (6 components)

Bromomethane (methyl bromide) (74-83-9)	Dichlorodifluoromethane (CFC-12) (75-71-8)
Chloroethane (ethyl chloride) (75-00-3)	Trichlorofluoromethane (CFC-11) (75-69-4)
Chloromethane (methyl chloride) (74-87-3)	Vinyl chloride (75-01-4)

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

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

Method 8010 (Halogenated Volatile Organics), *cont.*

BTEX Standard (6 components)

Benzene (71-43-2)	<i>m</i> -Xylene (108-38-3)
Ethylbenzene (100-41-4)	<i>o</i> -Xylene (95-47-6)
Toluene (108-88-3)	<i>p</i> -Xylene (106-42-3)

200 µg/mL each in P&T methanol, 1 mL/ampul
cat.# 30051 (ea.)

2,000 µg/mL each in P&T methanol, 1 mL/ampul
cat.# 30213 (ea.)

2,000 µg/mL each in P&T methanol (*m*- & *p*-xylene at 1,000 µg/mL), 1 mL/ampul
cat.# 30488 (ea.)

i tech tip

To analyze compounds listed in Methods 8010 and 8020 concurrently, add BTEX standard to the calibration curve mix.

BTEX Gas Mix (6 components)

Benzene (71-43-2)	<i>m</i> -Xylene (108-38-3)
Ethylbenzene (100-41-4)	<i>o</i> -Xylene (95-47-6)
Toluene (108-88-3)	<i>p</i> -Xylene (106-42-3)

cylinder design

Cylinder Construction: aluminum
Cylinder Fitting: CGA-180 outlet

Spectra (Linde) 104 L Cylinders:

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



Scotty (Air Liquide) 110 L Cylinders:

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



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

1 ppm in nitrogen, 110 liters @ 1,800 psi
cat.# 26361 (ea.)

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

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

100 ppb in nitrogen, 110 liters @ 1,800 psi
cat.# 26362 (ea.)

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

No data pack available.

Gas standards are subject to hazardous materials shipping fees by most freight carriers. All calibration gas standards are nonreturnable due to DOT hazardous shipping requirements.

also available

High-Purity VOC Regulators

See page 453.



Volatile Organics, *cont.*

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

8011 Calibration Mix—EDB/DBCP (2 components)

1,2-Dibromo-3-chloropropane (DBCP) (96-12-8)
1,2-Dibromoethane (EDB) (106-93-4)
2,000 µg/mL each in P&T methanol, 1 mL/ampul
cat.# 30062 (ea.)

Method 8020 (Aromatic Volatile Organics)

Internal and Surrogate Standards for Method 8020

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

Compound	CAS #	Solvent	Conc.	cat.#
1-Bromo-4-fluorobenzene (BFB)	460-00-4	PTM	2,000	30026
1,4-Difluorobenzene	540-36-3	PTM	2,000	30032
Fluorobenzene	462-06-6	PTM	2,000	30030
α,α,α -Trifluorotoluene	98-08-8	PTM	2,000	30048

PTM = Purge-and-trap grade methanol

8020A Calibration Mix (10 components)

Benzene (71-43-2)	Ethylbenzene (100-41-4)
Chlorobenzene (108-90-7)	Toluene (108-88-3)
1,2-Dichlorobenzene (95-50-1)	<i>m</i> -Xylene (108-38-3)
1,3-Dichlorobenzene (541-73-1)	<i>o</i> -Xylene (95-47-6)
1,4-Dichlorobenzene (106-46-7)	<i>p</i> -Xylene (106-42-3)

2,000 µg/mL each in P&T methanol, 1 mL/ampul
cat.# 30222 (ea.)

Method 8021 (Volatile Organics)

502.2 Internal Standard Mix #2 (2 components)

2-Bromo-1-chloropropane (3017-95-6)
Fluorobenzene (462-06-6)
2,000 µg/mL each in P&T methanol, 1 mL/ampul
cat.# 30041 (ea.)

8021/502.2 Surrogate Mix #1 (3 components)

1-Bromo-2-chloroethane (107-04-0) Fluorobenzene (462-06-6)
1-Chloro-3-fluorobenzene (625-98-9)
2,000 µg/mL each in P&T methanol, 1 mL/ampul
cat.# 30463 (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-and-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-and-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 555**.

Method 8240 (Volatile Organic Compounds [VOCs])

502.2 Calibration Mix #1 (gases) (6 components)

Bromomethane (methyl bromide) (74-83-9)	Dichlorodifluoromethane (CFC-12) (75-71-8)
Chloroethane (ethyl chloride) (75-00-3)	Trichlorofluoromethane (CFC-11) (75-69-4)
Chloromethane (methyl chloride) (74-87-3)	Vinyl chloride (75-01-4)

200 µg/mL each in P&T methanol, 1 mL/ampul
cat.# 30439 (ea.)
2,000 µg/mL each in P&T methanol, 1 mL/ampul
cat.# 30042 (ea.)

VOA Calibration Mix #1 (ketones) (4 components)

Acetone (67-64-1)	2-Hexanone (591-78-6)
2-Butanone (MEK) (78-93-3)	4-Methyl-2-pentanone (MIBK) (108-10-1)

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

VOA Purgeable Halocarbon Mix #1 (23 components)

Bromodichloromethane (75-27-4)	1,1-Dichloroethene (75-35-4)
Bromoform (75-25-2)	<i>trans</i> -1,2-Dichloroethene (156-60-5)
Carbon tetrachloride (56-23-5)	1,2-Dichloropropane (78-87-5)
Chlorobenzene (108-90-7)	<i>cis</i> -1,3-Dichloropropene (10061-01-5)
2-Chloroethyl vinyl ether (110-75-8)	<i>trans</i> -1,3-Dichloropropene (10061-02-6)
Chloroform (67-66-3)	Methylene chloride (dichloromethane) (75-09-2)
Dibromochloromethane (124-48-1)	1,1,2,2-Tetrachloroethane (79-34-5)
1,2-Dichlorobenzene (95-50-1)	Tetrachloroethene (127-18-4)
1,3-Dichlorobenzene (541-73-1)	1,1,1-Trichloroethane (71-55-6)
1,4-Dichlorobenzene (106-46-7)	1,1,2-Trichloroethane (79-00-5)
1,1-Dichloroethane (75-34-3)	Trichloroethene (79-01-6)
1,2-Dichloroethane (107-06-2)	

