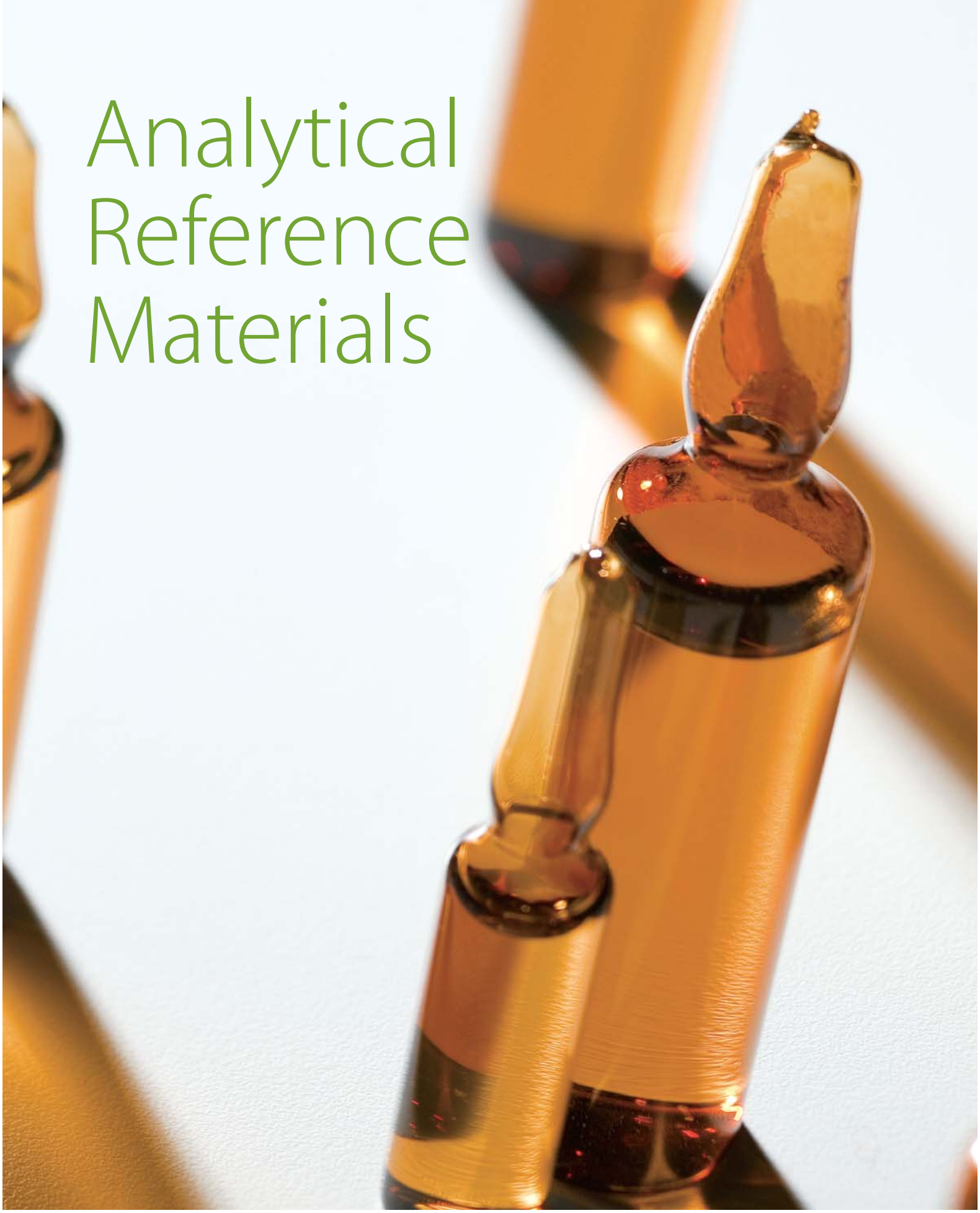
Analytical Reference Materials



Analytical Reference Materials

AJ Saclyn
Associate Product Marketing Manager

Index of Environmental Mixtures by Chemical Class (cat.#...page#)

12 CRITICAL STEPS

in reference materials production that separate Restek from the rest!

1. **Review Method Requirements**
   We carefully review the method to determine compound requirements and stock concentrations needed to produce working solutions. We confirm the required purity of raw materials and documentation needed to meet method compliance are important aspects of this review.

2. **Verify Compatibility and Stability**
   We review chemical compatibility with a goal of long-term stability. We specify raw material purity and mixture composition, and test experimental batches.

3. **Thoroughly Characterize Raw Materials**
   We perform chromatographic analyses on each solvent and mixture component to confirm identity and determine purity. For selected compounds, purity is confirmed by using nonchromatographic techniques to detect water, residual catalysts or surfactants, or inorganic contaminants not detected by chromatographic techniques.

4. **Calibrate Balances**
   Calibration of all analytical balances is verified at seven mass levels each day, using NIST-traceable weights. Balances are serviced and certified by an outside organization, using NIST weights.

5. **Deactivate Glassware and Ampuls**
   Weight/volume mixtures are prepared in ASTM Class A volumetric flasks, using Class A pipettes. Glassware, ampuls, and vials used in product preparation and packaging are deactivated for selected products to prevent loss of target analytes through adsorption to glass surfaces.

6. **Prepare Two Independent Lots**
   Two independent preparers, using two independently calibrated analytical balances, prepare two lots of a mixture. Details of preparation are annotated on the certificate.

7. **Assay to Assure Quality**
   Ampuls from each new lot are analyzed and data are compared to previous lots. Consistent relative response factors for difficult mixtures demonstrate that our production processes are accurate, consistent, reliable, and well controlled.

8. **Assign Real-Time Expiration Dates**
   Expiration dates are assigned to a lot of material based on real-time expiration studies. We retain sample ampuls from each lot of material, and compare data from the earlier lots against data from the newest lot. For new formulations, we make these comparisons every 6 months for 2 years. We continue this study until we determine the shelf life of the product.

9. **Use Customer-Friendly Product Packaging**
   Restek ampuls are packaged so you can see the contents. We include an ampul breaker, a deactivated screw-top vial to store unused solution, an extra product label to attach to the vial or your lab notebook, and a hazard card summarizing special precautions.

10. **Prepare Documentation**
    Our data packs contain every record, from raw material identity verification and purity data through final testing. Free data packs for our catalog mixtures are available on our website at **www.restek.com/datapacks**. A certificate and an MSDS are included for all mixtures.

11. **Comply with ISO 9001:2000 Registration**
    You can have complete confidence in our documented procedures, and in the accurate, reproducible reference materials we produce.

12. **Offer a Custom Reference Materials Program**
    Contact us with your special requirements, and join the thousands of chromatographers worldwide who use Restek custom mixtures. A form for ordering custom materials is on page 427 of this catalog–or at **www.restek.com/solutions**.

Custom Standards

Restek is your #1 source for custom analytical reference materials!

- **Made to your exact specifications.**
- **Quick quotations.**
- **Most orders shipped within 5–10 working days.**

Call our reference materials department, use the form on **page 427**, or contact your Restek representative for more information.

Custom Reference Materials Request Form

Take these eight steps to create the right solution:

1. Mixture Description: _____
2. Solvent: _____
3. Number of Components: _____
4. Volume per ampul (select): 1mL, 2mL, 5mL, 10mL or other _____mL
5. Quantity of ampuls: _____
6. Testing and documentation that best meet your requirements:
   - ❍ Gravimetric Documentation: Lot Sheet with balance printout attached.
   - ❍ Qualitative Documentation: Certificate of Composition, Chromatogram, and Gravimetric Documentation.
   - ❍ Quantitative Documentation: Certificate of Analysis and Data Pack.
7. Compound(s) (list or attach sheet)

		CAS Number	Concentration
Compound 01:			
Compound 02:			
Compound 03:			
Compound 04:			
Compound 05:			
Compound 06:			
Compound 07:			
Compound 08:			
Compound 09:			
Compound 10:			
Compound 11:			
Compound 12:			
Compound 13:			
Compound 14:			
Compound 15:			
Compound 16:			
Compound 17:			
Compound 18:			
Compound 19:			
Compound 20:			

8. Concentration Units

❍ mg/mL ❍ µg/mL ❍ ng/mL ❍ vol./wt. % ❍ wt./wt. % ❍ other_____

Contact Information:

Name: _____ Date: _____

Company/Location: _____

_____

Phone #:_____ FAX #: _____

E-mail: _____

U.S. Customers

FAX#: (814) 355-2895

email: standards@restek.com

online form: www.restek.com/solutions

International Customers

Contact Your

Restek Representative.

ALL mixtures are produced in accordance with our ISO 9001:2000 registration.
Analytical balances are calibrated at seven mass levels using NIST-traceable weights.
ALL raw materials used are a minimum of 97% pure; otherwise, their weight is corrected.

Neat & Single Analyte Solutions

Top: Matt Hepfer, Analytical Reference Materials Manufacturing Technician/Analyst

Bottom: Diane Thompson, Shipping Technician

Individual Compounds: Environmental, Petrochemical, Other

Compound Packaged 1mL/ampul*	CAS#	Solvent Code	µg/mL*	Individual cat.#
abamectin	71751-41-2	Neat	100mg	PS-2068
Abate®	3383-96-8	Neat	100mg	PS-665
Acarol	18181-80-1	Neat	250mg	PS-1062
Accent®	111991-09-4	Neat	100mg	PS-2005
acenaphthene	83-32-9	M	1,000	31267
acenaphthylene	208-96-8	M	1,000	31268
acephate	30560-19-1	Neat	1g	PS-738
acetaldehyde-2,4-DNPH	1019-57-4	ACN	100	33074
acetamiprid	135410-20-7	Neat	100mg	PS-2219
acetochlor	34256-82-1	Neat	100mg	PS-2040
acetochlor oa	—	Neat	25mg	MET-2040B
acetone	67-64-1	PTM	5,000	30245
acetone-2,4-DNPH	1567-89-1	ACN	100	33075
acetonitrile	75-05-8	DMSO	2.05mg/mL	36281
acetonitrile	75-05-8	PTM	1,000	30495
acetophenone	98-86-2	PTM	5,000	30621
acibenzolar-S-methyl	135158-54-2	Neat	250mg	PS-2212
acifluorfen	50594-66-6	M	1,000	32255
acifluorfen	50594-66-6	Neat	1g	PS-1016
acifluorfen, amino	—	Neat	10mg	MET-1016A
acifluorfen methyl ester	50594-67-7	M	1,000	32256
acifluorfen methyl ester	—	Neat	100mg	PS-1111
acrolein	107-02-8	PTM	10,000	30499
acrolein	107-02-8	W	10,000	30478
acrolein-2,4-DNPH	888-54-0	ACN	100	33076
acrylamide	79-06-1	M	1,000	30494
acrylonitrile	107-13-1	PTM	2,000	30246
agribrom	16079-88-2	Neat	500mg	PS-2089
Akton	1757-18-2	Neat	1g	PS-675
alachlor	15972-60-8	M	1,000	32204
alachlor	15972-60-8	Neat	1g	PS-357
alachlor oa	—	Neat	25mg	MET-357E
aldicarb	116-06-3	Neat	1g	PS-734
aldicarb sulfoxide	1646-87-3	Neat	10mg	PS-1054
aldoxycarb	1646-88-4	Neat	10mg	PS-1055
aldrin	309-00-2	M	1,000	32205
aldrin	309-00-2	Neat	100mg	PS-69
di-allate	2303-16-4	Neat	100mg	PS-507
tri-allate	2303-17-5	Neat	1g	PS-506
allethrin (5mL)	584-79-2	D	0.1mg/mL	PS-96
alloxydim - sodium (5mL)	66003-55-2	ACN	100	PS-1200
allyl chloride	107-05-1	PTM	2,000	30248
4-allyl-2-methoxyphenol	97-53-0	Neat	1g	PS-940
allyl trimethylammonium bromide	—	Neat	1g	PS-360
alprazolam	28981-97-7	PTM	1,000	34042
amdro	67485-29-4	Neat	100mg	PS-1001
ametryne	834-12-8	Neat	500mg	PS-383
2-aminobenzimidazole	934-32-7	Neat	250mg	MET-222A
aminocarb	2032-59-9	Neat	250mg	PS-751
3-amino-2,5-dichlorobenzoic acid	133-90-4	Neat	100mg	PS-314
2-amino-4,6-dinitrotoluene	35572-78-2	ACN	1,000	31670
4-amino-2,6-dinitrotoluene	19406-51-0	ACN	1,000	31671
2-amino-N-isopropyl benzamide	—	Neat	50mg	MET-1011C
aminomethyl phosphonic acid	1066-51-9	Neat	100mg	MET-1051A
aminomethyl phosphonic acid (AMPA)	1066-51-9	W	100	32428
aminopyralid	150114-71-9	Neat	100mg	PS-2315
aminotriazole	61-82-5	Neat	1g	PS-382
amitraz	33089-61-1	Neat	500mg	PS-1005
ammonium fluosilicate	16919-19-0	Neat	1g	PS-291
ammonium picrate	131-74-8	ACN	2,000	31890
ammonium sulfamate	7773-06-0	Neat	1g	PS-344
Amobam	3566-10-7	Neat	1g	PS-228
amobarbital	64-43-7	PTM	1,000	34028
d-amphetamine	51-63-8	PTM	1,000	34020
tert-amyl alcohol	75-85-4	PTM	10,000	30631
tert-amyl ethyl ether (TAEE)	919-94-8	PTM	2,000	30617
tert-amyl methyl ether (TAME)	994-05-8	PTM	2,000	30629
ancymidol	12771-68-5	Neat	1g	PS-1008
5-α-androstane	438-22-2	D	2,000	31065
anilazine	101-05-3	Neat	250mg	PS-388
aniline	62-53-3	M	1,000	31470
anthracene	120-12-7	A	1,000	31269
anthracene-d10	1719-06-08	D	2,000	31037
9,10-anthraquinone	84-65-1	Neat	1g	PS-926
antifoam agent for purge & trap	N/A	Neat	1mL	31822
4-ap	504-24-5	Neat	1g	PS-1010
aprobarbital	77-02-1	PTM	1,000	34029
Aramite	140-57-8	H	2,000	31624
Aramite (5mL)	140-57-8	H	0.1mg/mL	PS-850
Aroclor 1016	12674-11-2	H	1,000	32006
Aroclor 1016	12674-11-2	I	200	32064
Aroclor 1016	12674-11-2	TO	500mg/kg	32076
Aroclor 1016	12674-11-2	TO	50mg/kg	32075
Aroclor 1221	11104-28-2	H	1,000	32007
Aroclor 1221	11104-28-2	I	200	32065
Aroclor 1221	11104-28-2	TO	500mg/kg	32078
Aroclor 1221	11104-28-2	TO	50mg/kg	32077
Aroclor 1232	11141-16-5	H	1,000	32008
Aroclor 1232	11141-16-5	I	200	32066
Aroclor 1232	11141-16-5	TO	500mg/kg	32080
Aroclor 1232	11141-16-5	TO	50mg/kg	32079
Aroclor 1242	53469-21-9	H	1,000	32009
Aroclor 1242	53469-21-9	I	200	32067
Aroclor 1242	53469-21-9	TO	500mg/kg	32082
Aroclor 1242	53469-21-9	TO	50mg/kg	32081
Aroclor 1248	12672-29-6	H	1,000	32010
Aroclor 1248	12672-29-6	I	200	32068
Aroclor 1248	12672-29-6	TO	500mg/kg	32084
Aroclor 1248	12672-29-6	TO	50mg/kg	32083
Aroclor 1254	11097-69-1	H	1,000	32011
Aroclor 1254	11097-69-1	I	200	32069
Aroclor 1254	11097-69-1	TO	500mg/kg	32086
Aroclor 1254	11097-69-1	TO	50mg/kg	32085
Aroclor 1260	11096-82-5	H	1,000	32012
Aroclor 1260	11096-82-5	I	200	32070
Aroclor 1260	11096-82-5	TO	500mg/kg	32088
Aroclor 1260	11096-82-5	TO	50mg/kg	32087
Aroclor 1262	37324-23-5	H	1,000	32409
Aroclor 1268	11100-14-4	H	1,000	32410
Asana®	66230-04-4	Neat	100mg	PS-2004
Aspon	3244-90-4	Neat	50mg	PS-663
asulam	3337-71-1	Neat	1g	PS-1009
atraton	1610-17-9	Neat	500mg	PS-395
atrazine	1912-24-9	A	1,000	32208
atrazine	1912-24-9	Neat	500mg	PS-380
atrazine desethyl	6190-65-4	Neat	50mg	MET-380B
atrazine desethyl des-isopropyl-2-hydroxy	—	Neat	50mg	MET-380E
atrazine desethyl-2-hydroxy	—	Neat	50mg	MET-380D
atrazine desisopropyl	1007-28-9	Neat	50mg	MET-58A
atrazine-2-hydroxy	2163-68-0	Neat	50mg	MET-380F
aviation gas (5mL)	8006-69-1	PTM	50,000	30208
aviation gas	8006-69-1	PTM	2,500	30094
aviation gas	8006-69-1	PTM	50,000	30207
azadirachtin	11141-17-6	Neat	10mg	PS-2075
azamethiphos (5mL)	35575-96-3	D	100	PS-1202
azinphos-methyl oxon (5mL)	—	T	100	MET-666A
azobenzene	103-33-3	D	1,000	31496
azobenzene	103-33-3	Neat	1g	PS-851
azocyclotin	41083-11-8	Neat	250mg	PS-2063
azoxystrobin	131860-33-8	Neat	250mg	PS-2141

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

Solvent code:

A=acetone
ACN=acetonitrile
C=carbon disulfide
Cy=cyclohexane
D=methylene chloride
DMSO=dimethyl sulfoxide
EA=ethyl acetate
H=hexane
I=isooctane
Ip=isopropanol
M=methanol
MTBE=methyl *tert*-butyl ether
PTM=purge & trap grade methanol
T=toluene
TO=transformer oil
W=water (DI)

Cat.#s starting with PS- & MET- are ChemService pesticides that are subject to size and price changes without notification. They are not available in Europe.