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

8240 Volatiles Mix #1A (12 components)

Allyl chloride (3-chloropropene) (107-05-1)	<i>trans</i> -1,4-Dichloro-2-butene (110-57-6)
Benzyl chloride (100-44-7)	1,4-Dioxane (123-91-1)
1,2-Dibromo-3-chloropropane (96-12-8)	Iodomethane (methyl iodide) (74-88-4)
1,2-Dibromoethane (EDB) (106-93-4)	Pentachloroethane (76-01-7)
Dibromomethane (74-95-3)	1,1,1,2-Tetrachloroethane (630-20-6)
<i>cis</i> -1,4-Dichloro-2-butene (1476-11-5)	1,2,3-Trichloropropene (96-18-4)

2,000 µg/mL each in P&T methanol, 1 mL/ampul
cat.# 30217 (ea.)

8240 Volatiles Mix #2A (3 components)

Carbon disulfide (75-15-0)	Pyridine (110-86-1)
2-Picoline (109-06-8)	

2,000 µg/mL each in P&T methanol, 1 mL/ampul
cat.# 30218 (ea.)



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Reference Materials

See **pages 464–465**.



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Volatile Organics, *cont.*

Method 8240 (Volatile Organic Compounds [VOCs]), *cont.*

8240 Nitriles Mix (7 components)

Acrylonitrile (107-13-1)	Methyl methacrylate (80-62-6)
Ethyl methacrylate (97-63-2)	Propionitrile (107-12-0)
Malononitrile (109-77-3)	Styrene (100-42-5)
Methacrylonitrile (126-98-7)	

2,000 µg/mL each in P&T methanol, 1 mL/ampul
cat.# 30215 (ea.)

8240 Alcohols Mix (5 components)

Allyl alcohol (2-propen-1-ol) (107-18-6)	Isobutyl alcohol (78-83-1)
2-Chloroethanol (107-07-3)	Propargyl alcohol (107-19-7)
Ethanol (64-17-5)	

2,000 µg/mL each in P&T methanol, 1 mL/ampul
cat.# 30214 (ea.)

Glycols Standard (2 components)

Ethylene glycol (107-21-1)
Propylene glycol (57-55-6)

50,000 µg/mL each in DI water, 1 mL/ampul
cat.# 30471 (ea.)

BTEX Standard (6 components)

Benzene (71-43-2)	<i>m</i> -Xylene (108-38-3)
Ethylbenzene (100-41-4)	<i>o</i> -Xylene (95-47-6)
Toluene (108-88-3)	<i>p</i> -Xylene (106-42-3)

200 µg/mL each in P&T methanol, 1 mL/ampul
cat.# 30051 (ea.)

2,000 µg/mL each in P&T methanol, 1 mL/ampul
cat.# 30213 (ea.)

2,000 µg/mL each in P&T methanol (*m*- & *p*-xylene at 1,000 µg/mL), 1 mL/ampul
cat.# 30488 (ea.)

BTEX Gas Mix (6 components)

Benzene (71-43-2)
Ethylbenzene (100-41-4)
Toluene (108-88-3)
m-Xylene (108-38-3)
o-Xylene (95-47-6)
p-Xylene (106-42-3)

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

1 ppm in nitrogen, 110 liters @ 1,800 psi
cat.# 26361 (ea.)

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

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

100 ppb in nitrogen, 110 liters @ 1,800 psi
cat.# 26362 (ea.)

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

cylinder design

Spectra (Linde)
104 L Cylinders:
Aluminum construction
Size: 8 x 24 cm
Volume/Pressure:
104 liters of gas @ 1,800 psi
CGA-180 outlet fitting.
Weight: 1.5 lb/0.7 kg

Scotty (Air Liquide)
110 L Cylinders:
Aluminum construction
Size: 8.3 x 29.5 cm
Volume/Pressure:
110 liters of gas @ 1,800 psi
CGA-180 outlet fitting.
Weight: 2.2 lb/1 kg
U.S. DOT Specs: 3AL2216

No data pack available.

Gas standards are subject to hazardous materials shipping fees by most freight carriers. All calibration gas standards are nonreturnable due to DOT hazardous shipping requirements.

Method 8260, 8260A, 8260B (Volatile Organic Compounds [VOCs]), *cont.*

8260A Internal Standard Mix (3 components)

Chlorobenzene-d5 (3114-55-4)	Fluorobenzene (462-06-6)
1,4-Dichlorobenzene-d4 (3855-82-1)	
2,500 µg/mL each in P&T methanol, 1 mL/ampul cat.# 30241 (ea.)	

8260 Internal Standard Mix (4 components)

Chlorobenzene-d5 (3114-55-4)	1,4-Difluorobenzene (540-36-3)
1,4-Dichlorobenzene-d4 (3855-82-1)	Pentafluorobenzene (363-72-4)
2,500 µg/mL each in P&T methanol, 1 mL/ampul cat.# 30074 (ea.)	

8260A Surrogate Mix (4 components)

1-Bromo-4-fluorobenzene (BFB) (460-00-4)	1,2-Dichloroethane-d4 (17060-07-0)
Dibromofluoromethane (1868-53-7)	Toluene-d8 (2037-26-5)
2,500 µg/mL each in P&T methanol, 1 mL/ampul cat.# 30240 (ea.)	

8260 Surrogate Mix (3 components)

1-Bromo-4-fluorobenzene (BFB) (460-00-4)	Dibromofluoromethane (1868-53-7)
	Toluene-d8 (2037-26-5)
2,500 µg/mL each in P&T methanol, 1 mL/ampul cat.# 30073 (ea.)	

8260B Matrix Spike Mix (5 components)

Benzene (71-43-2)	Toluene (108-88-3)
Chlorobenzene (108-90-7)	Trichloroethylene (79-01-6)
1,1-Dichloroethene (75-35-4)	
2,500 µg/mL each in P&T methanol, 1 mL/ampul cat.# 30479 (ea.)	

8240/8260 System Performance Check Mix (5 components)

Bromoform (75-25-2)	1,1-Dichloroethane (75-34-3)
Chlorobenzene (108-90-7)	1,1,2,2-Tetrachloroethane (79-34-5)
Chloromethane (methyl chloride) (74-87-3)	
2,000 µg/mL each in P&T methanol, 1 mL/ampul cat.# 30075 (ea.)	

1-Bromo-4-fluorobenzene (BFB)

1-Bromo-4-fluorobenzene (BFB) (460-00-4)

2,000 µg/mL in P&T methanol, 1 mL/ampul
cat.# 30026 (ea.)

2,500 µg/mL in P&T methanol, 1 mL/ampul
cat.# 30067 (ea.)

10,000 µg/mL in P&T methanol, 1 mL/ampul
cat.# 30082 (ea.)

1,4-Dioxane-d8

1,4-Dioxane-d8 (17647-74-4)

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

Volatile Organics, *cont.*Method 8260, 8260A, 8260B (Volatile Organic Compounds [VOCs]), *cont.***PFTBA (MS Tuning Compound)**

Perfluorotributylamine (PFTBA) (311-89-7)

Neat, 1 mL/ampul

cat.# 30482 (ea.)

No data pack available.

8260B MegaMix® Calibration Mix

(76 components)



Acetonitrile (75-05-8)
 Acrylonitrile (107-13-1)
 Allyl chloride (3-chloropropene) (107-05-1)
 Benzene (71-43-2)
 Bromobenzene (108-86-1)
 Bromochloromethane (74-97-5)
 Bromodichloromethane (75-27-4)
 Bromoform (75-25-2)
n-Butylbenzene (104-51-8)
sec-Butylbenzene (135-98-8)
tert-Butylbenzene (98-06-6)
 Carbon disulfide (75-15-0)
 Carbon tetrachloride (56-23-5)
 Chlorobenzene (108-90-7)
 2-Chloroethanol (107-07-3)
 Chloroform (67-66-3)
 Chloroprene (2-chloro-1,3-butadiene) (126-99-8)
 2-Chlorotoluene (95-49-8)
 4-Chlorotoluene (106-43-4)
 Dibromochloromethane (124-48-1)
 1,2-Dibromo-3-chloropropane (DBCP) (96-12-8)
 1,2-Dibromoethane (EDB) (106-93-4)
 Dibromomethane (74-95-3)
 1,2-Dichlorobenzene (95-50-1)
 1,3-Dichlorobenzene (541-73-1)
 1,4-Dichlorobenzene (106-46-7)
cis-1,4-Dichloro-2-butene (1476-11-5)
trans-1,4-Dichloro-2-butene (110-57-6)
 1,1-Dichloroethane (75-34-3)
 1,2-Dichloroethane (107-06-2)
 1,1-Dichloroethene (75-35-4)
cis-1,2-Dichloroethene (156-59-2)
trans-1,2-Dichloroethene (156-60-5)
 1,2-Dichloropropane (78-87-5)
 1,3-Dichloropropane (142-28-9)
 2,2-Dichloropropane (594-20-7)
 1,1-Dichloropropene (563-58-6)
cis-1,3-Dichloropropene (10061-01-5)
trans-1,3-Dichloropropene (10061-02-6)

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

cat.# 30633 (ea.)

8260B MegaMix® Calibration Mix, Revised (75 components)

Same list as above, but without pentachloroethane.

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

cat.# 30152 (ea.)

2-Chloroethyl Vinyl Ether

2-Chloroethyl vinyl ether (110-75-8)

2,000 µg/mL in P&T methanol, 1 mL/ampul

cat.# 30265 (ea.)

8260B MegaMix® Calibration Mix Kit

Contains 1 mL each of these mixtures.

30633: 8260B MegaMix Calibration Mix

30265: 2-chloroethyl vinyl ether

cat.# 30475 (kit)

kit

8240/8260 Calibration Check Mix (6 components)

Chloroform (67-66-3)
 1,1-Dichloroethene (75-35-4)
 1,2-Dichloropropane (78-87-5)
 2,000 µg/mL each in P&T methanol, 1 mL/ampul

cat.# 30427 (ea.)

502.2 Calibration Mix #1 (gases) (6 components)

Bromomethane (methyl bromide) (74-83-9)
 Chloroethane (ethyl chloride) (75-00-3)
 Chloromethane (methyl chloride) (74-87-3)
 Dichlorodifluoromethane (CFC-12) (75-71-8)
 Trichlorofluoromethane (CFC-11) (75-69-4)
 Vinyl chloride (75-01-4)

200 µg/mL each in P&T methanol, 1 mL/ampul

cat.# 30439 (ea.)

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

cat.# 30042 (ea.)

8260B Acetate Mix (5 components)

n-Butyl acetate (123-86-4)
 Ethyl acetate (141-78-6)
 Isopropyl acetate (108-21-4)
n-Propyl acetate (109-60-4)
 Vinyl acetate (108-05-4)

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

cat.# 30477 (ea.)

8260B Acetate Mix (Revised) (7 components)

n-Amyl acetate (628-63-7)
 Butyl acetate (123-86-4)
 Ethyl acetate (141-78-6)
 Isopropyl acetate (108-21-4)
 Methyl acetate (79-20-9)
 Propyl acetate (109-60-4)
 Vinyl acetate (108-05-4)

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

cat.# 30489 (ea.)

California Oxygenates Mix (5 components)

tert-Amyl methyl ether (TAME) (994-05-8) 2,000 µg/mL
tert-Butanol (TBA) (75-65-0) 10,000
 Diisopropyl ether (DIPE) (108-20-3) 2,000
 Ethyl-*tert*-butyl ether (ETBE) (637-92-3) 2,000
 Methyl-*tert*-butyl ether (MTBE) (1634-04-4) 2,000

In P&T methanol, 1 mL/ampul

cat.# 30465 (ea.)