Individual Compounds: Environmental, Petrochemical, Other

Compound Packaged 1mL/ampul*	CAS#	Solvent Code	µg/mL*	Individual cat.#
banol	671-04-5	Neat	100mg	PS-1085
barban	101-27-9	Neat	100mg	PS-540
barbital	57-44-3	PTM	1,000	34030
Baycarb	3766-81-2	Neat	1g	PS-1046
Baycor	55179-31-2	Neat	100mg	PS-1093
Baygon®	114-26-1	Neat	1g	PS-551
Baytan®	55219-65-3	Neat	250mg	PS-1064
Baythroid®	68359-37-5	Neat	250mg	PS-1090
BDMC	—	Neat	100mg	PS-450
Beam	41814-78-2	Neat	100mg	PS-1083
benalaxyl	71626-11-4	Neat	250mg	PS-2142
benazolin-ethyl	25059-80-7	Neat	250mg	PS-2193
bendiocarb	22781-23-3	Neat	250mg	PS-739
benfluralin	1861-40-1	Neat	1g	PS-389
benomyl	17804-35-2	Neat	100mg	PS-222
bensulfuron-methyl	83055-99-6	Neat	100mg	PS-1082
bensulide	741-58-2	Neat	250mg	PS-425
bensultap	17606-31-4	Neat	1g	PS-2106
bentazon	25057-89-0	M	1,000	32257
bentazon	25057-89-0	Neat	250mg	PS-1011
bentazon methyl derivative	—	Neat	50mg	PS-1112
benthiocarb	28249-77-6	Neat	1g	PS-1017
benzaldehyde	100-52-7	D	2,000	33017
benzaldehyde-2,4-DNPH	1157-84-2	ACN	100	33077
benzene	71-43-2	DMSO	10mg/mL	36282
benzene	71-43-2	D	250	35262
benzene	71-43-2	PTM	2,000	30249
benzene-d6	1076-43-3	PTM	2,000	30025
benzidine	92-87-5	M	1,000	31441
benzo(a)anthracene	56-55-3	M	1,000	31270
benzo(a)pyrene	50-32-8	A	1,000	31271
benzo(b)fluoranthene	205-99-2	A	1,000	31272
benzo(ghi)perylene	191-24-2	D	1,000	31273
benzo(k)fluoranthene	207-08-9	A	1,000	31274
benzoic acid	65-85-0	D	2,000	31879
benzoic acid	65-85-0	M	1,000	31415
benzoylecgonine	519-09-5	PTM	1,000	34016
benzoylprop ethyl	22212-55-1	Neat	100mg	PS-2079
benzphetamine	5411-22-3	PTM	1,000	34022
benzthiazuron (5mL)	1929-88-0	D	100	PS-1201
benzyl benzoate	120-51-4	H	5,000	31847
benzyl benzoate	120-51-4	Neat	1g	PS-904
o-benzyl-*p*-chlorophenol	120-32-1	Neat	1g	PS-170
benzyl thiocyanate	3012-37-1	Neat	1g	PS-98
α-BHC	319-84-6	M	1,000	32206
α-BHC	319-84-6	Neat	100mg	PS-692
ß-BHC	319-85-7	A	1,000	32209
β-BHC	319-85-7	Neat	100mg	PS-691
δ-BHC	319-86-8	M	1,000	32217
δ-BHC	319-86-8	Neat	100mg	PS-693
ε-BHC	6108-10-7	T	100	PS-2222
γ-BHC (lindane)	58-89-9	M	1,000	32226
BHC mixed isomers	608-73-1	Neat	1g	PS-70
bifenazate	149877-41-8	Neat	250mg	PS-2194
bifenox	42576-02-3	Neat	1g	PS-311
bifenthrin	82657-04-3	Neat	100mg	PS-2003
binapacryl	485-31-4	Neat	100mg	PS-2087
bioallethrin	28057-48-9	Neat	250mg	PS-791
s-bioallethrin	28434-00-6	Neat	250mg	PS-790
bioresmethrin	28434-01-7	Neat	500mg	PS-2080
biphenyl	92-52-4	Neat	1g	PS-2032
bis(*p*-chlorophenyl)urea	—	Neat	500mg	MET-59A
N,N'-bis(3,4-dichloro-phenyl) urea	—	Neat	100mg	MET-60A
bis(2-ethylhexyl)adipate	103-23-1	M	1,000	31449
bis(2-ethylhexyl)phthalate	117-81-7	D	1,000	31420
bis[tri-*n*-butyltin]oxide	56-35-9	Neat	1g	PS-282
Bitrex®	3734-33-6	Neat	1g	PS-2084
bladex	21725-46-2	Neat	1g	PS-387
brodifacoum	56073-10-0	Neat	50mg	PS-1056
bromacil	314-40-9	Neat	1g	PS-62
bromazepam	1812-30-2	PTM	1,000	34043

Compound Packaged 1mL/ampul*	CAS#	Solvent Code	µg/mL*	Individual cat.#
bromoacetyl bromide	598-21-0	Neat	500mg	PS-273
p-bromoaniline	106-40-1	Neat	1g	MET-374B
bromobenzene	108-86-1	PTM	2,000	30250
2-bromobutanoic acid	80-58-0	MTBE	2,000	31881
2-bromobutyrate	3196-15-4	MTBE	2,000	31882
2-bromochlorobenzene	694-80-4	PTM	2,000	30228
4-bromochlorobenzene	106-39-8	PTM	2,000	30230
1-bromo-2-chloroethane	107-04-0	PTM	2,000	30469
bromochloromethane	74-97-5	PTM	2,000	30225
2-bromo-1-chloropropane	3017-95-6	PTM	2,000	30226
bromodichloromethane	75-27-4	PTM	2,000	30251
4-bromo-3,5-dimethylphenyl-N-methylcarbamate (BDMC)	3766-81-2	M	100	32274
(2-bromoethyl)trimethyl ammonium bromide	2758-06-7	Neat	1g	PS-361
1-bromo-4-fluorobenzene	460-00-4	A	1,000	31854
4-bromofluorobenzene	460-00-4	PTM	2,000	30026
4-bromofluorobenzene	460-00-4	PTM	2,500	30067
4-bromofluorobenzene	460-00-4	PTM	5,000	30003
4-bromofluorobenzene	460-00-4	PTM	10,000	30082
bromoform	75-25-2	PTM	2,000	30252
bromomethane	74-83-9	PTM	2,000	30253
bromomethane solution (5mL)	74-83-9	M	10,000	PS-155
1-bromo-2-nitrobenzene	577-19-5	A	1,000	32279
p-bromophenoxy acetic acid	—	Neat	1g	PS-312
bromophos ethyl	4824-78-6	Neat	100mg	PS-2008
bromophos methyl	2104-96-3	Neat	50mg	PS-2009
2-bromopropionic acid	598-72-1	MTBE	1,000	31653
bromoxynil	1689-84-5	Neat	1g	PS-426
bromoxynil-heptanoate	—	Neat	50mg	MET-426A
bromoxynil-methyl ether	—	Neat	100mg	MET-426B
bromoxynil octanoic acid ester	1689-99-2	Neat	1g	PS-434
bromuconazole	116255-48-2	Neat	100mg	PS-2301
bronopol	52-51-7	Neat	1g	PS-2128
buprofezin	69327-76-0	Neat	100mg	PS-2067
Busan® 40	51026-28-9	Neat	100mg	PS-2019
Busan® 85	128-03-0	Neat	100mg	PS-2020
butabarbital	125-40-6	PTM	1,000	34031
butachlor	23184-66-9	Neat	250mg	PS-348
1,3-butadiene	106-99-0	PTM	1,000	30622
butalbital	77-26-9	PTM	1,000	34032
1,4-butanediol	110-63-4	M	1,000	34078
(s)-(-)-1,2,4-butanetriol	42890-76-6	pyridine	1,000	33024
(s)-(-)-1,2,4-butanetriol (5mL)	42890-76-6	pyridine	1,000	33032
1-butanol	71-36-3	D	250	35260
1-butanol	71-36-3	PTM	50,000	30474
tert-butanol	75-65-0	PTM	50,000	30470
tert-butanol-d9	25725-11-5	PTM	20,000	30618
2-butanone (MEK)	78-93-3	PTM	5,000	30254
2-butanone-2,4-DNPH	958-60-1	ACN	100	33078
2-[2-butoxyethoxy]ethyl thiocyanate	112-56-1	Neat	250mg	PS-730
butoxypolypropylene glycol	9003-13-8	Neat	1g	PS-908
butralin	33629-47-9	Neat	500mg	PS-1004
butylate	2008-41-5	Neat	1g	PS-503
4-*tert*-butyl-2-chloro-phenol	—	Neat	10mg	MET-607A
2-*sec*-butyl-4,6-dinitro-phenol triethanolamine salt	6420-47-9	Neat	1g	PS-436
2-butyl-2-ethyl-1,3-propanediol	115-84-4	Neat	1g	PS-101
butylmesityl oxide oxalate	532-34-3	Neat	1g	PS-907
2-(4-*tert*-butylphenoxy) cyclohexanol	—	Neat	100mg	MET-858A
n-butyraldehyde-2,4-DNPH	1527-98-6	ACN	100	33079
γ-butyrolactone (GBL)	96-48-0	ACN	1,000	34077
cadmium succinate	141-00-4	Neat	1g	PS-280
cadusafos	95465-99-9	Neat	100mg	PS-2199
caffeine	74051-80-2	W	5	31800
caffeine	74051-80-2	W	25	31801
caffeine	74051-80-2	W	125	31802
caffeine	74051-80-2	W	250	31803
caffeine	74051-80-2	W	500	31804
caffeine	58-08-2	M	1,000	34084

free data

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

For complete information detailing manufacturing and testing for Restek inventoried reference standards, visit our website at **www.restek.com**.

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

Individual Compounds: Environmental, Petrochemical, Other

Compound Packaged 1mL/ampul*	CAS#	Solvent Code	µg/mL*	Individual cat.#
cannabidiol	13956-24-1	PTM	1,000	34011
cannabinol	521-35-7	PTM	1,000	34010
ε-caprolactam	105-60-2	D	2,000	31833
captafol	2425-06-1	Neat	1g	PS-260
captan	133-06-2	Neat	1g	PS-25
carbaryl	63-25-2	Neat	1g	PS-84
carbazole	86-74-8	D	1,000	31836
carbazole	86-74-8	M	1,000	31430
carbendazim	10605-21-7	Neat	100mg	PS-1077
carbofuran	1563-66-2	Neat	1g	PS-754
carbofuran-3-keto	—	Neat	100mg	MET-754E
carbofuranphenol-3-keto	—	Neat	50mg	MET-754F
carbon disulfide	75-15-0	PTM	2,000	30258
carbon tetrachloride	56-23-5	DMSO	20mg/mL	36283
carbon tetrachloride	56-23-5	PTM	2,000	30259
carbophenothion	786-19-6	Neat	1g	PS-88
carbophenothion methyl (5mL)	953-17-3	M	100	MET-88A
carbophenothion methyl-O-analog	—	Neat	50mg	MET-88B
carbophenothion methyl sulfone (5mL)	—	EA	10ng/µL	MET-88C
carbophenothion methyl sulfoxide (5mL)	—	EA	10ng/µL	MET-88D
carbosulfan	55285-14-8	Neat	250mg	PS-1063
carboxin	5234-68-4	Neat	1g	PS-294
carfentrazone-ethyl	128639-02-1	Neat	100mg	PS-2170
cartap hydrochloride	22042-59-7	Neat	500mg	PS-2069
chloral hydrate	302-17-0	ACN	1,000	30609
α-chloralose	15879-93-3	Neat	250mg	PS-2112
β-chloralose	16376-36-6	Neat	1g	PS-2113
chloramben methyl ester	7286-84-2	Neat	100mg	PS-1113
chloranil	118-75-2	Neat	1g	PS-11
chloranocryl	2164-09-2	Neat	1g	PS-63
chlorbenside	103-17-3	Neat	100mg	PS-853
chlorbromuron	13360-45-7	Neat	1g	PS-368
chlordane	57-74-9	Neat	1g	PS-75
chlordane (technical)	57-74-9	H	1,000	32021
chlordane (technical)	57-74-9	I	5,000	32072
chlordane (technical)	57-74-9	M	2,000	32016
α-chlordane	5103-71-9	M	1,000	32207
cis-chlordane	5103-71-9	Neat	10mg	PS-75-1
trans-chlordane	5103-74-2	Neat	10mg	PS-75-2
γ-chlordane	5566-34-7	M	1,000	32227
chlordiazepoxide	438-41-5	PTM	1,000	34044
chlordimeform	6164-98-3	Neat	1g	PS-840
chlorfenapyr	122453-73-0	Neat	100mg	PS-2171
chlorfenvinphos	470-90-6	Neat	100mg	PS-1087
chlorflurecol-methyl ester	2536-31-4	Neat	100mg	PS-1022
chlorimuron ethyl	90982-32-4	Neat	100mg	PS-1081
chlormephos	24934-91-6	Neat	250mg	PS-2209
chlormequat chloride	999-81-5	Neat	1g	PS-363
chloroacetic acid	79-11-8	Neat	1g	PS-31
2-chloroallyl diethyldithiocarbamate	95-06-7	Neat	250mg	PS-19
4-chloroaniline	106-47-8	D	2,000	31211
chlorobenzene	108-90-7	DMSO	1.8mg/mL	36284
chlorobenzene	108-90-7	PTM	2,000	30261
chlorobenzene-d5	3114-55-4	PTM	2,000	30223
chlorobenzilate	510-15-6	M	1,000	32211
chlorobenzilate	510-15-6	Neat	100mg	PS-854
2-chlorobenzonitrile	873-32-5	Neat	250mg	MET-2015A
2-chloro-4,6-diamino-1,3,5-triazine	3397-62-4	Neat	100mg	MET-58C
2-chloro-2',6'-diethyl-acetanilide	—	Neat	100mg	MET-357A
chloroethane	75-00-3	PTM	2,000	30263

Compound Packaged 1mL/ampul*	CAS#	Solvent Code	µg/mL*	Individual cat.#
2-chloroethanol	107-07-3	PTM	2,000	30264
(2-chloroethyl)phosphonic acid	16672-87-0	Neat	1g	PS-325
2-chloroethyl vinyl ether	110-75-8	PTM	2,000	30265
1-chloro-2-fluorobenzene	348-51-6	PTM	2,000	30040
1-chloro-4-fluorobenzene	352-33-0	PTM	2,500	30066
chloroform	67-66-3	DMSO	0.3mg/mL	36285
chloroform	67-66-3	PTM	2,000	30266
p-chloromandelic acid	492-86-4	Neat	1g	PS-310
chloromethane	74-87-3	PTM	2,000	30267
4-chloro-2-methylaniline	95-69-2	Neat	1g	MET-840A
4-chloro-2-methylphenol	1570-64-5	Neat	1g	MET-40A
2-chloronaphthalene	91-58-7	M	1,000	31284
chloroneb	2675-77-6	Neat	1g	PS-255
1-chloro-3-nitrobenzene	121-73-3	H	1,000	31875
4-chloro-3-nitrobenzotrifluoride	121-17-5	A	1,000	32282
2-chloro-4-nitrophenol	619-08-9	Neat	1g	MET-669A
1-chlorooctadecane	3386-33-2	D	10,000	31098
1-chlorooctane	111-85-3	PTM	10,000	30084
chlorophacinone	3691-35-8	Neat	500mg	PS-2085
o-chlorophenoxy acetic acid	614-61-9	Neat	1g	PS-38
p-chlorophenoxy acetic acid	122-88-3	Neat	1g	PS-39
2-[3-chlorophenoxy] propionamide	—	Neat	1g	PS-359
2-(3-chlorophenoxy) propionic acid	101-10-0	Neat	1g	PS-317
3-(4-chlorophenyl)methyl urea	—	Neat	100mg	MET-60B
p-chlorophenylurea	140-38-5	Neat	100mg	MET-1028A
6-chloro-2-picolinic acid methyl ester (5mL)	—	H	100	MET-419B
chloroprene	126-99-8	PTM	5,000	30238
chlorothalonil	1897-45-6	Neat	1g	PS-1020
4-chlorotoluene	106-43-4	PTM	2,000	30269
chlorotoluron	15545-48-9	Neat	250mg	PS-2078
4-chloro-*o*-tolyloxyacetic acid	94-74-6	Neat	1g	PS-40
4-chloro-*o*-tolyloxyacetic acid methyl ester	2436-73-9	Neat	100mg	PS-1105
chloroxuron	1982-47-4	Neat	1g	PS-376
chloroxynil	1891-95-8	Neat	500mg	PS-2090
chlorpropham	101-21-3	Neat	1g	PS-52
chlorpyrifos	2921-88-2	M	1,000	32212
chlorpyrifos	2921-88-2	Neat	1g	PS-674
chlorpyrifos methyl	5598-13-0	Neat	250mg	PS-418
chlorpyrifos methyl-O-analog	—	Neat	50mg	MET-418B
chlorpyrifos oxon	5598-15-2	Neat	100mg	MET-674B
chlorsulfuron	64902-72-3	Neat	100mg	PS-1065
chlorsulfuron-5-hydroxy (5mL)	—	EA	10ng/µL	MET-1065A
chlorthal	1861-32-1	Neat	1g	PS-33
chrysene	218-01-9	A	1,000	31275
clethodim	99129-21-2	Neat	100mg	PS-2045
clobazam	22316-47-8	PTM	1,000	34045
clofentezine	74115-24-5	Neat	100mg	PS-2015
clonazepam	1622-61-3	PTM	1,000	34046
cloransulam-methyl	147150-35-4	Neat	100mg	PS-2165
cocaethylene	529-38-4	ACN	1,000	34066
cocaine	53-21-4	PTM	1,000	34015
codeine	76-57-3	PTM	1,000	34000
command	81777-89-1	Neat	100mg	PS-2001
continine	486-56-6	M	1,000	34086
copper naphthenates	—	Neat	1g	PS-2028
copper oxychloride	1332-65-6	Neat	1g	PS-292
copper-8-quinolinolate	10380-28-6	Neat	500mg	PS-2091
coumaphos	56-72-4	Neat	100mg	PS-656
coumaphos-O-analog	321-54-0	Neat	50mg	MET-656D
coumatetralyl	5836-29-3	Neat	250mg	PS-2093
creatine	57-00-1	Neat	1g	MET-250A

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

Solvent code:

A=acetone
ACN=acetonitrile
C=carbon disulfide
Cy=cyclohexane
D=methylene chloride
DMSO=dimethyl sulfoxide
EA=ethyl acetate
H=hexane
I=isooctane
Ip=isopropanol
M=methanol
MTBE=methyl *tert*-butyl ether
PTM=purge & trap grade methanol
T=toluene
TO=transformer oil
W=water (DI)

Cat.#s starting with PS- & MET- are ChemService pesticides that are subject to size and price changes without notification. They are not available in Europe.

Individual Compounds: Environmental, Petrochemical, Other

Compound Packaged 1mL/ampul*	CAS#	Solvent Code	µg/mL*	Individual cat.#
creosote oil	8001-58-9	D	50,000	31838
crotonaldehyde-2,4-DNPH	1527-96-4	ACN	100	33080
crotoxyphos	7700-17-6	Neat	50mg	PS-603
cyanazine	21725-46-2	A	1,000	32215
cyanophos	2636-26-2	Neat	100mg	PS-2034
cyclanilide	113136-77-9	Neat	100mg	PS-2243
cycloate	1134-23-2	Neat	1g	PS-502
cyclohexane	110-82-7	DMSO	19.4mg/mL	36286
1,2-cyclohexanediol (*cis* & *trans* mixture)	931-17-9	Neat	1g	MET-858B
cycloheximide	66-81-9	Neat	100mg	PS-1002
cycloprate	54460-46-7	Neat	500mg	PS-2092
cyclosulfamuron	136849-15-5	Neat	250mg	PS-2214
lambda-cyhalothrin	91465-08-6	Neat	100mg	PS-2018
cymoxanil	57966-95-7	Neat	100mg	PS-1067
cypermethrin	52315-07-8	Neat	100mg	PS-1068
alpha-cypermethrin	67375-30-8	Neat	250mg	PS-2083
beta-cypermethrin	—	Neat	250mg	PS-2203
cyprazine	22936-86-3	Neat	100mg	PS-2104
cyproconazole	113096-99-4	Neat	50mg	PS-2130
cyprodinil	121552-61-2	Neat	500mg	PS-2144
cyromazine	66215-27-8	Neat	500mg	PS-2073
Cythioate	115-93-5	Neat	1g	PS-1025
2,4-D (2,4-dichlorophenylacetic acid)	94-75-7	M	1,000	32239
2,4-D	94-75-7	Neat	1g	PS-41
2,4-D butoxyethyl ester	1929-73-3	Neat	1g	PS-315
2,4-D butoxypolypropylene ester	1928-45-6	Neat	1g	PS-298
2,4-D butyl ester	94-80-4	Neat	1g	PS-42
2,4-D *sec*-butyl ester	—	Neat	1g	PS-301
2,4-D dimethylamine salt	2008-39-1	Neat	1g	PS-337
2,4-D ethanolamine salt	3599-58-4	Neat	1g	PS-338
2,4-D ethyl ester	533-23-3	Neat	1g	PS-304
2,4-D isooctyl ester	25168-26-7	Neat	1g	PS-319
2,4-D isopropanol amine salt	—	Neat	1g	PS-332
2,4-D isopropylamine salt	—	Neat	1g	PS-299
2,4-D isopropyl ester	94-11-1	Neat	1g	PS-43
2,4-D methyl ester	1928-38-7	M	1,000	32240
2,4-D methyl ester	1928-38-7	Neat	1g	PS-41-1
2,4-D propylene glycol ester	—	Neat	1g	PS-302
Dacthal® (DCPA dimethyl ester)	1861-32-1	M	1,000	32216
dalapon	75-99-0	ACN	1,000	32432
dalapon	75-99-0	M	1,000	32253
dalapon	75-99-0	M	2,000	32056
dalapon	75-99-0	Neat	1g	PS-32
dalapon methyl ester	17640-02-7	H	2,000	32057
dalapon methyl ester	17640-02-7	M	1,000	32254
dalapon methyl ester	—	Neat	100mg	PS-1100
daminozide	1596-84-5	Neat	1g	PS-391
dazomet	533-74-4	Neat	1g	PS-17
2,4-DB	94-82-6	M	1,000	32241
2,4-DB	94-82-6	Neat	1g	PS-306
2,4-DB dimethylamine salt	—	Neat	1g	PS-316
2,4-DB methyl ester	18625-12-2	Neat	100mg	PS-1101
DCPA diacid	2136-79-0	M	200	32261
p,p'-DDA	83-05-6	Neat	100mg	MET-698A
2,4'-DDD	53-19-0	M	1,000	32098
4,4'-DDD	72-54-8	M	1,000	32201
o,p'-DDD	53-19-0	Neat	100mg	PS-694
p,p'-DDD	72-54-8	Neat	1g	PS-72
o,p'-DDD olefin	—	Neat	10mg	MET-694A
2,4'-DDE	3424-82-6	M	1,000	32099
4,4'-DDE	72-55-9	M	1,000	32202
o,p'-DDE	3424-82-6	Neat	50mg	PS-695
p,p'-DDE	72-55-9	Neat	100mg	PS-696

Compound Packaged 1mL/ampul*	CAS#	Solvent Code	µg/mL*	Individual cat.#
p,p'-DDMU	1022-22-6	Neat	10mg	MET-699B
2,4'-DDT	789-02-6	M	1,000	32200
4,4'-DDT	50-29-3	M	1,000	32203
o,p'-DDT	789-02-6	Neat	50mg	PS-698
p,p'-DDT	50-29-3	Neat	1g	PS-699
DDT (mixture *p,p'* & *o,p'*)	—	Neat	1g	PS-74
decachlorobiphenyl (BZ #209) (5mL)	2051-24-3	A	200	32030
decachlorobiphenyl (BZ #209)	2051-24-3	A	200	32029
decachlorobiphenyl (BZ #209)	2051-24-3	I	10	32289
decafluorobiphenyl	434-90-2	A	1,000	31855
decafluorobiphenyl	434-90-2	D	2,000	31041
decafluorobiphenyl	434-90-2	ACN	1,000	31842
decafluorotriphenylphosphine (DFTPP)	5074-71-5	D	2,500	31001
n-decane	124-18-5	Neat	1mL	31858
deltamethrin	52918-63-5	Neat	100mg	PS-2071
demeton O	298-03-3	Neat	100mg	PS-661
demeton S	126-75-0	Neat	100mg	PS-662
demeton O&S	8065-48-3	Neat	100mg	PS-661/662
desethyl-atrazine	6190-65-4	A	1,000	32445
desisopropylatrazine	1007-28-9	A	1,000	32446
desmedipham	13684-56-5	Neat	250mg	PS-1015
Devrinol®	15299-99-7	Neat	250mg	PS-553
Dexon	140-56-7	Neat	1g	PS-262
dextromethorphan HBr monohydrate	125-69-9	M	1,000	34081
dextro-propoxyphene	1639-60-7	PTM	1,000	34008
diafenthiuron	80060-09-9	Neat	250mg	PS-2221
N,N-diallyl-2-chloro-acetamide	93-71-0	Neat	1g	PS-351
diazepam	439-14-5	PTM	1,000	34047
diazinon	333-41-5	Neat	1g	PS-90
diazinon-O-analog	—	Neat	100mg	MET-90A
dibenzo(a,h)anthracene	53-70-3	D	1,000	31276
4,4'-dibromobiphenyl	92-86-4	D	2,000	31039
4,4'-dibromobiphenyl	92-86-4	EA	500	32092
dibromochloromethane (chlorodibromomethane)	124-48-1	PTM	2,000	30271
1,2-dibromo-3-chloropropane (DBCP)	96-12-8	Neat	1g	PS-1
1,2-dibromo-3-chloropropane (DBCP)	96-12-8	PTM	2,000	30270
dibromofluoromethane	1868-53-7	Neat	100mg	30634
1,2-dibromoethane	106-93-4	Neat	1g	PS-154
1,2-dibromoethane	106-93-4	PTM	2,000	30272
dibromomethane	74-95-3	PTM	2,000	30430
4,4'-dibromooctafluorobiphenyl	10386-84-2	D	2,000	31040
4,4'-dibromooctafluorobiphenyl	10386-84-2	H	250	32053
4,4'-dibromooctafluorobiphenyl	10386-84-2	MTBE	2,000	31856
2,3-dibromopropionic acid	600-05-5	MTBE	1,000	31655
2,5-dibromotoluene	615-59-8	PTM	1,000	30435
2,5-dibromotoluene	615-59-8	PTM	10,000	30453
3-(2,2-dibromovinyl)-2,2-dimethyl-(1-cyclopropane) carboxylic acid	63597-73-9	Neat	100µg/mL	MET-2071B
dibutyl succinate	141-03-7	Neat	1g	PS-903
dibutylchlorendate	1770-80-5	A	200	32025
dicamba	1918-00-9	M	1,000	32247
dicamba	1918-00-9	Neat	1g	PS-346
dicamba methyl ester	6597-78-0	M	1,000	32248
dicamba methyl ester	6597-78-0	Neat	100mg	PS-1102
dicapthon	2463-84-5	Neat	1g	PS-669
dichlofenthion	97-17-6	Neat	1g	PS-103
dichlofluanid	1085-98-9	Neat	1g	PS-2047
dichlone	117-80-6	Neat	1g	PS-12
dichlormid	37764-25-3	Neat	100mg	PS-2054
2,4-dichloroaniline	554-00-7	Neat	1g	MET-372A
2,6-dichlorobenzamide	—	Neat	1g	MET-392B

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

Solvent code:

A=acetone
ACN=acetonitrile
C=carbon disulfide
Cy=cyclohexane
D=methylene chloride
DMSO=dimethyl sulfoxide
EA=ethyl acetate
H=hexane
I=isooctane
Ip=isopropanol
M=methanol
MTBE=methyl *tert*-butyl ether
PTM=purge & trap grade methanol
T=toluene
TO=transformer oil
W=water (DI)

Cat.#s starting with PS- & MET- are ChemService pesticides that are subject to size and price changes without notification. They are not available in Europe.

Compound Packaged 1mL/ampul*	CAS#	Solvent Code	µg/mL*	Individual cat.#
1,2-dichlorobenzene	95-50-1	M	1,000	31442
1,3-dichlorobenzene	541-73-1	M	1,000	31443
1,4-dichlorobenzene	106-46-7	ACN	1,000	30498
1,4-dichlorobenzene	106-46-7	M	1,000	31444
o-dichlorobenzene	95-50-1	Neat	1g	PS-2
p-dichlorobenzene	106-46-7	Neat	1g	PS-3
1,2-dichlorobenzene-d4	2199-69-1	PTM	2,000	30049
4,4'-dichlorobenzhydrol	90-97-1	Neat	1g	MET-854A
3,3'-dichlorobenzidine	91-94-1	D	2,000	31835
3,3'-dichlorobenzidine	91-94-1	M	2,000	31026
3,3'-dichlorobenzidine-free base	91-94-1	Neat	100mg	31884
2,6-dichlorobenzoic acid	50-30-6	Neat	1g	MET-392A
3,5-dichlorobenzoic acid	51-36-5	MTBE	1,000	31652
3,5-dichlorobenzoic acid	51-36-5	Neat	1g	PS-1107
2,6-dichlorobenzoic acid methyl ester	—	Neat	250mg	MET-392C
3,5-dichlorobenzoic acid methyl ester	2905-67-1	M	1,000	32264
3,5-dichlorobenzoic acid methyl ester	2905-67-1	MTBE	1,000	31649
3,5-dichlorobenzoic acid methyl ester	—	Neat	100mg	PS-1114
2,6-dichlorobenzonitrile	1194-65-6	Neat	1g	PS-392
4,4'-dichlorobenzophenone	90-98-2	Neat	100mg	MET-854B
1,4-dichlorobutane	110-56-5	PTM	2,000	30227
trans-1,4-dichloro-2-butene	110-57-6	PTM	2,000	30274
dichlorodifluoromethane (CFC-12)	75-71-8	PTM	2,000	30275
1,1-dichloroethane	75-34-3	PTM	2,000	30276
1,2-dichloroethane	107-06-2	DMSO	25mg/mL	36288
1,2-dichloroethane	107-06-2	PTM	2,000	30277
1,2-dichloroethane-d4	17060-07-0	PTM	2,000	30027
1,1-dichloroethene	75-35-4	DMSO	40mg/mL	36287
1,1-dichloroethene	75-35-4	PTM	2,000	30278
cis-1,2-dichloroethene	156-59-2	PTM	2,000	30279
trans-1,2-dichloroethene	156-60-5	PTM	2,000	30280
cis-1,2-dichloroethylene	156-59-2	DMSO	4.67mg/mL	36289
trans-1,2-dichloroethylene	156-60-5	DMSO	4.67mg/mL	36290
3,6-dichloro-2-hydroxy benzoic acid	—	Neat	50mg	MET-346B
1,1-dichloro-1-nitro-ethane	594-72-9	Neat	1g	PS-5
dichlorophen	97-23-4	Neat	1g	PS-6
2,6-dichlorophenol	87-65-0	M	1,000	31409
N-[(2,4-dichlorophenoxy) acetyl]-DL-methionine	—	Neat	10mg	PS-390
2,4-dichlorophenylacetic acid	19719-28-9	M	200	32049
2,4-dichlorophenyl acetic acid methyl ester	N/A	H	200	32050
2,4-dichlorophenyl benzenesulfonate	97-16-5	Neat	1g	PS-856
1,2-dichloropropane	78-87-5	Neat	1g	PS-153
1,2-dichloropropane	78-87-5	PTM	2,000	30281
2,2-dichloropropane	594-20-7	PTM	2,000	30283
1,3-dichloropropene	542-75-6	Neat	1g	PS-152
cis-1,3-dichloropropene	10061-01-5	PTM	2,000	30284
trans-1,3-dichloropropene	10061-02-6	PTM	2,000	30285
3',4'-dichloropropionanilide	709-98-8	Neat	500mg	PS-356
2,3-dichloropropionic acid	565-64-0	MTBE	1,000	31650
2,3-dichloropropionic acid methyl ester	3674-09-7	MTBE	1,000	31651
1,2-dichlorotetrafluoroethane (CFC-114)	76-14-2	PTM	2,000	30476
3-(2,2-dichlorovinyl)-2,2-dimethyl-(1-cyclopropane) carboxylic acid	55701-05-8	Neat	1mL	MET-758D
dichlorprop	120-36-5	M	1,000	32249
dichlorprop	120-36-5	Neat	250mg	PS-44
dichlorprop methyl ester	57153-17-0	M	1,000	32250
dichlorprop methyl ester	—	Neat	100mg	PS-1103
dichlorvos	62-73-7	Neat	1g	PS-89
diclofop acid	40843-25-2	Neat	100mg	MET-1036B
diclofop methyl	51338-27-3	Neat	1g	PS-1036
dicloran	99-30-9	Neat	1g	PS-293
diclosulam	145701-21-9	Neat	250mg	PS-2208
o,p-dicofol (5mL)	—	ACN	100	MET-82A
dicrotophos	141-66-2	Neat	250mg	PS-602
dicyclopentadiene	77-73-6	Neat	500mg	PS-2033
dieldrin	60-57-1	M	1,000	32218
dieldrin	60-57-1	Neat	250mg	PS-76
diesel fuel #2 composite (5mL)	68334-30-5	D	50,000	31259
diesel fuel #2 composite	68334-30-5	D	5,000	31093
diesel fuel #2 composite	68334-30-5	D	50,000	31258
diesel fuel #2: 25% weathered	68334-30-5	D	5,000	31234
diesel fuel #2: 50% weathered	68334-30-5	D	5,000	31235
diesel fuel #2: 75% weathered	68334-30-5	D	5,000	31236
diesel fuel #2: unweathered	68334-30-5	D	5,000	31233
diesel/biodiesel 80:20	67784-80-9	D	5,000	31880
diethatyl ethyl	38727-55-8	Neat	1g	PS-1006
diethofencarb	87130-20-9	Neat	250mg	PS-2153
2-diethylamino-6-methyl pyrimidin-4-ol	—	Neat	100mg	MET-644A
2,6-diethylaniline	579-66-8	Neat	500mg	MET-357C
diethyl dithiobis (thionoformate)	502-55-6	Neat	1g	PS-66
diethyl ether (ethyl ether)	60-29-7	PTM	2,000	30286
diethyl phosphate	598-02-7	Neat	100mg	MET-90C
O,O-diethyl phosphoro-chloridothioate	2524-04-1	Neat	1g	PS-670
N,N-diethyl-*m*-toluamide	134-62-3	Neat	1g	PS-902
difenacoum	56073-07-5	Neat	100mg	PS-2143
difenoconazole	119446-68-3	Neat	250mg	PS-2159
difenzoquat-desmethyl	—	Neat	100mg	MET-404C
difenzoquat methylsulfate	43222-48-6	Neat	1g	PS-404
diflubenzuron	35367-38-5	Neat	1g	PS-1028
diflufenican	—	Neat	100mg	PS-2316
diflufenzopyr	109293-97-2	Neat	250mg	PS-2148
1,4-difluorobenzene	540-36-3	PTM	2,000	30032
2,3-dihydro-2,2-dimethyl benzofuran-3,7-diol	—	T	10ng/µL	MET-754D
2,3-dihydro-2,2-dimethyl-benzofuran-7-ol	1563-38-8	Neat	1g	MET-754B
3,5-diiodo-4-hydroxybenzonitrile	1689-83-4	Neat	250mg	PS-397
diisopropyl ether (DIPE)	108-20-3	PTM	2,000	30627
dikegulac acid	18467-77-1	Neat	250mg	PS-2190
dimehypo	52207-48-4	Neat	250mg	PS-2184
dimethachlon	24096-53-5	Neat	500mg	PS-2154
dimethenamid	87674-68-8	Neat	250mg	PS-2161
dimethenamid-P	163515-14-8	Neat	100mg	PS-2291
dimethipin	55290-64-7	Neat	1g	PS-2052
dimethoate	60-51-5	Neat	250mg	PS-659
dimethomorph	110488-70-5	Neat	500mg	PS-2138
1,2-dimethoxyethane	173201-80-4	DMSO	0.5mg/mL	36291
dimethylarsinic acid	75-60-5	Neat	500mg	PS-51
N,N-dimethylacetamide	127-19-5	DMSO	5.45mg/mL	36292
2,5-dimethylbenzaldehyde-2,4-DNPH	152477-96-8	ACN	100	33081
2,2-dimethyl-1,3-benzodioxole-4-ol	—	Neat	500mg	MET-739A
dimethyldichlorosilane (DMDCS) (20mL)	75-78-5	Neat	20mL	31840
N,N-dimethylformamide	68-12-2	DMSO	4.4mg/mL	36293
dimethyl-*p*-nitrophenylphosphate	950-35-6	Neat	100mg	PS-613
2,6-dimethylphenol	576-26-1	M	1,000	31410
1,1-dimethyl-3-phenylurea	101-42-8	Neat	1g	PS-61
O,O-dimethyl phosphoro chloridothioate	2524-03-0	Neat	1g	PS-91
dimethylphthalate	131-11-3	Neat	1g	PS-901
N,N-dimethylsuccinamic acid	2564-95-6	Neat	1g	PS-340
di-*n*-butylphthalate	84-74-2	Neat	1g	PS-900
diniconazole	83657-24-3	Neat	100mg	PS-2152
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
1,4-dinitrobenzene	100-25-4	ACN	2,000	33205
4,6-dinitro-2-*sec*-butyl-phenol ethanolamine salt	—	Neat	1g	PS-433
4,6-dinitro-*o*-cresol	534-52-1	Neat	1g	PS-57
2,4-dinitrophenol	51-28-5	M	1,000	31291
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	EA	2,000	33901
3,4-dinitrotoluene	610-39-9	M	1,000	31452
dinocap	39300-45-3	Neat	100mg	PS-27