Oxygenates (6 components)

tert-Amyl ethyl ether (TAE) (919-94-8) 2,000 µg/mL
tert-Amyl methyl ether (TAME) (994-05-8) 2,000
tert-Butanol (TBA) (75-65-0) 10,000
 Diisopropyl ether (DIPE) (108-20-3) 2,000
 Ethyl-*tert*-butyl ether (ETBE) (637-92-3) 2,000
 Methyl-*tert*-butyl ether (MTBE) (1634-04-4) 2,000

In P&T methanol, 1 mL/ampul

cat.# 30262 (ea.)



Volatile Organics, *cont.*

Method 8260, 8260A, 8260B (Volatile Organic Compounds [VOCs]), *cont.*

Single-Component Oxygenates Solutions

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

Compound	CAS #	Solvent	Conc.	cat.#
<i>tert</i> -Amyl alcohol	75-85-4	PTM	10,000	30631
<i>tert</i> -Amyl ethyl ether (TAEE)	919-94-8	PTM	2,000	30617
<i>tert</i> -Amyl methyl ether (TAME)	994-05-8	PTM	2,000	30629
<i>tert</i> -Butanol (TBA)	75-65-0	PTM	50,000	30470
<i>tert</i> -Butanol-d9	25725-11-5	PTM	20,000	30618
Diisopropyl ether (DIPE)	108-20-3	PTM	2,000	30627
Ethanol	64-17-5	PTM	2,000	30288
Ethanol	64-17-5	W	10,000	30466
Ethyl- <i>tert</i> -butyl ether (ETBE)	637-92-3	PTM	2,000	30628
Methanol	67-56-1	W	10,000	30467
Methyl <i>tert</i> -butyl ether (MTBE)	1634-04-4	PTM	2,000	30402

PTM = purge-and-trap grade methanol; W = DI water

also available

Rtx®-VMS Column

Your best choice for EPA Method 8260

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

See **page 78** for more information.



Acrolein

Acrolein (107-02-8)

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

cat.# 30645 (ea.)

5,000 µg/mL in water, 1 mL/ampul

cat.# 30646 (ea.)

This product has a limited shelf life. We recommend that you order only the ampul quantity that meets your immediate needs.

1,2-Dichlorotetrafluoroethane (CFC-114)

1,2-Dichlorotetrafluoroethane (CFC-114) (76-14-2)

2,000 µg/mL in P&T methanol, 1 mL/ampul

cat.# 30476 (ea.)

Chloroprene

A pure, quantitative chloroprene solution, specially stabilized in purge-and-trap grade methanol to allow dilutions for working standards in unmodified purge-and-trap methanol. The entire preparation procedure is performed under carefully monitored conditions to prevent any contamination or polymerization of the highly reactive, neat chloroprene.

Chloroprene (126-99-8)

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

cat.# 30238 (ea.)

Vinyl Acetate

Vinyl acetate (108-05-4)

2,000 µg/mL in P&T methanol, 1 mL/ampul

cat.# 30216 (ea.)

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

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

Contains 1 mL each of these mixtures.

- 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 µg/mL)
- 30240: 8260A Surrogate Mix (2,500 µg/mL)
- 30241: 8260A Internal Standard Mix (2,500 µg/mL)
- 30075: 8240/8260 System Performance Check Mix
- 30005: VOA Matrix Spike Mix (2,500 µg/mL)

cat.# 30242 (kit)

kit

8260 Volatile Organics Kit (2,000 µg/mL)

Contains 1 mL each of these mixtures.

- 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 µg/mL)
- 30073: 8260 Surrogate Mix (2,500 µg/mL)
- 30074: 8260 Internal Standard Mix (2,500 µg/mL)
- 30075: 8240/8260 System Performance Check Mix
- 30005: VOA Matrix Spike Mix (2,500 µg/mL)

cat.# 30076 (kit)

kit

TCLP VOA Mix (11 components)

- | | |
|--------------------------------|-------------------------------|
| Benzene (71-43-2) | 1,2-Dichloroethane (107-06-2) |
| 2-Butanone (MEK) (78-93-3) | 1,1-Dichloroethene (75-35-4) |
| Carbon tetrachloride (56-23-5) | Tetrachloroethene (127-18-4) |
| Chlorobenzene (108-90-7) | Trichloroethene (79-01-6) |
| Chloroform (67-66-3) | Vinyl chloride (75-01-4) |
| 1,4-Dichlorobenzene (106-46-7) | |

2,000 µg/mL each in P&T methanol:water (90:10), 1 mL/ampul

cat.# 30024 (ea.)



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See **pages 464-465** or visit www.restek.com/iso

Volatile Organics, *cont.*

SOM01.1 (Volatiles), QA Mixes

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

Benzene-d6 (1076-43-3)	1,2-Dichloropropane-d6 (93952-08-0)
Chloroethane-d5 (19199-91-8)	1,3-Dichloropropene-d4 (202656-23-3)*
Chloroform-d (865-49-6)	1,1,2,2-Tetrachloroethane-d2 (33685-54-0)
1,2-Dichlorobenzene-d4 (2199-69-1)	Toluene-d8 (2037-26-5)
1,2-Dichloroethane-d4 (17060-07-0)	Vinyl chloride-d3 (6745-35-3)
1,1-Dichloroethene-d2 (22280-73-5)	

500 µg/mL each in deuterated methanol (MeD₀), 1 mL/ampul
cat.# 30624 (ea.)

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

SOM01.1 VOA Ketone Deuterated Monitoring Compounds (2 components)

2-Butanone-d5 (24313-50-6)
2-Hexanone-d5 (4840-82-8)

500 µg/mL each in deuterium oxide (D₂O), 1 mL/ampul
cat.# 30625 (ea.)

SOM01.1 VOA DMC Kit

500 µg/mL. 1 mL each of these mixtures.
30624: Non-Ketones
30625: Ketones

500 µg/mL. 1 mL each of these mixtures.
cat.# 30630 (kit)



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

CLP 04.1 VOA Internal Standard/SMC Spike Mix

(6 components)

Bromochloromethane (74-97-5)	1,2-Dichloroethane-d4 (17060-07-0)
1-Bromo-4-fluorobenzene (BFB) (460-00-4)	1,4-Difluorobenzene (540-36-3)
Chlorobenzene-d5 (3114-55-4)	Toluene-d8 (2037-26-5)

2,500 µg/mL each in P&T methanol, 1 mL/ampul
cat.# 30457 (ea.)