Individual Compounds: Environmental, Petrochemical, Other

Compound Packaged 1mL/ampul*	CAS#	Solvent Code	µg/mL*	Individual cat.#
di-*n*-octyl phthalate	117-84-0	M	1,000	31426
dinoseb	88-85-7	M	1,000	32251
dinoseb	88-85-7	Neat	100mg	PS-56
dinoseb methyl ether	6099-79-2	M	1,000	32252
dinoseb methyl ether	6099-79-2	Neat	100mg	PS-1104
di-*n*-propyl isocin-chomeronate	136-45-8	Neat	1g	PS-906
diolein (1,3-di[*cis*-octadecenoyl] glycerol)	2465-32-9	pyridine	5,000	33022
dioxacarb	6988-21-2	Neat	250mg	PS-2022
1,4-dioxane	123-91-1	DMSO	1.9mg/mL	36294
1,4-dioxane	123-91-1	D	2,000	31853
1,4-dioxane	123-91-1	PTM	2,000	30287
1,4-dioxane-d8	17647-74-4	PTM	2,000	30614
dioxathion	78-34-2	Neat	100mg	PS-658
dioxydemeton-S-methyl	17040-19-6	Neat	100mg	PS-642
diphacinone	82-66-6	Neat	100mg	PS-288
diphenamid	957-51-7	Neat	1g	PS-350
diphenylacetonitrile	86-29-3	Neat	1g	PS-64
diphenylamine	122-39-4	Neat	1g	PS-427
1,2-diphenylhydrazine	122-66-7	M	1,000	31497
dipropetryn	4147-51-7	Neat	100mg	PS-411
diquat dibromide monohydrate	6385-62-2	Neat	1g	PS-365
disodium methyl arsenate	144-21-8	Neat	500mg	PS-281
disulfoton	298-04-4	Neat	1g	PS-652
disulfoton sulfone	2497-06-5	Neat	100mg	MET-652A
disulfoton sulfoxide	2497-07-6	Neat	100mg	MET-652B
ditalimfos	5131-24-8	Neat	100mg	PS-2127
ditalimfos (5mL)	5131-24-8	H	100	PS-1208
dithianon	3347-22-6	Neat	250mg	PS-2035
dithiopyr	97886-45-8	Neat	100mg	PS-2173
diuron	330-54-1	ACN	200	32450
diuron	330-54-1	Neat	500mg	PS-60
dodemorph	1593-77-7	Neat	100mg	PS-1086
dodine	2439-10-3	Neat	1g	PS-250
Dyfonate®	944-22-9	Neat	100mg	PS-664
Dylox®	52-68-6	Neat	1g	PS-608
ecgonine	5796-31-6	PTM	1,000	34017
ecgonine methyl ester	38969-40-3	PTM	1,000	34018
EDDP perchlorate	66729-78-0	M	1,000	34069
edifenphos	17109-49-8	Neat	500mg	PS-2066
EGDN	628-96-6	M	1,000	31601
EGT	2514-53-6	Neat	1g	PS-328
endosulfan	115-29-7	Neat	500mg	PS-81
endosulfan I	959-98-8	M	1,000	32221
endosulfan II	33213-65-9	M	1,000	32222
endosulfan alcohol	2157-19-9	Neat	50mg	MET-81A
endosulfan ether	3369-52-6	Neat	50mg	MET-81B
endosulfan alpha isomer	959-98-8	Neat	100mg	PS-81-1
endosulfan beta isomer	33213-65-9	Neat	100mg	PS-81-2
endosulfan lactone	3868-61-9	Neat	50mg	MET-81C
endosulfan sulfate	1031-07-8	M	1,000	32223
endosulfan sulfate	1031-07-8	Neat	50mg	PS-81-3
endothal	145-73-3	Neat	250mg	PS-345
endrin	72-20-8	M	1,000	32219
endrin	72-20-8	Neat	250mg	PS-77
endrin aldehyde	7421-93-4	M	1,000	32224
endrin aldehyde	7421-93-4	Neat	10mg	PS-77-1
endrin ketone	53494-70-5	M	1,000	32220
endrin ketone	53494-70-5	Neat	10mg	PS-77-2
EPN	2104-64-5	Neat	1g	PS-93
ethalfluralin	55283-68-6	Neat	1g	PS-408
ethametsulfuron-methyl	97780-06-8	Neat	100mg	PS-2183
ethanedial dioxime	557-30-2	Neat	1g	PS-412
ethanol	64-17-5	PTM	2,000	30288
ethanol	64-17-5	W	10,000	30466

Compound Packaged 1mL/ampul*	CAS#	Solvent Code	µg/mL*	Individual cat.#
ethidimuron	30043-49-3	Neat	100mg	PS-2061
ethiofencarb	29973-13-5	Neat	100mg	PS-2058
ethion	563-12-2	Neat	1g	PS-92
ethofumesate	26225-79-6	Neat	1g	PS-1045
2-ethoxyethanol	110-80-5	DMSO	0.8mg/mL	36295
ethoxyquin	91-53-2	Neat	250mg	PS-432
ethoxysulfuron	126801-58-9	Neat	100mg	PS-2303
ethyl-3-amino-2,5-dichlorobenzoate	—	Neat	1g	PS-326
ethylbenzene	100-41-4	DMSO	1.84mg/mL	36296
ethylbenzene	100-41-4	PTM	2,000	30290
ethylbenzene-d5	20302-26-5	PTM	2,000	30028
ethylbenzene-d10	25837-05-2	PTM	2,000	30029
ethyl-*tert*-butyl ether (ETBE)	637-92-3	PTM	2,000	30628
N-ethylcyclohexylamine	5459-93-8	Neat	1g	MET-502A
S-ethyl dipropylthiocarbamate	759-94-4	Neat	500mg	PS-54
ethylenediamine	107-15-3	M	540	35222
ethylene glycol	3775-85-7	DMSO	3.1mg/mL	36297
ethylene oxide	75-21-8	DMSO	500	36005
2-ethyl-1,3-hexanediol	94-96-2	Neat	1g	PS-102
2-ethylhexyl-2,4-dichlorophenoxy acetate	1928-43-4	Neat	1g	PS-319-1
ethylmercurichlorendiimide	2597-93-5	Neat	1g	PS-13
ethyl methacrylate	97-63-2	PTM	2,000	30289
2-[(2-ethyl-6-methyl-phenyl) amino]-1-propanol	—	Neat	50mg	MET-403A
ethyl-1-naphthalene acetate	2122-70-5	Neat	1g	PS-335
famphur	52-85-7	Neat	1g	PS-671
famphur-O-analog	—	Neat	50mg	MET-671A
fenac	85-34-7	Neat	1g	PS-308
fenamiphos sulfone	—	Neat	100mg	MET-612B
fenamiphos sulfoxide	—	Neat	50mg	MET-612A
fenarimol	60168-88-9	Neat	100mg	PS-1073
fenbuconazole	114369-43-6	Neat	100mg	PS-2072
fenbutatin-oxide	13356-08-6	Neat	1g	PS-1060
fenchlorphos	299-84-3	Neat	100mg	PS-657
fenchlorphos-oxon	—	Neat	100mg	MET-657A
fenfluramine	16105-77-4	PTM	1,000	34023
fenhexamid	126833-17-8	Neat	250mg	PS-2202
fenitrothion	122-14-5	Neat	500mg	PS-678
fenitrothion-O-analog (5mL)	2255-17-6	H	100	MET-678A
fenoxaprop ethyl	66441-23-4	Neat	100mg	PS-1088
fenoxaprop-P-ethyl	71283-80-2	Neat	100mg	PS-2223
fenoxycarb	79127-80-3	Neat	100mg	PS-2174
fenpropathrin	64257-84-7	Neat	250mg	PS-2002
fenpropimorph (5mL)	67564-91-4	T	100	PS-1214
fenpyroximate	134098-61-6	Neat	100mg	PS-2216
fensulfothion	115-90-2	Neat	100mg	PS-667
fentanyl	437-38-7	M	1,000	34082
nor-fentanyl oxalate	1609-66-1	M	1,000	34083
fenthion	55-38-9	Neat	500mg	PS-655
fenthion-O-analog (5mL)	6552-12-1	I	100	MET-655C
fenthion-sulfone	3761-42-0	Neat	100mg	MET-655A
fenthion sulfoxide	3761-41-9	Neat	100mg	MET-655D
fenthion sulfoxide (5mL)	3761-41-9	D	100	MET-655B
fentin hydroxide	76-87-9	Neat	500mg	PS-1031
fenuron TCA	4482-55-7	Neat	1g	PS-364
ferbam	14484-64-1	Neat	1g	PS-20
fipronil	120068-37-3	Neat	100mg	PS-2136
flamprop isopropyl	52756-22-6	Neat	100mg	PS-2037
flamprop-methyl	52756-25-9	Neat	100mg	PS-2038
flocoumafen	90035-08-8	Neat	10mg	PS-2149
fluazifop (5mL)	69335-91-7	ACN	100	PS-1205
fluazifop-butyl	69806-50-4	Neat	250mg	PS-2240
fluazifop-*p*-butyl	79241-46-6	Neat	100mg	PS-1097

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

Solvent code:

A=acetone
ACN=acetonitrile
C=carbon disulfide
Cy=cyclohexane
D=methylene chloride
DMSO=dimethyl sulfoxide
EA=ethyl acetate
H=hexane
I=isooctane
Ip=isopropanol
M=methanol
MTBE=methyl *tert*-butyl ether
PTM=purge & trap grade methanol
T=toluene
TO=transformer oil
W=water (DI)

Cat.#s starting with PS- & MET- are ChemService pesticides that are subject to size and price changes without notification. They are not available in Europe.

Compound Packaged 1mL/ampul*	CAS#	Solvent Code	µg/mL*	Individual cat.#
fluchloralin	33245-39-5	Neat	50mg	PS-1012
flucythrinate	70124-77-5	Neat	30mg	PS-1072
fludioxonil	131341-86-1	Neat	100mg	PS-2172
flufenacet	142459-58-3	Neat	250mg	PS-2205
flufenoxuron	101463-69-8	Neat	250mg	PS-2213
flumetralin	62924-70-3	Neat	250mg	PS-2168
flumetralin (5mL)	62924-70-3	A	100	PS-1211
flumetsulam	98967-40-9	Neat	500mg	PS-2111
flumiclorac-pentyl	87546-18-7	Neat	500mg	PS-2119
flunitrazepam	1622-62-4	PTM	1,000	34049
fluometuron	2164-17-2	Neat	1g	PS-369
fluoranthene	206-44-0	M	1,000	31277
fluorene	86-73-7	M	1,000	31278
2-fluoroacetamide	640-19-7	Neat	1g	PS-2029
fluorobenzene	462-06-6	PTM	2,000	30030
2-fluorobiphenyl	321-60-8	D	2,000	31091
2-fluorobiphenyl	321-60-8	D	10,000	31096
fluorodifen	15457-05-3	Neat	1g	PS-431
1-fluoronaphthalene	321-38-0	D	2,000	31092
2-fluorophenol	367-12-4	D	2,000	31047
flurazepam	1172-18-5	PTM	1,000	34050
fluroxypyr-meptyl	81406-37-3	Neat	100mg	PS-2191
flurprimidol	56425-91-3	Neat	100mg	PS-2131
flusilazole	85509-19-9	Neat	100mg	PS-2041
flutolanil	66332-96-5	Neat	1g	PS-2057
flutriafol	76674-21-0	Neat	100mg	PS-2177
Folicur®	107534-96-3	Neat	100mg	PS-1091
folpet	133-07-3	Neat	250mg	PS-26
fomesafen	72178-02-0	Neat	500mg	PS-2102
forchlorfenuron	68157-60-8	Neat	100mg	PS-2150
formaldehyde (in water)	50-00-0	Neat	1g	PS-2031
formaldehyde-DNPH	1081-15-8	ACN	500	31837
formaldehyde-2,4-DNPH	1081-15-8	ACN	100	33082
formaldehyde oxazoladine	—	T	2,000	33004
formamide	75-12-7	DMSO	1.1mg/mL	36298
formetanate hydrochloride	23422-53-9	Neat	1g	PS-400
formothion	2540-82-1	Neat	100mg	PS-2036
fosamine ammonium	25954-13-6	Neat	1g	PS-414
fosetyl-aluminum	39148-24-8	Neat	100mg	PS-2026
fuberidazole	3878-19-1	Neat	100mg	PS-2059
fuel oil # 4	N/A	D	5,000	31216
fuel oil # 4	N/A	D	50,000	31244
fuel oil # 5	N/A	D	5,000	31217
fuel oil # 5	N/A	D	50,000	31246
fuel oil # 6 (5mL)	N/A	D	50,000	31249
fuel oil # 6	N/A	D	5,000	31218
fuel oil # 6	N/A	D	50,000	31248
2-furanacrylic acid	539-47-9	Neat	1g	PS-341
gibberellic acid	77-06-5	Neat	100mg	PS-49
glufosinate-ammonium	77182-82-2	Neat	250mg	PS-2124
DL-glutethimide	18389-24-7	PTM	1,000	34058
glycerin	56-81-5	pyridine	500	33020
glycolaldehyde-2,4-DNPH	—	ACN	100	33091
glyodin	556-22-9	Neat	1g	PS-261
glyphosate	1071-83-6	Neat	1g	PS-1051
glyphosate (5mL)	1071-83-6	W	1,000	32427
glyphosate	1071-83-6	W	1,000	32426
glyphosate-isopropylammonium	38641-94-0	Neat	250mg	PS-2185
glyphosine	2439-99-8	Neat	1g	PS-2164
Guthion®	86-50-0	Neat	1g	PS-666
Guthion® ethyl	2642-71-9	Neat	100mg	PS-673
halofenozide	112226-61-6	Neat	500mg	PS-2146
halosulfuron-methyl	100784-20-1	Neat	100mg	PS-2108
1,6-HDIP	72375-27-0	DMSO	1,000	33002
heptachlor	76-44-8	M	1,000	32228
heptachlor	76-44-8	Neat	100mg	PS-78
heptachlor epoxide (isomer B)	1024-57-3	M	1,000	32230
heptachlor epoxide (isomer B)	1024-57-3	Neat	50mg	PS-700
trans-heptachlor epoxide	28044-83-9	Neat	50mg	PS-700-1

Compound Packaged 1mL/ampul*	CAS#	Solvent Code	µg/mL*	Individual cat.#
2,2',3,4,4',5,5'-heptachlorobiphenyl (BZ #180)	35065-29-3	I	10	32288
heptenophos	23560-59-0	Neat	250mg	PS-2225
hexachloroacetone	116-16-5	Neat	1g	PS-272
hexachlorobenzene	118-74-1	A	1,000	32231
hexachlorobenzene	118-74-1	Neat	1g	PS-690
2,2',3,4,4',5'-hexachlorobiphenyl (BZ #138)	35065-28-2	I	10	32286
2,2',4,4',5,5'-hexachlorobiphenyl (BZ #153)	35065-27-1	I	10	32287
hexachloro-1,3-butadiene	87-68-3	M	1,000	31435
hexachlorocyclopentadiene	77-47-4	M	1,000	32232
hexachlorodimethyl sulfone	—	Neat	1g	PS-171
hexachloroethane	67-72-1	M	1,000	31436
hexachlorophene	70-30-4	D	2,000	31811
hexachlorophene	70-30-4	Neat	1g	PS-1035
hexaconazole	79983-71-4	Neat	500mg	PS-2157
hexaflumuron	86479-06-3	Neat	250mg	PS-2074
hexaldehyde-2,4-DNPH	1527-97-5	ACN	100	33083
hexane	8031-34-3	DMSO	1.45mg/mL	36299
hexobarbital	56-29-1	PTM	1,000	34033
hexythiazox	78587-05-0	Neat	100mg	PS-1079
HMX	2691-41-0	ACN	1,000	31665
hydraulic oil	—	D	50,000	31839
hydrocodone	34195-34-1	PTM	1,000	34002
hydromorphone	71-68-1	PTM	1,000	34063
hydroprene	41096-46-2	Neat	50mg	PS-2134
γ-hydroxybutyrate (GHB)	502-85-2	M	1,000	34076
4-hydroxycoumarin	1076-38-6	Neat	1g	MET-104B
7-hydroxycoumarin	93-35-6	Neat	1g	MET-104A
5-hydroxy-diclofop methyl (5mL)	—	Cy	10ng/µL	MET-1036A
p-hydroxy-N,N-dimethyl-benzene sulfonamide	—	Neat	10mg	MET-671B
2-hydroxyethyl-*n*-octyl sulphide	3547-33-9	Neat	1g	PS-952
2-hydroxypyrazine	—	M	100	MET-668B
8-hydroxyquinoline	148-24-3	Neat	1g	PS-18
hymexazole	10004-44-1	Neat	25mg	PS-2186
imazalil	35554-44-0	Neat	100mg	PS-2043
imazalil sulfate	60534-80-7	Neat	100mg	PS-2043-1
imazamethabenz-methyl	81405-85-8	Neat	100mg	PS-2195
imazamox	114311-32-9	Neat	500mg	PS-2162
imazapic	104098-48-8	Neat	250mg	PS-2197
imazapyr	81334-34-1	Neat	100mg	PS-2016
imazaquin	81335-37-7	Neat	100mg	PS-2053
imazethapyr	81335-77-5	Neat	100mg	PS-2039
imidacloprid	138261-41-3	Neat	500mg	PS-2086
Imidan	732-11-6	Neat	1g	PS-653
2-imidazolidinethione	96-45-7	Neat	1g	PS-2180
iminobis (methyl-phosphonic acid)	6711-48-4	Neat	500mg	MET-2164A
indeno(1,2,3-cd)pyrene	193-39-5	D	1,000	31279
3-indoleacetic acid	87-51-4	Neat	1g	PS-320
3-indolebutyric acid	133-32-4	Neat	100mg	PS-48
3-indolepropionic acid	830-96-6	Neat	1g	PS-321
iodofenphos (5mL)	18181-70-9	A	100	PS-1206
iodomethane	74-88-4	PTM	2,000	30292
ioxynil-methyl	—	Neat	100mg	MET-397A
iprobenfos	26087-47-8	Neat	500mg	PS-2065
iprodione	36734-19-7	Neat	1g	PS-1052
isazophos	42509-80-8	Neat	1g	PS-681
isobenzan	297-78-9	Neat	10mg	PS-704
isobornyl thiocyanoacetate	115-31-1	Neat	1g	PS-731
isobutyraldehyde-2,4-DNPH	2057-82-1	ACN	100	33084
isobutyl alcohol	78-83-1	PTM	2,000	30293
isodrin	465-73-6	Neat	1g	PS-2103
isofenphos	25311-71-1	Neat	100mg	PS-1003
isofenphos-des-N-isopropyl	—	Neat	100mg	MET-1003C
isofenphos-des-N-isopropyl	—	H	100	MET-1003A
isofenphos-des-N-isopropyl-O-analogue (5mL)	—	Cy	10ng/µL	MET-1003B

free data

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

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

Individual Compounds: Environmental, Petrochemical, Other

Compound Packaged 1mL/ampul*	CAS#	Solvent Code	µg/mL*	Individual cat.#
isomalathion	3344-12-5	Neat	5ml	MET-86A
isoprocarb	2631-40-5	Neat	500mg	PS-2070
isopropalin	33820-53-0	Neat	1g	PS-406
isopropylbenzene	98-82-8	Neat	1g	PS-2179
isopropylbenzene	98-82-8	PTM	2,000	30294
isopropyl-4,4'-dichloro-benzilate	5836-10-2	Neat	1g	PS-857
2-isopropyl-6-methyl-4-pyrimidinol	2814-20-2	Neat	1g	MET-90B
isoprothiolane	50512-35-1	Neat	250mg	PS-2101
isoproturon	34123-59-6	Neat	1g	PS-2000
isovaleraldehyde-2,4-DNPH	2256-01-1	ACN	100	33085
2-isovaleryl-1,3-indanedione	83-28-3	Neat	250mg	PS-911
isoxaben	82558-50-7	Neat	1g	PS-2129
isoxaflutole	141112-29-0	Neat	500mg	PS-2166
ivermectin	70288-86-7	Neat	100mg	PS-2220
jet fuel A (5mL)	64742-47-8	D	50,000	31243
jet fuel A	64742-47-8	D	5,000	31215
jet fuel A	64742-47-8	D	50,000	31242
JP-4 military fuel	8008-20-6	D	5,000	31219
JP-4 military fuel	8008-20-6	D	50,000	31250
JP-4 military fuel	8008-20-6	PTM	50,000	30472
JP-5 military fuel (5mL)	8008-20-6	D	50,000	31253
JP-5 military fuel	8008-20-6	D	5,000	31220
JP-5 military fuel	8008-20-6	D	50,000	31252
JP-8 military fuel	8008-20-6	D	5,000	31262
JP-8 military fuel	8008-20-6	D	50,000	31254
Kelthane	115-32-2	Neat	250mg	PS-82
Kepone	143-50-0	Neat	50mg	PS-701
kerosene composite (5mL)	84742-81-0	D	50,000	31257
kerosene composite	84742-81-0	D	5,000	31094
kerosene composite	84742-81-0	D	50,000	31256
kerosene: 25% weathered	84742-81-0	D	5,000	31230
kerosene: 50% weathered	84742-81-0	D	5,000	31231
kerosene: 75% weathered	84742-81-0	D	5,000	31232
kerosene: unweathered	84742-81-0	D	5,000	31229
kinoprene	42588-37-4	Neat	100mg	PS-2051
kresoxim-methyl	143390-89-0	Neat	250mg	PS-2182
lactofen	77501-63-4	Neat	100mg	PS-2077
LAMPA	40158-98-3	ACN	1,000	34075
lead arsenate	7784-40-9	Neat	1g	PS-290
lenacil	2164-08-1	Neat	1g	PS-415
leptophos	21609-90-5	Neat	1g	PS-677
leptophos oxon	—	Neat	50mg	MET-677A
levorphanol	5985-38-6	PTM	1,000	34003
lindane	58-89-9	Neat	1g	PS-71
linuron	330-55-2	Neat	250mg	PS-372
Lontrel®	1702-17-6	Neat	250mg	PS-1069
lorazepam	846-49-1	PTM	1,000	34051
LSD	50-37-3	ACN	25	34089
LSD	50-37-3	ACN	100	34088
malathion	121-75-5	Neat	500mg	PS-86
malathion monocarboxylic acid	35884-76-5	Neat	100mg	MET-86D
malathion monocarboxylic acid	35884-76-5	MTBE	100	MET-86B
malathion-O-analog	1634-78-2	Neat	100mg	MET-86C
maleic hydrazide	123-33-1	Neat	1g	PS-65
mancozeb	8018-01-7	Neat	500mg	PS-2095
maneb	12427-38-2	Neat	1g	PS-22
MCPA	97-74-6	M	1,000	32269
MCPB	94-81-5	Neat	100mg	PS-307
MCPB methyl ester	57153-18-1	Neat	500mg	PS-1084
MCPP	93-65-2	M	1,000	32271
3,4-MDA HCl	4764-17-4	M	1,000	34070
3,4-MDEA HCl	82801-81-8	M	1,000	34072
3,4-MDMA HCl	42542-10-9	M	1,000	34071
4,4'-MDIP	72375-24-7	DMSO	1,000	33003
mecoprop	7085-19-0	Neat	250mg	PS-324
mecoprop methyl ester	23844-56-6	Neat	100mg	PS-1106
mecoprop-P	16484-77-8	Neat	500mg	PS-2116
mecoprop-2,4,4-trimethyl-pentyl ester (5mL)	—	A	100	PS-1212
mefenacet	73250-68-7	Neat	500mg	PS-2140
mefenoxam	70630-17-0	Neat	100mg	PS-2160
mefluidide	53780-34-0	Neat	100mg	PS-2050
meperidine	50-13-5	PTM	1,000	34004
mephobarbital	115-38-8	PTM	1,000	34034
mephosfolan	950-10-7	Neat	100mg	PS-1026
mepiquat chloride	24307-26-4	Neat	10mg	PS-1047
meprobamate	57-53-4	PTM	1,000	34059
mepronil	55814-41-0	Neat	100mg	PS-2227
metalaxyl	57837-19-1	Neat	100mg	PS-1099
metaldehyde	9002-91-9	Neat	1g	PS-2030
metamitron	41394-05-2	Neat	500mg	PS-2117
Metasystox I®	919-86-8	Neat	50mg	PS-1096
metazachlor	—	Neat	100mg	PS-2312
methabenzthiazuron	18691-97-9	Neat	100mg	PS-2048
methacrifos	62610-77-9	Neat	100mg	PS-2218
methacrolein-2,4-DNPH	5077-73-6	ACN	100	33095
methacrylonitrile	126-98-7	PTM	2,000	30297
methadone	1095-90-5	PTM	1,000	34005
metham sodium	137-42-8	Neat	500mg	PS-221
methamidophos	10265-92-6	Neat	100mg	PS-676
(+)methamphetamine	51-57-0	PTM	1,000	34021
methanol	67-56-1	DMSO	15mg/mL	36401
methanol	67-56-1	W	10,000	30467
methaqualone	340-56-7	PTM	1,000	34064
methidathion	950-37-8	Neat	1g	PS-679
methiocarb	2032-65-7	Neat	1g	PS-543
methiocarb sulfone	—	Neat	50mg	MET-543A
methiocarb sulfoxide (5mL)	—	T	100	MET-543B
methohexital	151-83-7	PTM	1,000	34035
methomyl	16752-77-5	Neat	1g	PS-775
Methoprene	40596-69-8	Neat	250mg	PS-1040
methoprotryne	841-06-5	Neat	100mg	PS-2122
methoxychlor	72-43-5	M	1,000	32233
methoxychlor	72-43-5	Neat	1g	PS-83
o,p'-methoxychlor	—	Neat	100mg	MET-83A
p,p-methoxychlor-olefin	—	Neat	50mg	MET-83B
2-methoxyethanol	109-86-4	DMSO	0.25mg/mL	36402
1-(methylamino)anthraquinone	82-38-3	D	100	31823
methyl anthranilate	134-20-3	Neat	100mg	PS-2055
methyl arachidate	1120-28-1	Neat		35056
methyl arachidonate	2566-89-4	Neat		35060
methyl behenate	929-77-1	Neat		35062
methyl 2-bromopropionate	5445-17-0	MTBE	1,000	31654
methyl *tert*-butyl ether (MTBE)	1634-04-4	PTM	2,000	30402
methylbutylketone	591-78-6	DMSO	0.25mg/mL	36400
methyl caprate	110-42-9	Neat		35041
methyl caproate	106-70-7	Neat		35037
methyl caprylate	111-11-5	Neat		35039
methylcyclohexane	108-87-2	DMSO	5.9mg/mL	36403
methyl-2,3-dibromopropionate	1729-67-5	MTBE	1,000	31656
2-methyl-4,6-dinitrophenol	534-52-1	M	1,000	31292
methyl eicosadienoate	2463-02-7	Neat		35058
methyl eicosatrienoate	55682-88-7	Neat		35059
methyl eicosenoate	2390-09-2	Neat		35057
α-methylene-γ-butyrolactone (AMGBL)	547-65-9	ACN	1,000	34079
methylene chloride (dichloromethane)	75-09-2	DMSO	3mg/mL	36404
methylene chloride (dichloromethane)	75-09-2	PTM	2,000	30401
methyl erucate	1120-34-9	Neat		35063
methyl heneicosanoate	6064-90-0	Neat		35061
methyl heptadecanoate	1731-92-6	Neat		35050
methyl heptanoate	106-73-0	Neat		35038
methyl isothiocyanate	556-61-6	Neat	1g	MET-221A

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

Solvent code:

A=acetone
ACN=acetonitrile
C=carbon disulfide
Cy=cyclohexane
D=methylene chloride
DMSO=dimethyl sulfoxide
EA=ethyl acetate
H=hexane
I=isooctane
Ip=isopropanol
M=methanol
MTBE=methyl *tert*-butyl ether
PTM=purge & trap grade methanol
T=toluene
TO=transformer oil
W=water (DI)

Cat.#s starting with PS- & MET- are ChemService pesticides that are subject to size and price changes without notification. They are not available in Europe.

Compound Packaged 1mL/ampul*	CAS#	Solvent Code	µg/mL*	Individual cat.#
methyl laurate	111-82-0	Neat		35043
methyl lignocerate	2442-49-1	Neat		35064
methyl linoleate	112-63-0	Neat		35053
methyl linolenate	301-00-8	Neat		35054
methyl methacrylate	80-62-6	PTM	2,000	30299
N-methyl-methamidophos	28167-49-9	Neat	100mg	PS-676-1
methyl myristate	124-10-7	Neat		35045
methyl myristoleate	56219-06-8	Neat		35046
1-methylnaphthalene	90-12-0	M	1,000	31283
2-methylnaphthalene	91-57-6	D	1,000	31285
methyl-1-naphthalene acetate	2876-78-0	Neat	1g	PS-30
N-methyl-N-1-naphthyl acetamide	—	Neat	1g	PS-352
methyl nervonate	2733-88-2	Neat		35065
2-methyl-4-nitroaniline	99-55-8	M	1,000	31612
3-methyl-4-nitrophenol	2581-34-2	Neat	1g	MET-678B
methyl nonadecanoate	1731-94-8	Neat		35055
methyl nonanoate	1731-84-6	Neat		35040
methyl oleate	112-62-9	Neat		35052
methyl palmitate	112-39-0	Neat		35048
methyl palmitoleate	1120-25-8	Neat		35049
methyl parathion	298-00-0	Neat	250mg	PS-94
methyl pentadecanoate	7162-64-1	Neat		35047
4-methyl-2-pentanone (MIBK)	108-10-1	PTM	5,000	30400
3-methylphenol	108-39-4	M	1,000	31403
N-methylpiperidine	626-67-5	Neat	1g	MET-1047A
N-methylpyrrolidone	872-50-4	DMSO	2.65mg/mL	36405
methyl stearate	112-61-8	Neat		35051
2-methylsulfonyl-4-tri-fluoromethyl benzoic acid	—	Neat	100mg	MET-2166B
methyl tridecanoate	1731-88-0	Neat		35044
methyl *o*-trifluoromethyl-benzoate	344-96-7	Neat	100mg	MET-2057A
methyl undecanoate	1731-86-8	Neat		35042
methyprylon	125-64-4	PTM	1,000	34060
metobromuron	3060-89-7	Neat	1g	PS-374
metolachlor	51218-45-2	Neat	500mg	PS-403
S-metolachlor	87392-12-9	Neat	250mg	PS-403-1
metolcarb	1129-41-5	Neat	500mg	PS-2096
metoxuron	19937-59-8	Neat	250mg	PS-2178
metribuzin	21087-64-9	A	1,000	32436
metribuzin	21087-64-9	Neat	1g	PS-398
metsulfuron methyl	74223-64-6	Neat	100mg	PS-1078
cis-mevinphos	26718-65-0	Neat	100mg	PS-87-1
MGK® 264	113-48-4	Neat	250mg	PS-962
MGK® R-11	126-15-8	Neat	1g	PS-910
mineral spirits: 25% weathered	8030-30-6	D	5,000	31226
mineral spirits: 50% weathered	8030-30-6	D	5,000	31227
mineral spirits: 75% weathered	8030-30-6	D	5,000	31228
mineral spirits: unweathered (5mL)	8030-30-6	D	50,000	31261
mineral spirits: unweathered	8030-30-6	D	5,000	31225
mineral spirits: unweathered	8030-30-6	D	50,000	31260
Mirex	2385-85-5	Neat	100mg	PS-702
molinate	2212-67-1	Neat	250mg	PS-501
Monceren®	66063-05-6	Neat	100mg	PS-1095
monocrotophos	6923-22-4	Neat	1g	PS-609
monolein (1-mono[*cis*-9-octadecenoyl]-rac-glycerol)	111-03-5	pyridine	5,000	33021
monolinuron	1746-81-2	Neat	250mg	PS-2210
monomethyl tetrachloro-terephthalate	—	Neat	100mg	MET-33A
monopalmitin	524-44-9	pyridine	5,000	33026
monosodium acid methane arsonate sesquihydrate	2163-80-6	Neat	1g	PS-429
monothiono TEPP	645-78-3	Neat	50mg	PS-2181
monuron	150-68-5	Neat	1g	PS-59
monuron TCA	140-41-0	Neat	1g	PS-371