VOA Internal Standard Mix (3 components)

Bromochloromethane (74-97-5)	Chlorobenzene-d5 (3114-55-4)
1,4-Difluorobenzene (540-36-3)	

2,500 µg/mL each in P&T methanol, 1 mL/ampul
cat.# 30011 (ea.)

VOA Surrogate Spike Mix (3 components)

1-Bromo-4-fluorobenzene (BFB) (460-00-4)	1,2-Dichloroethane-d4 (17060-07-0)
	Toluene-d8 (2037-26-5)

2,500 µg/mL each in P&T methanol, 1 mL/ampul
cat.# 30004 (ea.)

VOA Matrix Spike Mix (5 components)

Benzene (71-43-2)	Toluene (108-88-3)
Chlorobenzene (108-90-7)	Trichloroethene (79-01-6)
1,1-Dichloroethene (75-35-4)	

2,500 µg/mL each in P&T methanol, 1 mL/ampul
cat.# 30005 (ea.)

04.2, 04.1, and 10/92 SOW (Volatiles), QA Mixes, *cont.*

VOA Tuning Compound

1-Bromo-4-fluorobenzene (BFB) (460-00-4)
5,000 µg/mL in P&T methanol, 1 mL/ampul
cat.# 30003 (ea.)

PFTBA (MS Tuning Compound)

Perfluorotributylamine (PFTBA) (311-89-7)
Neat, 1 mL/ampul
cat.# 30482 (ea.)

No data pack available.

L/C VOA Lab Control Sample

We prepare the L/C VOA lab control sample in two parts. Sample #1 contains all compounds except vinyl chloride because this compound is extremely volatile and must be replaced frequently. Sample #2 contains vinyl chloride.

L/C VOA Lab Control Sample #1 (11 components)

Benzene (71-43-2)	1,2-Dichloropropane (78-87-5)
Bromoform (75-25-2)	<i>cis</i> -1,3-Dichloropropene (10061-01-5)
Carbon tetrachloride (56-23-5)	Tetrachloroethene (127-18-4)
1,2-Dibromoethane (EDB) (106-93-4)	1,1,2-Trichloroethane (79-00-5)
1,4-Dichlorobenzene (106-46-7)	Trichloroethene (79-01-6)
1,2-Dichloroethane (107-06-2)	

2,500 µg/mL each in P&T methanol, 1 mL/ampul
cat.# 30092 (ea.)

L/C VOA Lab Control Sample #2 (Vinyl chloride)

Vinyl chloride (75-01-4)
2,500 µg/mL in P&T methanol, 1 mL/ampul
cat.# 30093 (ea.)

L/C VOA Internal Standard Mix (3 components)

Chlorobenzene-d5 (3114-55-4)	1,4-Difluorobenzene (540-36-3)
1,4-Dichlorobenzene-d4 (3855-82-1)	

2,500 µg/mL each in P&T methanol, 1 mL/ampul
cat.# 30091 (ea.)



Volatile Organics, *cont.*

04.2 and 04.1 (Volatiles), Calibration Mixes

CLP 04.1 VOA CAL2000 MegaMix® Standard



(40 components)

- | | |
|--|---|
| Benzene (71-43-2) | <i>trans</i> -1,3-Dichloropropene (10061-02-6) |
| Bromodichloromethane (75-27-4) | Ethylbenzene (100-41-4) |
| Bromoform (75-25-2) | Isopropylbenzene (cumene) (98-82-8) |
| Carbon disulfide (75-15-0) | Methyl acetate (79-20-9) |
| Carbon tetrachloride (56-23-5) | Methyl <i>tert</i> -butyl ether (MTBE) (1634-04-4) |
| Chlorobenzene (108-90-7) | Methylcyclohexane (108-87-2) |
| Chloroform (67-66-3) | Methylene chloride (dichloromethane) (75-09-2) |
| Cyclohexane (110-82-7) | Styrene (100-42-5) |
| Dibromochloromethane (124-48-1) | 1,1,2,2-Tetrachloroethane (79-34-5) |
| 1,2-Dibromo-3-chloropropane (DBCP) (96-12-8) | Tetrachloroethene (127-18-4) |
| 1,2-Dibromoethane (EDB) (106-93-4) | Toluene (108-88-3) |
| 1,2-Dichlorobenzene (95-50-1) | 1,2,4-Trichlorobenzene (120-82-1) |
| 1,3-Dichlorobenzene (541-73-1) | 1,1,1-Trichloroethane (71-55-6) |
| 1,4-Dichlorobenzene (106-46-7) | 1,1,2-Trichloroethane (79-00-5) |
| 1,1-Dichloroethane (75-34-3) | Trichloroethene (79-01-6) |
| 1,2-Dichloroethane (107-06-2) | 1,1,2-Trichloro-1,2,2-trifluoroethane (CFC-113) (76-13-1) |
| 1,1-Dichloroethene (75-35-4) | <i>m</i> -Xylene (108-38-3) |
| <i>cis</i> -1,2-Dichloroethene (156-59-2) | <i>o</i> -Xylene (95-47-6) |
| <i>trans</i> -1,2-Dichloroethene (156-60-5) | <i>p</i> -Xylene (106-42-3) |
| 1,2-Dichloropropane (78-87-5) | |
| <i>cis</i> -1,3-Dichloropropene (10061-01-5) | |

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

502.2 Calibration Mix #1 (gases) (6 components)

- | | |
|---|--|
| Bromomethane (methyl bromide) (74-83-9) | Dichlorodifluoromethane (CFC-12) (75-71-8) |
| Chloroethane (ethyl chloride) (75-00-3) | Trichlorofluoromethane (CFC-11) (75-69-4) |
| Chloromethane (methyl chloride) (74-87-3) | Vinyl chloride (75-01-4) |

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

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

VOA Calibration Mix #1 (ketones) (4 components)

- | | |
|----------------------------|--|
| Acetone (67-64-1) | 2-Hexanone (591-78-6) |
| 2-Butanone (MEK) (78-93-3) | 4-Methyl-2-pentanone (MIBK) (108-10-1) |