Compound Packaged 1mL/ampul*	CAS#	Solvent Code	µg/mL*	Individual cat.#
morphine	6211-15-0	PTM	1,000	34006
motor oil composite	64742-47-8	D	50,000	31464
nabam	142-59-6	Neat	1g	PS-220
naled	300-76-5	Neat	250mg	PS-605
naphthalene	91-20-3	M	1,000	31280
naphthalene-d8	1146-65-2	D	2,000	31043
1-naphthalene acetamide	86-86-2	Neat	1g	PS-28
1-naphthaleneacetic acid	86-87-3	Neat	1g	PS-29
1,8-naphthalic anhydride	81-84-5	Neat	1g	PS-1048
2-naphthoxyacetic acid	120-23-0	Neat	1g	PS-35
N-1-naphthylacetamide	—	Neat	500mg	PS-354
N-1-naphthylphthalamic acid	132-66-1	Neat	250mg	PS-343
N-(1-naphthyl)phthalimide	—	Neat	1g	MET-343A
α-naphthylthiourea	86-88-4	Neat	1g	PS-106
neburon	555-37-3	Neat	1g	PS-377
Niclofen	1836-75-5	Neat	100mg	PS-394
niclosamide	50-65-7	Neat	250mg	PS-1207
nicotine	54-11-5	M	1,000	34085
nicotine	54-11-5	Neat	1g	PS-85
nitralin	4726-14-1	Neat	1g	PS-358
nitrapyrin	1929-82-4	Neat	100mg	PS-419
nitrazepam	146-22-5	PTM	1,000	34053
nitrobenzene	99-95-3	ACN	1,000	31657
nitrobenzene-d5	4165-60-0	D	2,000	31044
nitrobenzene-d5	4165-60-0	D	2,000	33904
nitroglycerin	55-63-0	M	1,000	31498
nitroguanidine	556-88-7	M	1,000	31602
2-nitromesitylene	603-71-4	M	2,000	33902
nitromethane	75-52-5	DMSO	0.25mg/mL	36406
4-nitrophenol	100-02-7	M	1,000	31296
1-nitropropane	108-03-2	D	250	35263
2-nitropropane	79-46-9	PTM	2,000	30403
N-nitrosodimethylamine	62-75-9	M	1,000	31427
N-nitrosodimethylamine-d6	17829-05-9	D	1,000	33910
N-nitrosodiphenylamine	86-30-6	M	1,000	31429
N-nitroso-di-*n*-propylamine	621-64-7	M	1,000	31428
N-nitrosodi-*n*-propylamine-d14	93951-96-3	D	1,000	33911
N-nitrosopendimethalin	—	Neat	100mg	MET-401A
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
cis-nonachlor	5103-73-1	Neat	25mg	MET-75B
trans-nonachlor	39765-80-5	Neat	25mg	MET-75C
nonatriacontane (C39) (10mL)	7194-86-7	C	3,000	31877
n-nonatriacontane (C39)	7194-86-7	C	3,000	31456
Norflurazon	27314-13-2	Neat	100mg	PS-1044
n-octacosane (C28)	630-02-4	D	1,000	31672
octamethylpyrophosphoramide	—	Neat	50mg	PS-2338
omethoate	1113-02-6	Neat	100mg	PS-2017
Omite®	2312-35-8	Neat	1g	PS-858
ormetoprin	6981-18-6	Neat	250mg	PS-2277
oryzalin	19044-88-3	Neat	1g	PS-410
ovex	80-33-1	Neat	1g	PS-855
oxadiazon	19666-30-9	Neat	1g	PS-1050
oxadiazon-hydroxy (5mL)	—	T	10ng/µL	MET-1050A
oxadixyl	77732-09-3	Neat	100mg	PS-2137
oxamyl	23135-22-0	Neat	250mg	PS-737
oxazepam	604-75-1	PTM	1,000	34054
oxycarboxin	5259-88-1	Neat	1g	PS-295
oxychlordane (5mL)	27304-13-8	M	100	MET-75A
oxycodone	124-90-3	PTM	1,000	34007
oxydemeton-methyl	301-12-2	Neat	50mg	PS-641
oxyfluorfen	42874-03-3	Neat	1g	PS-1033
oxymorphone	76-41-5	PTM	1,000	34065
oxytetracycline hydrochloride	2058-46-0	Neat	250mg	PS-2200
paclobutrazol	76738-62-0	Neat	500mg	PS-2097
paraoxon	311-45-5	Neat	100mg	PS-610
paraquat Cl tetrahydrate	1910-42-5	Neat	1g	PS-366
Parathion	56-38-2	Neat	500mg	PS-95
penconazole	66246-88-6	Neat	100mg	PS-2207
Pentac®	2227-17-0	Neat	1g	PS-862

free data

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

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Individual Compounds: Environmental, Petrochemical, Other

Compound Packaged 1mL/ampul*	CAS#	Solvent Code	µg/mL*	Individual cat.#
pentachloroaniline	527-20-8	Neat	100mg	MET-150A
pentachloroanisole	1825-21-4	M	1,000	32268
pentachloroanisole	1825-21-4	Neat	1g	PS-1109
2,2',4,5,5'-pentachlorobiphenyl (BZ #101)	37680-73-2	I	10	32285
2,3',4,4',5-pentachlorobiphenyl (BZ #118)	31508-00-6	I	10	32293
pentachloroethane	76-01-7	PTM	2,000	30404
pentachloronitrobenzene	82-68-8	EA	100	32091
pentachloronitrobenzene	82-68-8	Neat	1g	PS-150
pentachlorophenol	87-86-5	M	1,000	31297
pentachlorophenol	87-86-5	Neat	1g	PS-7
pentachlorothiophenol	133-49-3	Neat	100mg	MET-690B
n-pentacontane (C50)	6596-40-3	T	10	31685
pentacosane (C25)	629-99-2	D	10,000	31487
pentafluorobenzene	363-72-4	PTM	2,000	30031
pentafluorophenol	771-61-9	D	2,000	31048
2-pentanone	107-87-9	D	250	35261
pentazocine	64024-15-3	PTM	1,000	34062
pentobarbital	76-74-4	PTM	1,000	34036
perchloromethyl mercaptan	594-42-3	Neat	1g	PS-224
perfluorotributylamine (PFTBA)	311-89-7	Neat	1mL	30482
perfluorotributylamine (PFTBA)	311-89-7	Neat	1g	33027
permethrin	52645-53-1	Neat	250mg	PS-758
cis-permethrin	—	Neat	50mg	PS-758-1
trans-permethrin (isomeric mix)	61949-77-7	Neat	50mg	PS-758-2
Perthane	72-56-0	Neat	1g	PS-73
PETN (pentaerythritol tetranitrate)	78-11-5	M	1,000	31600
phenamiphos	22224-92-6	Neat	1g	PS-612
phenanthrene	85-01-8	M	1,000	31281
phenanthrene-d10	1517-22-2	D	2,000	31045
phencyclidine	956-90-1	PTM	1,000	34027
phendimetrazine	50-58-8	PTM	1,000	34025
phenmedipham	13684-63-4	Neat	250mg	PS-1014
Phenmerzyl nitrate	55-68-5	Neat	100mg	PS-202
phenmetrazine	1707-14-8	PTM	1,000	34026
phenobarbital	50-06-6	PTM	1,000	34037
phenol	108-95-2	M	1,000	31298
phenol-d6	13127-88-3	D	2,000	31049
phenothiazine	92-84-2	Neat	1g	PS-733
d-(*cis-trans*)-phenothrin	26002-80-2	Neat	50mg	PS-1030
phenoxyacetic acid	122-59-8	Neat	1g	PS-36
3-phenoxybenzoic acid	3739-38-6	Neat	1g	MET-758C
m-phenoxybenzyl alcohol	13826-35-2	Neat	1g	MET-758B
2-phenoxypropionic acid	940-31-8	Neat	1g	PS-37
phentermine	1197-21-3	PTM	1,000	34024
phenthoate	2597-03-7	Neat	100mg	PS-2025
phentinoacetate	900-95-8	Neat	1g	PS-1021
phenyl mercuric acetate	62-38-4	Neat	1g	PS-14
phenyl mercuric benzoate	—	Neat	1g	PS-15
phenyl mercuric chloride	100-56-1	Neat	1g	PS-214
phenyl mercuric hydroxide	100-57-2	Neat	1g	PS-215
phenyl mercuric lactate	—	Neat	1g	PS-216
phenyl mercuric oleate	104-60-9	Neat	100mg	PS-199
phenyl mercuric phthalate	—	Neat	1g	PS-217
phenylmercury borate	102-98-7	Neat	100mg	PS-203
phenylmercury salicylate	28086-13-7	Neat	1g	PS-205
5-(phenylmethyl)-3-furanmethanol	—	Neat	100mg	MET-1000A
o-phenylphenol	90-43-7	Neat	1g	PS-420
phenylpropanolamine HCl	154-41-6	M	1,000	34073

Compound Packaged 1mL/ampul*	CAS#	Solvent Code	µg/mL*	Individual cat.#
phenyl-2-thiourea	103-85-5	Neat	1g	PS-801
phorate	298-02-2	Neat	100mg	PS-654
phorate-oxon (5mL)	—	T	100	MET-654A
phorate sulfone (5mL)	—	H	100	MET-654B
phorate sulfoxide	2588-03-6	Neat	100mg	MET-654C
phosalone	2310-17-0	Neat	1g	PS-682
Phosdrin	7786-34-7	Neat	250mg	PS-87
phosfolan	947-02-4	Neat	1g	PS-842
phosmet-oxon (5mL)	—	T	100	MET-653A
phosphamidon	13171-21-6	Neat	250mg	PS-606
phosphan	115-78-6	Neat	50mg	PS-67
phoxim	14816-18-3	Neat	1g	PS-2100
phthalamic acid	—	Neat	100mg	MET-26A
phthalanillic acid	4727-29-1	Neat	1g	PS-2114
picloram	1918-02-1	M	1,000	32265
picloram	1918-02-1	Neat	250mg	PS-274
picloram methyl ester	N/A	M	1,000	32266
picloram methyl ester	14143-55-6	Neat	100mg	PS-1108
picric acid	88-89-1	M	1,000	31499
Pinnacle	79277-27-3	Neat	100mg	PS-2011
pinoxaden	243973-20-8	Neat	100mg	PS-2319
piperalin	3478-94-2	Neat	1g	PS-409
piperonyl butoxide	51-03-6	Neat	100mg	PS-100
pirimicarb	23103-98-2	Neat	1g	PS-757
pirimiphos-ethyl	23505-41-1	Neat	250mg	PS-643
pirimiphos-methyl	29232-93-7	Neat	250mg	PS-644
2-pivaloyl-1,3-indandione	83-26-1	Neat	250mg	PS-905
Polyram®	9006-42-2	Neat	1g	PS-225
Polywax® 500	9002-88-4	Neat	1g	36224
Polywax® 655	9002-88-4	Neat	1g	36225
Polywax® 850	9002-88-4	Neat	1g	36226
Polywax® 1000	9002-88-4	Neat	1g	36227
potassium cyanate	590-28-3	Neat	1g	PS-289
prallethrin	23031-36-9	Neat	10mg	PS-2109
prazepam	2955-38-6	PTM	1,000	34055
primisulfuron-methyl	86209-51-0	Neat	500mg	PS-2169
probenazole	27605-76-1	Neat	500mg	PS-2082
prochloraz	67747-09-5	Neat	250mg	PS-2175
procyazine	32889-48-8	Neat	1g	PS-402
procymidone	32809-16-8	Neat	250mg	PS-2126
prodiamine	29091-21-2	Neat	500mg	PS-2133
profenofos	41198-08-7	Neat	250mg	PS-1024
Profluoralin	26399-36-0	Neat	1g	PS-399
prohexadione	88805-35-0	Neat	100mg	PS-2226-1
prohexadione-calcium	127277-53-6	Neat	100mg	PS-2226
promecarb	2631-37-0	Neat	100mg	PS-2027
prometon	1610-18-0	Neat	250mg	PS-386
prometryne	7287-19-6	A	1,000	32449
prometryne	7287-19-6	Neat	1g	PS-384
propachlor	1918-16-7	M	1,000	32235
propachlor	1918-16-7	Neat	500mg	PS-355
propamocarb HCl	25606-41-1	Neat	250mg	PS-2167
2-propanol	67-63-0	W	50,000	30473
propazine	139-40-2	A	1,000	32448
propazine	139-40-2	Neat	500mg	PS-385
propazine-2-hydroxy (5mL)	—	ACN:W (75:25)	100	MET-385A
propham	122-42-9	Neat	1g	PS-53
prophos	13194-48-4	Neat	1g	PS-672
propineb	9016-72-2	Neat	250mg	PS-2062
propionaldehyde-2,4-DNPH	725-00-8	ACN	100	33086
propionitrile	107-12-0	PTM	2,000	30407
n-propylbenzene	103-65-1	PTM	2,000	30408

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

Solvent code:

A=acetone
ACN=acetonitrile
C=carbon disulfide
Cy=cyclohexane
D=methylene chloride
DMSO=dimethyl sulfoxide
EA=ethyl acetate
H=hexane
I=isooctane
Ip=isopropanol
M=methanol
MTBE=methyl *tert*-butyl ether
PTM=purge & trap grade methanol
T=toluene
TO=transformer oil
W=water (DI)

free data

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

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

Compound Packaged 1mL/ampul*	CAS#	Solvent Code	µg/mL*	Individual cat.#
S-propyl butylethylthio-carbamate	1114-71-2	Neat	1g	PS-55
propylene glycol dinitrate (PGDN)	6423-43-4	M	1,000	31821
propyzamide	23950-58-5	Neat	1g	PS-349
prosulfuron	94125-34-5	Neat	500mg	PS-2123
Prowl	40487-42-1	Neat	1g	PS-401
pymetrozine	123312-89-0	Neat	250mg	PS-2189
pyraclofos	77458-01-6	Neat	500mg	PS-2046
pyraflufen-ethyl	129630-17-7	Neat	100mg	PS-2306
pyrazon	1698-60-8	Neat	1g	PS-430
pyrazophos	13457-18-6	Neat	100mg	PS-2049
pyrazosulfuron-ethyl	93697-74-6	Neat	100mg	PS-2105
pyrazoxyfen	71561-11-0	Neat	1g	PS-2064
pyrene	129-00-0	M	1,000	31282
pyrethrum	8003-34-7	Neat	100mg	PS-97
pyridaben	96489-71-3	Neat	1g	PS-2125
pyridaphenthion	119-12-0	Neat	250mg	PS-2155
pyridate	55512-33-9	Neat	500mg	PS-2081
pyridine	85404-20-2	DMSO	1mg/mL	36407
pyridine	110-86-1	PTM	2,000	30409
pyridine-d5	7291-22-7	D	2,000	31046
pyriproxyfen	95737-68-1	Neat	100mg	PS-2110
pyrithiobac-sodium	123343-16-8	Neat	500mg	PS-2145
quinalphos	13593-03-8	Neat	250mg	PS-2010
quinclorac	84087-01-4	Neat	500mg	PS-2098
quinomethionate	2439-01-2	Neat	250mg	PS-860
quinoxyfen	124495-18-7	Neat	100mg	PS-2284
quizalofop	76578-12-6	Neat	50mg	MET-1080A
quizalofop ethyl	76578-14-8	Neat	100mg	PS-1080
quizalofop-P-ethyl	100646-51-3	Neat	500mg	PS-2151
quizalofop methyl	—	Neat	50mg	MET-1080B
RDX	121-82-4	ACN	1,000	31666
resmethrin	10453-86-8	Neat	250mg	PS-1000
rimsulfuron	122931-48-0	Neat	100mg	PS-2118
rotenone	83-79-4	Neat	250mg	PS-99
Ruelene	299-86-5	Neat	50mg	PS-607
Safrotin®	31218-83-4	Neat	100mg	PS-1076
secobarbital	29071-21-4	PTM	1,000	34038
Sesone	149-26-8	Neat	1g	PS-313
sethoxydim	74051-80-2	Neat	100mg	PS-2013
siduron	1982-49-6	Neat	1g	PS-373
Silvex	93-72-1	Neat	250mg	PS-47
Silvex isooctyl ester	—	Neat	1g	PS-329
Silvex methyl ester	—	Neat	250mg	PS-342
simazine	122-34-9	A	1,000	32236
simazine	122-34-9	Neat	100mg	PS-58
simazine hydroxy	—	Neat	25mg	MET-58B
simetryn	1014-70-6	Neat	50mg	PS-381
sodium arsenate	7778-43-0	Neat	1g	PS-428
sodium fluoroacetate	62-74-8	Neat	1g	PS-105
Sonar®	59756-60-4	Neat	100mg	PS-1070
spinosad	—	Neat	100mg	PS-2211
spiromesifen	283594-90-1	Neat	100mg	PS-2322
STB	132827-25-9	Neat	500mg	MET-222B
stearyl stearate (10mL)	2778-96-3	Cy	2,000	31636
stearyl stearate (10mL)	2778-96-3	H	2,000	31681
stearyl stearate	2778-96-3	Neat	100mg	31860
Stoddard solvent	8052-41-3	PTM	10,000	30487
Strobane	8001-50-1	Neat	100mg	PS-2023
styrene	100-42-5	PTM	2,000	30410
sulfadimethoxine	122-11-2	Neat	250mg	PS-2278
sulfaquinoxaline	59-40-5	Neat	10mg	PS-2056
sulfentrazone	122836-35-5	Neat	250mg	PS-2132
sulfolane	126-33-0	DMSO	0.8mg/mL	36413
sulfometuron methyl	74222-97-2	Neat	100mg	PS-1074
sulfosulfuron	141776-32-1	Neat	100mg	PS-2224
sulfotep	3689-24-5	Neat	50mg	PS-2024
sulfoxide	120-62-7	Neat	100mg	PS-976
sulprofos	35400-43-2	Neat	100mg	PS-1018
sulprofos sulfone (5mL)	—	T	100	MET-1018A
sulprofos-sulfoxide	34643-47-5	Neat	100mg	MET-1018C
super-rozol	28772-56-7	Neat	100mg	PS-1038
swep	1918-18-9	Neat	50mg	PS-1098
Systhane®	88671-89-0	Neat	100mg	PS-2006

Compound Packaged 1mL/ampul*	CAS#	Solvent Code	µg/mL*	Individual cat.#
2,4,5-T	93-76-5	M	200	32243
2,4,5-T	93-76-5	Neat	250mg	PS-45
2,4,5-T-amine	—	Neat	1g	PS-296
2,4,5-T butoxyethyl ester	2545-59-7	Neat	1g	PS-309
2,4,5-T *n*-butyl ester	93-79-8	Neat	1g	PS-303
2,4,5-T 2-ethylhexyl ester	—	Neat	250mg	PS-297-1
2,4,5-T isooctyl ester	25168-15-4	Neat	100mg	PS-297
2,4,5-T isopropyl ester	—	Neat	100mg	PS-46
2,4,5-T methyl ester	1928-37-6	M	1,000	32244
talbutal	115-44-6	PTM	1,000	34039
tau-fluvalinate	102851-06-9	Neat	100mg	PS-1071
TCMTB	21564-17-0	Neat	100mg	PS-2021
2,4-TDIP	72375-21-4	DMSO	1,000	33001
2,6-TDIP	195625-39-9	DMSO	1,000	33000
tebufenozide	112410-23-8	Neat	100mg	PS-2188
tebupirimfos	96182-53-5	Neat	100mg	PS-2192
tebuthiuron	34014-18-1	Neat	1g	PS-407
tefluthrin	79538-32-2	ACN	100	PS-2238
temazepam	896-50-4	PTM	1,000	34056
terbacil	5902-51-2	Neat	1g	PS-375
terbufos	13071-79-9	Neat	500mg	PS-680
terbumeton	33693-04-8	Neat	1g	PS-2120
terbuthylazine	5915-41-3	A	1,000	32447
terbuthylazine	5915-41-3	Neat	50mg	PS-413
terbuthylazine-desethyl	—	Neat	50mg	MET-413A
terbutol	1918-11-2	Neat	100mg	PS-550
terbutryne	886-50-0	Neat	1g	PS-379
p-terphenyl-d14	1718-51-0	D	1,000	31828
o-terphenyl	84-15-1	A	2,000	31066
o-terphenyl	84-15-1	D	10,000	31097
p-terphenyl	92-94-4	D	10,000	31095
α-terpineol	98-55-5	D	2,000	33912
Terrazole®	2593-15-9	Neat	1g	PS-264
2,2',5,5'-tetrachlorobiphenyl (BZ #52)	35693-99-3	I	10	32284
1,1,1,2-tetrachloroethane	630-20-6	PTM	2,000	30411
1,1,2,2-tetrachloroethane	79-34-5	PTM	2,000	30412
tetrachloroethene	127-18-4	PTM	2,000	30413
tetrachlorohydroquinone	87-87-6	Neat	1g	MET-690A
1,2,4,5-tetrachloro-3-nitrobenzene	117-18-0	Neat	1g	PS-151
2,3,4,6-tetrachlorophenol	58-90-2	M	1,000	31402
2,3,4,6-tetrachlorophenol	58-90-2	Neat	100mg	PS-8
tetrachloroterephthalic acid	2136-79-0	Neat	100mg	MET-33B
2,4,5,6-tetrachloro-*m*-xylene (5mL)	877-09-8	A	200	32028
2,4,5,6-tetrachloro-*m*-xylene	877-09-8	A	200	32027
tetrachlorvinphos	961-11-5	Neat	1g	PS-611
n-tetracontane (C40)	4181-95-7	Neat	100mg	31859
tetradifon	116-29-0	Neat	1g	PS-80
tetraethylpyrophosphate	107-49-3	Neat	500mg	PS-601
tetrahydrofuran (THF)	109-99-9	DMSO	3.6mg/mL	36408
tetrahydrofuran (THF)	109-99-9	PTM	2,000	30414
cis-1,2,3,6-tetrahydro-phthalimide	27813-21-4	Neat	5g	MET-260A
tetralin	119-64-2	DMSO	0.5mg/mL	36409
tetramethrin	7696-12-0	Neat	100mg	PS-1042
tetramethylthiuram disulfide	137-26-8	Neat	1g	PS-24
tetrapentyltin	3765-65-9	D	2,000	31475
tetra-*n*-propyltin	2176-98-9	D	2,000	31474
tetryl	479-45-8	ACN	1,000	31667
Δ^9-THC	1972-08-3	M	1,000	34067
(±)11-nor-9-carboxy-Δ^9-THC	104874-50-2	M	100	34068
thallium sulfate	7446-18-6	Neat	1g	PS-804
thebaine	115-37-7	PTM	1,000	34009
thiabendazole	148-79-8	Neat	1g	PS-1057
thiamethoxam	153719-23-4	Neat	100mg	PS-2215
thiamylal	337-47-3	PTM	1,000	34040
thiazopyr	117718-60-2	Neat	500mg	PS-2163
thidiazuron	51707-55-2	Neat	1g	PS-2044
thiodicarb	59669-26-0	Neat	250mg	PS-2012
thionazin-O-analog	—	Neat	100mg	MET-668A
thiopental	71-73-8	PTM	1,000	34041
thiophanate	23564-06-9	Neat	1g	PS-223
thiophanate-methyl	23564-05-8	Neat	1g	PS-230

Cat.#s starting with PS- & MET- are ChemService pesticides that are subject to size and price changes without notification. They are not available in Europe.

Individual Compounds: Environmental, Petrochemical, Other

Compound Packaged 1mL/ampul*	CAS#	Solvent Code	µg/mL*	Individual cat.#
Tilt®	60207-90-1	Neat	250mg	PS-1075
Tinuvin® P	2440-22-4	Ip	51.8	31629
Tokuthion	34643-46-4	Neat	100mg	PS-1094
tolclofos-methyl	57018-04-9	Neat	500mg	PS-2156
tolfenpyrad	129588-76-5	Neat	100mg	PS-2323
m-tolualdehyde-2,4-DNPH	2880-05-9	ACN	100	33088
o-tolualdehyde-2,4-DNPH	1773-44-0	ACN	100	33087
p-tolualdehyde-2,4-DNPH	2571-00-8	ACN	100	33089
toluene	108-88-3	DMSO	4.45mg/mL	36410
toluene	108-88-3	PTM	2,000	30415
toluene-d8	2037-26-5	PTM	2,000	30224
tolylfluanid	731-27-1	Neat	250mg	PS-2060
N-*m*-tolylphthalamic acid	85-72-3	Neat	1g	PS-50
toxaphene	8001-35-2	H	1,000	32005
toxaphene	8001-35-2	I	5,000	32071
toxaphene	8001-35-2	M	2,000	32015
toxaphene	8001-35-2	Neat	1g	PS-79
2,4,5-TP (Silvex)	93-72-1	M	1,000	32245
2,4,5-TP (Silvex) methyl ester	4841-20-7	M	1,000	32246
tralkoxydim	87820-88-0	Neat	500mg	PS-2135
tralomethrin	66841-25-6	Neat	100mg	PS-2115
transformer oil (PCB-free)	64742-53-6	Neat	50mL	32425
transformer oil (PCB-free)	64742-53-6	Neat	5mL	32424
n-triacontane-d62 (C30)	638-68-6	D	500	31816
triadimefon	43121-43-3	Neat	500mg	PS-1013
triasulfuron	82097-50-5	Neat	100mg	PS-2042
triazolam	28911-01-5	PTM	1,000	34057
1,2,4-triazole	288-88-0	Neat	1g	MET-1075A
triazophos	24017-47-8	Neat	100mg	PS-2139
triazophos (5mL)	24017-47-8	T	100	PS-1213
tribenuron methyl	101200-48-0	Neat	250mg	PS-2099
2,4,6-tribromophenol	118-79-6	M	1,000	31401
tributylphosphate	126-73-8	A	1,000	32280
S,S,S-tributylphosphoro-trithioate	78-48-8	Neat	1g	PS-562
tributyltin chloride	1461-22-9	D	2,000	31478
tricaprin (1,2,3-tricaprinoylglycerol)	621-71-6	pyridine	8,000	33025
tricaprin (1,2,3-tricaprinoylglycerol) (5mL)	621-71-6	pyridine	8,000	33033
trichloroacetic acid	76-03-9	Neat	1g	PS-34
1,2,3-trichlorobenzene	87-61-6	PTM	2,000	30416
1,2,4-trichlorobenzene	120-82-1	M	1,000	31439
2,3,6-trichlorobenzoic acid	50-31-7	Neat	1g	PS-330
2,4,4'-trichlorobiphenyl (BZ #28)	7012-37-5	I	10	32283
1,1,1-trichloroethane	74552-83-3	DMSO	50mg/mL	36411
1,1,1-trichloroethane	71-55-6	PTM	2,000	30418
1,1,2-trichloroethane	79-00-5	PTM	2,000	30419
trichloroethene	79-01-6	DMSO	0.4mg/mL	36412
trichloroethene	79-01-6	PTM	2,000	30420
trichlorofluoromethane (CFC-11)	75-69-4	PTM	2,000	30421
trichloronate	327-98-0	Neat	100mg	PS-2007
trichloronitromethane	76-06-2	Neat	1g	PS-4
2,4,5-trichlorophenol	95-95-4	A	1,000	32017
2,4,5-trichlorophenol	95-95-4	M	1,000	31299
2,4,5-trichlorophenol	95-95-4	Neat	1g	PS-9
2,4,6-trichlorophenol	88-06-2	M	1,000	31400
2,4,6-trichlorophenol	88-06-2	Neat	1g	PS-10
(2,4,5-trichlorophenoxy) acetic acid butoxypoly-propylene glycol ester	—	Neat	1g	PS-334
(2,4,5-trichlorophenoxy) acetic acid methyl ester	—	Neat	250mg	PS-339
1,2,3-trichloropropane	96-18-4	MTBE	1,000	31648
1,2,3-trichloropropane	96-18-4	PTM	2,000	30429
3,5,6-trichloro-2-pyridinol	6515-38-4	Neat	250mg	MET-674A
1,1,2-trichlorotrifluoroethane (CFC-113)	76-13-1	PTM	2,000	30462
triclopyr	55335-06-3	Neat	500mg	PS-417
triclopyr butoxyethyl ester	64700-56-7	Neat	250mg	PS-2308
triclopyr methyl ester	—	Neat	100mg	PS-1110

Compound Packaged 1mL/ampul*	CAS#	Solvent Code	µg/mL*	Individual cat.#
tricyclohexyltin hydroxide	13121-70-5	Neat	250mg	PS-107
trietazine	1912-26-1	Neat	100mg	PS-2107
trifloxystrobin	141517-21-7	Neat	100mg	PS-2196
trifloxysulfuron-sodium	199119-58-9	Neat	100mg	PS-2317
triflumizole	68694-11-1	Neat	1g	PS-2121
triflumuron	64628-44-0	Neat	100mg	PS-2176
α,α,α-trifluoro-3'-hydroxy-O-toluanilide	—	Neat	250mg	MET-2057C
α,α,α-trifluorotoluene	98-08-8	PTM	2,000	30048
α,α,α-trifluorotoluene	98-08-8	PTM	2,500	30068
α,α,α-trifluorotoluene	98-08-8	PTM	10,000	30083
α,α,α-trifluoro-O-toluic acid	433-97-6	Neat	500mg	MET-2057B
trifluralin	1582-09-8	M	1,000	32238
trifluralin	1582-09-8	Neat	1g	PS-393
triflusulfuron-methyl	126535-15-7	Neat	500mg	PS-2147
triforine	26644-46-2	Neat	100mg	PS-2014
2,3,5-triiodobenzoic acid	88-82-4	Neat	1g	PS-561
1,2,4-trimethylbenzene	95-63-6	PTM	2,000	30422
1,3,5-trimethylbenzene	108-67-8	PTM	2,000	30423
1,2,4-trimethyl-5-nitrobenzene	610-91-3	M	2,000	33903
2,3,5-trimethylphenyl methyl carbamate	2655-15-4	Neat	50mg	PS-541
trinexapac-ethyl	95266-40-3	Neat	250mg	PS-2158
1,3,5-trinitrobenzene	99-35-4	ACN	1,000	31668
2,4,6-trinitrotoluene	118-96-7	ACN	1,000	31669
tri-*n*-propyltin chloride	995-25-5	D	2,000	31476
triolein (1,2,3-Tri[*cis*-octadecenoyl] glycerol)	122-32-7	pyridine	5,000	33023
tripentyltin chloride	3342-67-4	D	2,000	31477
triphenylphosphate	115-86-6	A	1,000	32281
Tycor	64529-56-2	Neat	100mg	PS-1092
2-undecanone	112-12-9	Neat	1g	PS-951
uniconizole-P	83657-17-4	Neat	10mg	PS-2076
unleaded gasoline composite (5mL)	8006-61-9	PTM	50,000	30206
unleaded gasoline composite	8006-61-9	PTM	2,500	30081
unleaded gasoline composite	8006-61-9	PTM	50,000	30205
unleaded gasoline: 25% weathered	8006-61-9	PTM	5,000	30097
unleaded gasoline: 50% weathered	8006-61-9	PTM	5,000	30098
unleaded gasoline: 75% weathered	8006-61-9	PTM	5,000	30099
unleaded gasoline: 99% weathered	8006-61-9	PTM	5,000	30436
unleaded gasoline: unweathered	8006-61-9	PTM	5,000	30096
used motor oil composite	64742-65-0	D	50,000	31465
vacor	53558-25-1	Neat	100mg	PS-1059
valeraldehyde-2,4-DNPH	2057-84-3	ACN	100	33090
γ-valerolactone	108-29-2	ACN	1,000	34080
vamidothion	2275-23-2	Neat	100mg	PS-2187
Vanicide-20S	—	Neat	1g	PS-227
Velpar®	51235-04-2	Neat	1g	PS-416
vernolate	1929-77-7	Neat	250mg	PS-504
vinclozolin	50471-44-8	Neat	1g	PS-1049
vinyl acetate	108-05-4	PTM	2,000	30216
vinyl chloride	75-01-4	PTM	2,000	30089
vinyl chloride	75-01-4	PTM	2,500	30093
warfarin	81-81-2	Neat	1g	PS-104
m-xylene	108-38-3	DMSO	6.51mg/mL	36414
m-xylene	108-38-3	PTM	2,000	30424
o-xylene	95-47-6	DMSO	0.97mg/mL	36415
o-xylene	95-47-6	PTM	2,000	30425
p-xylene	106-42-3	DMSO	1.52mg/mL	36416
p-xylene	106-42-3	PTM	2,000	30426
Zectran	315-18-4	Neat	500mg	PS-756
zinc phosphate	—	Neat	1g	PS-803
Zineb	12122-67-7	Neat	1g	PS-23
Zinophos	297-97-2	Neat	100mg	PS-668
ziram	137-30-4	Neat	1g	PS-21

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

Solvent code chart available on page 438.

Cat.#s starting with PS- & MET- are ChemService pesticides that are subject to size and price changes without notification. They are not available in Europe.

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Analytical Reference Materials Group
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Brendan Conway, Matt Hepfer (not pictured: Sam Morehead)

Environmental Materials

Top: Sam Morehead, Analytical Reference Materials Manufacturing Technician/Analyst

Bottom: Mike Moore, Shipping Technician

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

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

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See page 427 for our Custom Reference Materials Request Form.

Method 501.1, 501.2, 501.3 (Trihalomethanes)

501 Trihalomethane Mix

bromodichloromethane
bromoform
chloroform
dibromochloromethane

200µg/mL each in P&T methanol, 1mL/ampul
cat. # 30036 (ea.)

2,000µg/mL each in P&T methanol, 1mL/ampul
cat. # 30211 (ea.)

DW-VOC Mix #1 (8 components)

benzene
carbon tetrachloride
1,4-dichlorobenzene
1,2-dichloroethane
1,1-dichloroethene
1,1,1-trichloroethane
trichloroethene
vinyl chloride

200µg/mL each in P&T methanol, 1mL/ampul
cat. # 30037 (ea.)

2,000µg/mL each in P&T methanol, 1mL/ampul
cat. # 30219 (ea.)

DW-VOC Mix #2 (12 components)

chlorobenzene
1,2-dichlorobenzene
cis-1,2-dichloroethene
trans-1,2-dichloroethene
1,2-dichloropropane
ethylbenzene
styrene
tetrachloroethene
toluene
m-xylene
o-xylene
p-xylene

200µg/mL each in P&T methanol, 1mL/ampul
cat. # 30038 (ea.)

2,000µg/mL each in P&T methanol, 1mL/ampul
cat. # 30220 (ea.)