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

CLP 04.1 VOA Kit #3

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

cat.# 30460 (kit)

kit

3/90 SOW (Volatiles), Calibration Mixes

CLP VOA CAL2000 MegaMix® Standard



(28 components)

- | | |
|--|--|
| Benzene (71-43-2) | <i>trans</i> -1,3-Dichloropropene (10061-02-6) |
| Bromodichloromethane (75-27-4) | Ethylbenzene (100-41-4) |
| Bromoform (75-25-2) | Methylene chloride (dichloromethane) (75-09-2) |
| Carbon disulfide (75-15-0) | Styrene (100-42-5) |
| Carbon tetrachloride (56-23-5) | 1,1,2,2-Tetrachloroethane (79-34-5) |
| Chlorobenzene (108-90-7) | Tetrachloroethene (127-18-4) |
| Chloroform (67-66-3) | Toluene (108-88-3) |
| Dibromochloromethane (124-48-1) | 1,1,1-Trichloroethane (71-55-6) |
| 1,1-Dichloroethane (75-34-3) | 1,1,2-Trichloroethane (79-00-5) |
| 1,2-Dichloroethane (107-06-2) | Trichloroethene (79-01-6) |
| 1,1-Dichloroethene (75-35-4) | <i>m</i> -Xylene (108-38-3) |
| <i>cis</i> -1,2-Dichloroethene (156-59-2) | <i>o</i> -Xylene (95-47-6) |
| <i>trans</i> -1,2-Dichloroethene (156-60-5) | <i>p</i> -Xylene (106-42-3) |
| 1,2-Dichloropropane (78-87-5) | |
| <i>cis</i> -1,3-Dichloropropene (10061-01-5) | |

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

Vinyl Acetate

Vinyl acetate (108-05-4)

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

CLP VOA CAL2000 MegaMix® Kit



Contains 1 mL each of these mixtures.
30632: CLP VOA CAL2000 MegaMix Standard
30216: vinyl acetate

cat.# 30438 (kit)

kit

VOA Calibration Mix #2 (7 components)

- | | |
|----------------------------|-----------------------------|
| Benzene (71-43-2) | Vinyl acetate (108-05-4) |
| Carbon disulfide (75-15-0) | <i>o</i> -Xylene (95-47-6) |
| Ethylbenzene (100-41-4) | <i>p</i> -Xylene (106-42-3) |
| Toluene (108-88-3) | |

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

VOA Calibration Mix #3 (10 components)

- | | |
|--------------------------------|--|
| Carbon tetrachloride (56-23-5) | Methylene chloride (dichloromethane) (75-09-2) |
| Chlorobenzene (108-90-7) | 1,1,2-Trichloroethane (79-00-5) |
| Chloroform (67-66-3) | Trichloroethene (79-01-6) |
| 1,1-Dichloroethane (75-34-3) | <i>m</i> -Xylene (108-38-3) |
| 1,1-Dichloroethene (75-35-4) | |
| 1,2-Dichloropropane (78-87-5) | |

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

VOA Calibration Mix #4 (12 components)

- | | |
|---|--|
| Bromodichloromethane (75-27-4) | <i>cis</i> -1,3-Dichloropropene (10061-01-5) |
| Bromoform (75-25-2) | <i>trans</i> -1,3-Dichloropropene (10061-02-6) |
| Dibromochloromethane (124-48-1) | Styrene (100-42-5) |
| 1,2-Dichloroethane (107-06-2) | 1,1,2,2-Tetrachloroethane (79-34-5) |
| <i>cis</i> -1,2-Dichloroethene (156-59-2) | Tetrachloroethene (127-18-4) |
| <i>trans</i> -1,2-Dichloroethene (156-60-5) | 1,1,1-Trichloroethane (71-55-6) |

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

Volatile Organics, *cont.*

3/90 SOW (Volatiles), Calibration Mixes, *cont.*

VOA Calibration Mix #5 (gases) (4 components)

Bromomethane (methyl bromide) (74-83-9)
Chloroethane (ethyl chloride) (75-00-3)
2,000 µg/mL each in P&T methanol, 1 mL/ampul
cat.# 30010 (ea.)

Chloromethane (methyl chloride) (74-87-3)
Vinyl chloride (75-01-4)

CLP VOA Calibration Kit #2

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

cat.# 30442 (kit)

kit

OLC 03.2 (Volatiles), Calibration Mixes

OLC 03.2 VOA MegaMix® Standard

(42 components)

Benzene (71-43-2)
Bromochloromethane (74-97-5)
Bromodichloromethane (75-27-4)
Bromoform (75-25-2)
Carbon disulfide (75-15-0)
Carbon tetrachloride (56-23-5)
Chlorobenzene (108-90-7)
Chloroform (67-66-3)
Cyclohexane (110-82-7)
Dibromochloromethane (chlorodibromomethane) (124-48-1)
1,2-Dibromo-3-chloropropane (DBCP) (96-12-8)
1,2-Dibromoethane (EDB) (106-93-4)
1,2-Dichlorobenzene (95-50-1)
1,3-Dichlorobenzene (541-73-1)
1,4-Dichlorobenzene (106-46-7)
1,1-Dichloroethane (75-34-3)
1,2-Dichloroethane (107-06-2)
1,1-Dichloroethene (75-35-4)
cis-1,2-Dichloroethene (156-59-2)
trans-1,2-Dichloroethene (156-60-5)
1,2-Dichloropropane (78-87-5)
cis-1,3-Dichloropropene (10061-01-5)

trans-1,3-Dichloropropene (10061-02-6)
Ethylbenzene (100-41-4)
Isopropylbenzene (cumene) (98-82-8)
Methyl acetate (79-20-9)
Methylcyclohexane (108-87-2)
Methyl *tert*-butyl ether (MTBE) (1634-04-4)
Methylene chloride (dichloromethane) (75-09-2)
Styrene (100-42-5)
1,1,2,2-Tetrachloroethane (79-34-5)
Tetrachloroethene (127-18-4)
Toluene (108-88-3)
1,2,3-Trichlorobenzene (87-61-6)
1,2,4-Trichlorobenzene (120-82-1)
1,1,1-Trichloroethane (71-55-6)
1,1,2-Trichloroethane (79-00-5)
Trichloroethene (79-01-6)
1,1,2-Trichlorotrifluoroethane (CFC-113) (76-13-1)
m-Xylene (108-38-3)*
o-Xylene (95-47-6)
p-Xylene (106-42-3)*

MEGAMIX®

2,000 µg/mL each in P&T methanol, 1 mL/ampul*

cat.# 30492 (ea.)

**m*-xylene and *p*-xylene concentration is 1,000 µg/mL.

Additional VOA Calibration Mixes Required:

30006: VOA Calibration Mix #1 page 558
30007: VOA Calibration Mix #2 page 558
30008: VOA Calibration Mix #3 page 558
30009: VOA Calibration Mix #4 page 558
30010: VOA Calibration Mix #5 see above
30003: VOA Tuning Compound page 557

International-Specific

Canada

C50 in Toluene

n-Pentacontane (C50) (6596-40-3)
10 µg/mL in toluene, 1 mL/ampul
cat.# 31685 (ea.)

CCME F1 Retention Time Marker (3 components)

n-Hexane (C6) (110-54-3) Toluene (108-88-3)
n-Decane (C10) (124-18-5)
2,000 µg/mL each in methanol, 1 mL/ampul
cat.# 30611 (ea.)

CCME PHC Calibration Mix (3 components)

n-Decane (C10) (124-18-5) *n*-Tetracontane (C34) (14167-59-0)
n-Hexadecane (C16) (544-76-3)
5,000 µg/mL each in toluene, 1 mL/ampul
cat.# 31684 (ea.)

Canadian Drinking Water Triazine Herbicides Mix

(7 components)

Alachlor (15972-60-8) Metribuzin (21087-64-9)
Atrazine (122-34-9) Prometryne (7287-19-6)
Cyanazine (Bladex) (21725-46-2) Simazine (122-34-9)
Metolachlor (51218-45-2)
500 µg/mL each in acetone, 1 mL/ampul
cat.# 31864 (ea.)

Canadian Drinking Water OP Pesticides Mix

(9 components)

Azinphos methyl (86-50-0) Parathion (ethyl parathion) (56-38-2)
Chlorpyrifos (2921-88-2) Phorate (298-02-2)
Diazinon (333-41-5) Temephos (Abate) (3383-96-8)
Dimethoate (60-51-5) Terbufos (13071-79-9)
Malathion (121-75-5)
1,000 µg/mL each in acetonitrile, 1 mL/ampul
cat.# 31867 (ea.)

Canada - Atlantic Provinces

Atlantic RBCA EPH Mix (11 components)

n-Decane (C10) (124-18-5) Acenaphthene (83-32-9)
n-Dodecane (C12) (112-40-3) Anthracene (120-12-7)
n-Hexadecane (C16) (544-76-3) Benzo(a)pyrene (50-32-8)
n-Heneicosane (C21) (629-94-7) Chrysene (218-01-9)
n-Octacosane (C28) (630-02-4) Naphthalene (91-20-3)
n-Dotriacontane (C32) (544-85-4)
1,000 µg/mL each in hexane:methylene chloride (85:15), 1 mL/ampul
cat.# 31872 (ea.)

Atlantic RBCA VPH Mix (12 components)

n-Hexane (C6) (110-54-3) 1-Methyl-3-ethylbenzene (620-14-4)
n-Heptane (C7) (142-82-5) Toluene (108-88-3)
n-Octane (C8) (111-65-9) 1,2,4-Trimethylbenzene (95-63-6)
n-Decane (C10) (124-18-5) 1,3,5-Trimethylbenzene (108-67-8)
Benzene (71-43-2) *o*-Xylene (95-47-6)
Ethylbenzene (100-41-4) *p*-Xylene (106-42-3)
1,000 µg/mL each in P&T methanol, 1 mL/ampul
cat.# 31871 (ea.)

International-Specific, *cont.*

Europe

Organophosphorus Pesticide Mix, European

Formulation (16 components)

Acephate (30560-19-1)	200 µg/mL	Methamidophos (10265-92-6)	500
Azinphos methyl (86-50-0)	400	Methodathion (950-37-8)	200
Chlorpyrifos (2921-88-2)	100	Omethoate (1113-02-6)	1,000
Demeton-S-methyl (919-86-8)	200	Pirimiphos methyl (29232-93-7)	100
Dichlorvos (DDVP) (62-73-7)	500	Profenofos (41198-08-7)	200
Dimethoate (60-51-5)	200	Prothiofos (34643-46-4)	200
Ethion (563-12-2)	200	Pyrazophos (13457-18-6)	500
Malathion (121-75-5)	200	Tolclofos-methyl (57018-04-9)	100

In acetone, 1 mL/ampul

cat.# 32418 (ea.)

PCB Congener Standard #1 (6 components)

2,4,4'-Trichlorobiphenyl (BZ #28) (7012-37-5)
 2,2',5,5'-Tetrachlorobiphenyl (BZ #52) (35693-99-3)
 2,2',4,5,5'-Pentachlorobiphenyl (BZ #101) (37680-73-2)
 2,2',3,4,4',5'-Hexachlorobiphenyl (BZ #138) (35065-28-2)
 2,2',4,4',5,5'-Hexachlorobiphenyl (BZ #153) (35065-27-1)
 2,2',3,4,4',5,5'-Heptachlorobiphenyl (BZ #180) (35065-29-3)

10 µg/mL each in isoocetane, 1 mL/ampul

cat.# 32290 (ea.)

PCB Congener Standard #2 (7 components)

2,4,4'-Trichlorobiphenyl (BZ #28) (7012-37-5)
 2,2',5,5'-Tetrachlorobiphenyl (BZ #52) (35693-99-3)
 2,2',4,5,5'-Pentachlorobiphenyl (BZ #101) (37680-73-2)
 2,3',4,4',5'-Pentachlorobiphenyl (BZ #118) (31508-00-6)
 2,2',3,4,4',5'-Hexachlorobiphenyl (BZ #138) (35065-28-2)
 2,2',4,4',5,5'-Hexachlorobiphenyl (BZ #153) (35065-27-1)
 2,2',3,4,4',5,5'-Heptachlorobiphenyl (BZ #180) (35065-29-3)

10 µg/mL each in isoocetane, 1 mL/ampul

cat.# 32294 (ea.)

Japan

Japan Calibration Mix (9 components)

Acrylonitrile	Dichloromethane
Benzene	Tetrachloroethylene
1,3-Butadiene	Trichloroethylene
Chloroform	Vinyl chloride
1,2-Dichloroethane	

cylinder design

Cylinder Construction: aluminum
 Cylinder Fitting: CGA-180 outlet

Spectra (Linde) 104 L Cylinders:

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



Scotty (Air Liquide) 110 L Cylinders:

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



1 ppm in nitrogen, 104 liters @ 1,800 psi

cat.# 34418 (ea.)

1 ppm in nitrogen, 110 liters @ 1,800 psi

cat.# 26367 (ea.)

1 ppm in nitrogen, 110 liters @ 1,800 psi (Pi-marked cylinder)

cat.# 34418-PI (ea.)

No data pack available.

Gas standards are subject to hazardous materials shipping fees by most freight carriers. All calibration gas standards are nonreturnable due to DOT hazardous shipping requirements.

also available

High-Purity VOC Regulators

See page 453.



Drinking Water Odor Standard (2 components)

- Reference mix of the two most common odor-causing compounds.
- Convenient concentration for purge-and-trap analysis: 100 µg/mL in methanol.

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

(+/-)-Geosmin (16423-19-1)
 2-Methylisoborneol (MIB) (2371-42-8)

100 µg/mL in P&T methanol, 1 mL/ampul

cat.# 30608 (ea.)

International-Specific, cont.**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 (2 components)

Diesel fuel #2 composite (68334-30-5)

Motor oil (64742-65-0)

5,000 µg/mL each in hexane, 1 mL/ampul

cat.# 31682 (ea.)

Diesel #2/Mineral Oil (2 components)

Diesel fuel #2 composite (68334-30-5)

Mineral oil (8042-47-5)

5,000 µg/mL each in hexane, 1 mL/ampul

cat.# 31676 (ea.)

Standard Mixture Stock Solution (2 components)

Diesel #2 (additive-free) (68334-30-5)

Mineral oil (additive-free [i.e., USP grade] bp 325–460 or C18–C32 retention time range) (8042-47-5)

5,000 µg/mL each in cyclohexane, 1 mL/ampul (prepares 8 mL of 1.25 µg/µL calibration curve high point). Total hydrocarbon concentration is 10,000 µg/mL.

cat.# 31630 (ea.)

Quality Control Standard Mixture, Revised

(2 components)

- Updated reference materials for GC analysis of TPH in water.
- Determination of hydrocarbon oil index—applicable to drinking, surface, waste, and treated water.

Diesel #2 (additive-free) (68334-30-5)

Motor oil (additive-free bp 325–460 or C18–C32 retention time range) (64742-65-0)

500 µg/mL each in acetone, 1 mL/ampul (1 mL is enough mix to spike one 900 mL quality control sample). Total hydrocarbon concentration is 1,000 µg/mL.

cat.# 31641 (ea.)

Quality Control Standard Mixture (2 components)

- For GC analysis of total petroleum hydrocarbons (TPH) in water.
- Environmentally safer than previous methods.
- Calibration standard available as diesel #2/motor oil and diesel #2/mineral oil.

Diesel #2 (additive-free) (68334-30-5)

Mineral oil (additive-free [i.e., USP grade] bp 391–522 or C24–C40 retention time range) (8042-47-5)

500 µg/mL each in acetone, 1 mL/ampul (1 mL is enough mix to spike one quality control sample). Total hydrocarbon concentration is 1,000 µg/mL.

cat.# 31631 (ea.)

System Performance Test Standard Mixture of *n*-Alkanes (16 components)

n-Decane (C10) (124-18-5)

n-Dodecane (C12) (112-40-3)

n-Tetradecane (C14) (629-59-4)

n-Hexadecane (C16) (544-76-3)

n-Octadecane (C18) (593-45-3)

n-Eicosane (C20) (112-95-8)

n-Docosane (C22) (629-97-0)

n-Tetracosane (C24) (646-31-1)

n-Hexacosane (C26) (630-01-3)

n-Octacosane (C28) (630-02-4)

n-Triacontane (C30) (638-68-6)

n-Dotriacontane (C32) (544-85-4)

n-Tetracontane (C34) (14167-59-0)

n-Hexatriacontane (C36) (630-06-8)

n-Octatriacontane (C38) (7194-85-6)

n-Tetracontane (C40) (4181-95-7)

50 µg/mL each in hexane, 1 mL/ampul

cat.# 31678 (ea.)

Extraction Solvent Stock Solution #1 (2 components)

n-Decane (C10) (124-18-5)

n-Tetracontane (C40) (4181-95-7)

20 µL/L

20 mg/L

In hexane, 5 mL/ampul

cat.# 31679 (ea.)

Extraction Solvent Stock Solution #2 (2 components)

n-Decane (C10) (124-18-5)

n-Tetracontane (C40) (4181-95-7)

20 µL/L

20 mg/L

In hexane, 20 mL/ampul

cat.# 31680 (ea.)

Stearyl Stearate Test Solution

Stearyl stearate (2778-96-3)

2,000 µg/mL in hexane, 10 mL/ampul

cat.# 31681 (ea.)

2,000 µg/mL in cyclohexane, 10 mL/ampul (enough to check one Florisil cartridge)

cat.# 31636 (ea.)

Florisil® Cartridge Quality Control Standard Mixture, Rev. 2 (2 components)

Diesel fuel #2 composite (68334-30-5)

Mineral oil (8042-47-5)

1,000 µg/mL each in hexane, 10 mL/ampul

cat.# 31677 (ea.)

***n*-Tetracontane (C40)**

n-Tetracontane (C40) (4181-95-7)

Neat, 100 mg

cat.# 31859 (ea.)

***n*-Decane (C10)**

n-Decane (C10) (124-18-5)

Neat, 1 mL/ampul

cat.# 31858 (ea.)

Stearyl Stearate

Stearyl stearate (2778-96-3)

Neat, 100 mg

cat.# 31860 (ea.)