DW-VOC Mix #3

methylene chloride
1,2,4-trichlorobenzene
1,1,2-trichloroethane

200µg/mL each in P&T methanol, 1mL/ampul
cat. # 30209 (ea.)

2,000µg/mL each in P&T methanol, 1mL/ampul
cat. # 30235 (ea.)

Method 502.1, 502.2 (Volatile Halogenated Organics)

Volatiles MegaMix® with Gases (60 components)

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

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

502.2 Internal Standard #1

1-chloro-2-fluorobenzene

2,000µg/mL in P&T methanol, 1mL/ampul
cat. # 30040 (ea.)

502.2 Internal Standard Mix #2

2-bromo-1-chloropropane
fluorobenzene

2,000µg/mL each in P&T methanol, 1mL/ampul
cat. # 30041 (ea.)

also available

Rbx®-502.2 GC Columns
See page 90 for details.

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

8021/502.2 Surrogate Mix #1

1-bromo-2-chloroethane
1-chloro-3-fluorobenzene
fluorobenzene

2,000µg/mL each in P&T methanol, 1mL/ampul
cat. # 30463 (ea.)

8021/502.2 Surrogate Mix #2

1-bromo-2-chloroethane
4-bromochlorobenzene
1-chloro-3-fluorobenzene
fluorobenzene

2,000µg/mL each in P&T methanol, 1mL/ampul
cat. # 30464 (ea.)

502.2 MegaMix® (54 components)

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

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

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

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

502.2 Calibration Mix #1 (gases)

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

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

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

502.2 Calibration Mix #2 (14 components)

bromodichloromethane
bromoform
carbon tetrachloride
chloroform
1,1-dichloroethane
1,1-dichloroethene
trans-1,2-dichloroethene
1,3-dichloropropane
2,2-dichloropropane
cis-1,3-dichloropropene
trans-1,3-dichloropropene
methylene chloride
1,1,1-trichloroethane
trichloroethene

2,000µg/mL each in P&T methanol, 1mL/ampul
cat. # 30043 (ea.)

502.2 Calibration Mix #3 (14 components)

bromochloromethane
dibromochloromethane
1,2-dibromo-3-chloropropane
1,2-dibromoethane
dibromomethane
1,2-dichloroethane
cis-1,2-dichloroethene
1,2-dichloropropane
1,1-dichloropropene
1,1,1,2-tetrachloroethane
1,1,2,2-tetrachloroethane
tetrachloroethene
1,1,2-trichloroethane
1,2,3-trichloropropane

2,000µg/mL each in P&T methanol, 1mL/ampul
cat. # 30044 (ea.)

502.2 Calibration Mix #4 (9 components)

benzene
tert-butylbenzene
chlorobenzene
isopropylbenzene
n-propylbenzene
styrene
toluene
1,3,5-trimethylbenzene
m-xylene

2,000µg/mL each in P&T methanol, 1mL/ampul
cat. # 30045 (ea.)

502.2 Calibration Mix #5 (10 components)

bromobenzene
n-butylbenzene
sec-butylbenzene
2-chlorotoluene
1,3-dichlorobenzene
ethylbenzene
1,2,4-trichlorobenzene
1,2,4-trimethylbenzene
o-xylene
p-xylene

2,000µg/mL each in P&T methanol, 1mL/ampul
cat. # 30046 (ea.)

502.2 Calibration Mix #6 (7 components)

4-chlorotoluene
1,2-dichlorobenzene
1,4-dichlorobenzene
hexachlorobutadiene
4-isopropyltoluene
naphthalene
1,2,3-trichlorobenzene

2,000µg/mL each in P&T methanol, 1mL/ampul
cat. # 30047 (ea.)

Antifoam Agent for Purge & Trap Samples

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

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

No data pack available.

Method 504.1 (Ethylene Dibromide/ Dibromochloropropane)

504.1 Calibration Mix

1,2-dibromo-3-chloropropane
1,2-dibromoethane
1,2,3-trichloropropane

200µg/mL each in P&T methanol, 1mL/ampul
cat. # 30239 (ea.)

Method 505 (Organohalide Pesticides & PCBs)

505 Organohalide Pesticide Mix (16 components)

aldrin
alachlor
atrazine
γ-BHC (lindane)
α-chlordane
γ-chlordane
dieldrin
endrin
heptachlor
heptachlor epoxide (isomer B)
hexachlorobenzene
hexachlorocyclopentadiene
methoxychlor
cis-nonachlor
trans-nonachlor
simazine

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

Toxaphene Solutions

1,000µg/mL in hexane, 1mL/ampul
cat. # 32005 (ea.)

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

5,000µg/mL in isooctane, 1mL/ampul
cat. # 32071 (ea.)

Method 506 (Phthalate & Adipate Esters)

506 Calibration Mix (7 components)

benzyl butyl phthalate
bis(2-ethylhexyl)adipate
bis(2-ethylhexyl)phthalate
di-*n*-butylphthalate
di-*n*-octyl phthalate
diethylphthalate
dimethylphthalate

1,000µg/mL in isooctane, 1mL/ampul
cat. # 31845 (ea.)

506 Laboratory Performance Check Mix

(7 components)

benzyl butyl phthalate	250µg/mL	di-*n*-butylphthalate	100
bis(2-ethylhexyl)adipate	1200	di-*n*-octyl phthalate	650
bis(2-ethylhexyl)phthalate	250	diethylphthalate	100
		dimethylphthalate	100

In P&T methanol, 1mL/ampul
cat. # 31844 (ea.)

Method 507 (Nitrogen & Phosphorus Pesticides)

Organonitrogen Pesticide Mix #1 (Rev), Method 525.2 (37 components)

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

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

Organophosphorus Pesticide Mix #1 (Rev), Method 525.2 (7 components)

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

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

Method 525.2 Nitrogen/Phosphorus Pesticide Mix #2 (6 components)

carboxin
diazinon
disulfoton
fenamiphos
merphos
terbufos

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

Method 508, 508.1, 508A (Chlorinated Pesticides)

508.1 Internal Standard

pentachloronitrobenzene

100µg/mL in ethyl acetate, 1mL/ampul
cat. # 32091 (ea.)

508.1 Surrogate

4,4'-dibromobiphenyl

500µg/mL in ethyl acetate, 1mL/ampul
cat. # 32092 (ea.)

508.1 GC Degradation Check Mix

4,4'-DDT
endrin

100µg/mL each in ethyl acetate, 1mL/ampul
cat. # 32093 (ea.)

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Stuart Kline
Customer Service Representative
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Method 508, 508.1, 508A (Chlorinated Pesticides) *cont'd*

508 Performance Check Mix

δ-BHC	0.4μg/mL	chlorpyrifos	0.02
chlorothalonil	0.5	DCPA (Dacthal®)	0.5

At concentrations listed in methyl *tert*-butyl ether, 1mL/ampul
cat. # 32045 (ea.)

508.1 Calibration Mix #1 (17 components)

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

500μg/mL each in ethyl acetate, 1mL/ampul
cat. # 32094 (ea.)

508.1 Calibration Mix #2 (11 components)

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

500μg/mL each in ethyl acetate, 1mL/ampul
cat. # 32095 (ea.)

*1000μg/mL total permethrin. Exact content of each isomer listed on certificate of analysis.

508.1 Calibration Mix #3 (8 components)

alachlor	hexachlorocyclopentadiene
atrazine	metolachlor
chlorthalonil	metribuzin
cyanazine	simazine

500μg/mL each in ethyl acetate, 1mL/ampul
cat. # 32096 (ea.)

Toxaphene Solutions

1,000μg/mL in hexane, 1mL/ampul
cat. # 32005 (ea.)

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

5,000μg/mL in isooctane, 1mL/ampul
cat. # 32071 (ea.)

Organochlorine Pesticide System Evaluation Mix

4,4'-DDT	200μg/mL
endrin	100μg/mL

In MTBE, 1mL/ampul
cat. # 32417 (ea.)

Decachlorobiphenyl, 508A

200μg/mL in acetone, 1mL/ampul
cat. # 32029 (ea.)

200μg/mL in acetone, 5mL/ampul
cat. # 32030 (ea.)

10μg/mL in isooctane, 1mL/ampul
cat. # 32289 (ea.)

Method 515, 515.4 (Chlorinated Acid Herbicides)

Herbicide Internal Standard

4,4'-dibromooctafluorobiphenyl
250μg/mL in hexane, 1mL/ampul
cat. # 32053 (ea.)

2,000μg/mL in methyl *tert*-butyl ether, 1mL/ampul
cat. # 31856 (ea.)

Herbicide Surrogate

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

1,000μg/mL in acetone, 1mL/ampul
cat. # 32439 (ea.)

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

Herbicide Lab Performance Check Mix

dinoseb methyl ether	4μg/mL
DCAA methyl ester	500
4,4'-dibromooctafluorobiphenyl	250
3,5-dichlorobenzoic acid methyl ester	600
4-nitroanisole	1,600

In MTBE, 1mL/ampul
cat. # 32063 (ea.)

Herbicide Mix #1 (7 components)

Free Acid Form:

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

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

Derivatized Form:

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

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

free data

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

Herbicide Mix #2

Free Acid Form:
dalapon
2,000µg/mL in methanol, 1mL/ampul
cat. # 32056 (ea.)

Derivatized Form:
dalapon methyl ester
2,000µg/mL in hexane, 1mL/ampul
cat. # 32057 (ea.)

Herbicide Mix #4 (8 components)

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

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

515.4 Calibration Mix (16 components)

acifluorfen (Blazer)	50µg/mL	3,5-dichlorobenzoic acid	50
bentazon	100	dichlorprop	100
chloramben	50	dinoseb	100
2,4-D	100	pentachlorophenol	10
dalapon	100	picloram	50
2,4-DB	100	quinclorac	50
DCPA diacid (tetra-chloroterephthalic acid)	50	2,4,5-T	25
dicamba	50	2,4,5-TP (Silvex)	25

In acetone, 1mL/ampul
cat. # 32443 (ea.)

515.4 Methylated Chlorinated Acids Mix (16 components)

acifluorfen methyl ester	50µg/mL	3,5-dichlorobenzoic acid methyl ester	50
bentazon methyl ester	100	dichlorprop methyl ester	100
chloramben methyl ester	50	dinoseb methyl ether	100
dalapon methyl ester	100	pentachloroanisole	10
2,4-D methyl ester	100	picloram methyl ester	50
2,4-DB methyl ester	100	quinclorac methyl ester	50
DCPA (Dacthal®)	100	2,4,5-T methyl ester	25
dicamba methyl ester	50	2,4,5-TP (Silvex) methyl ester	25

In methyl *tert*-butyl ether, 1mL/ampul
cat. # 32444 (ea.)

Method 521 (Nitrosamines)

Nitrosamine Calibration Mix, Method 521

(7 components)
N-nitrosodiethylamine
N-nitrosodimethylamine
N-nitrosodi-*n*-butylamine
N-nitrosodi-*n*-propylamine
N-nitrosomethylethylamine
N-nitrosopiperidine
N-nitrosopyrrolidine
1,000µg/mL each in methylene chloride, 1mL/ampul
cat. # 31898 (ea.)

N-Nitrosodimethylamine-d6

N-nitrosodimethylamine-d6
1,000µg/mL in methylene chloride, 1mL/ampul
cat. # 33910 (ea.)

N-Nitrosodi-*n*-propylamine-d14

N-nitrosodi-*n*-propylamine-d14
1,000µg/mL in methylene chloride, 1mL/ampul
cat. # 33911 (ea.)

Method 524.1, 524.2 (Volatile Organics)

Volatiles MegaMix® with Gases (60 components)

benzene
bromobenzene
bromochloromethane
bromodichloromethane
bromoform
bromomethane (methyl bromide)
n-butylbenzene
sec-butylbenzene
tert-butylbenzene
carbon tetrachloride
chlorobenzene
chloroethane (ethyl chloride)
chloroform
chloromethane (methyl chloride)
2-chlorotoluene
4-chlorotoluene
dibromochloromethane
1,2-dibromo-3-chloropropane (DBCP)
1,2-dibromoethane (EDB)
dibromomethane
1,2-dichlorobenzene
1,3-dichlorobenzene
1,4-dichlorobenzene
dichlorodifluoromethane (CFC-12)
1,1-dichloroethane
1,2-dichloroethane
1,1-dichloroethene
cis-1,2-dichloroethene
trans-1,2-dichloroethene
1,2-dichloropropane
1,3-dichloropropane
2,2-dichloropropane
1,1-dichloropropene
cis-1,3-dichloropropene
trans-1,3-dichloropropene
ethylbenzene
hexachloro-1,3-butadiene (hexachlorobutadiene)
isopropylbenzene (cumene)
4-isopropyltoluene (*p*-cymene)
methylene chloride (dichloromethane)
naphthalene
n-propylbenzene
styrene
1,1,1,2-tetrachloroethane
1,1,2,2-tetrachloroethane
tetrachloroethene
toluene
1,2,3-trichlorobenzene
1,2,4-trichlorobenzene
1,1,1-trichloroethane
1,1,2-trichloroethane
trichloroethene
trichlorofluoromethane (CFC-11)
1,2,3-trichloropropane
1,2,4-trimethylbenzene
1,3,5-trimethylbenzene
vinyl chloride
m-xylene
o-xylene
p-xylene
200µg/mL each in P&T methanol, 1mL/ampul
cat. # 30603 (ea.)

also available

Try our CLPesticides columns for these applications.

See pages 78-81 for details.

did you know?

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

See page 427 for our Custom Reference Materials Request Form.

Method 524.1, 524.2 (Volatile Organics) *cont'd*

Randy Fisher
Analytical Reference Materials Manufacturing Supervisor
10+ years of service!

524 Internal Standard/Surrogate Mix

4-bromofluorobenzene
1,2-dichlorobenzene-d4
fluorobenzene

2,000µg/mL each in P&T methanol, 1mL/ampul
cat. # 30201 (ea.)

Surrogate Standard

4-bromofluorobenzene
α,α,α-trifluorotoluene

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

524.2 Surrogate Standard

1-bromo-4-fluorobenzene
1,2-dichlorobenzene-d4

2,000µg/mL in P&T methanol, 1mL/ampul
cat. # 30607 (ea.)

PFTBA (MS Tuning Compound)

perfluorotributylamine (PFTBA)

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

No data pack available.

Drinking Water VOA MegaMix®, 524.2 Rev. 4.1

(73 components)

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

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

502.2 Calibration Mix #1 (gases)

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

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

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

Ketones Mix, 524.2 Rev. 4.1 (5 components)

acetone
2-butanone (MEK)
1,1-dichloro-2-propanone
2-hexanone
4-methyl-2-pentanone (MIBK)

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

Oxygenates Standard

diisopropyl ether (DIPE)	2,000µg/mL
ethyl-*tert*-butyl ether (ETBE)	2,000
tert-amyl ethyl ether (TAEE)	2,000
tert-amyl methyl ether (TAME)	2,000
tert-butyl alcohol (TBA)	10,000

In P&T methanol, 1mL/ampul
cat. # 30619 (ea.)

524 Calibration Mix #7 (12 components)

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

Ampul 1:
acetone
2-butanone (MEK)
2-hexanone
4-methyl-2-pentanone (MIBK)
tetrahydrofuran

Ampul 2:
acrylonitrile
allyl chloride
ethyl methacrylate
methyl acrylate
methyl methacrylate
nitrobenzene
pentachloroethane

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

524 Calibration Mix #8 (12 components)

carbon disulfide
chloroacetonitrile
1-chlorobutane
trans-1,4-dichloro-2-butene
1,1-dichloro-2-propanone
diethyl ether
hexachloroethane
iodomethane (methyl iodide)
methacrylonitrile
methyl *tert*-butyl ether
2-nitropropane
propionitrile

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

also available

Additional chlorinated acid herbicides mixes:

see Method 555, **page 453.** and Method 8321, **page 470**.

free data

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

Method 525, 525.1, 525.2 (Semivolatile Organics)

Method 525.2 Semivolatile Mix (revised)

(28 components)

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

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

*pentachlorophenol at 4,000µg/mL.

Method 525.2 PCB Congener Mix (8 components)

2-chlorobiphenyl (BZ#1)
2,3-dichlorobiphenyl (BZ#5)
2,4,5-trichlorobiphenyl (BZ#29)
2,2',4,4'-tetrachlorobiphenyl (BZ#47)
2,2',3',4,6-pentachlorobiphenyl (BZ#98)
2,2',4,4',5,6'-hexachlorobiphenyl (BZ#154)
2,2',3,3',4,4',6-heptachlorobiphenyl (BZ#171)
2,2',3,3',4,5',6,6'-octachlorobiphenyl (BZ#200)

200µg/mL each in acetone, 1mL/ampul
cat. # 32420 (ea.)

Organochlorine Pesticide Mix AB # 3

(20 components)

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

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

Organonitrogen Pesticide Mix #1 (Rev), Method 525.2 (37 components)

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

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

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

Organophosphorus Pesticide Mix #1 (Rev), Method 525.2 (7 components)

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

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

Method 525.2 Nitrogen/Phosphorus Pesticide Mix #2 (6 components)

carboxin
diazinon
disulfoton
fenamiphos
merphos
terbufos

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

Organochlorine Pesticide Mix #2 (Rev), Method 525.2 (8 components)

chlorobenzilate
chloroneb
chlorothalonil
DCPA (Dacthal®)
heptachlor epoxide (isomer A)
trans-nonachlor
cis-permethrin
trans-permethrin

500µg/mL each in acetone, 1mL/ampul
cat. # 33011 (ea.)

Method 525.2 Fortification Recovery Standard

p-terphenyl-d14

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

Method 525.2 Internal Standard Mix

acenaphthene-d10
chrysene-d12
phenanthrene-d10

1,000µg/mL each in acetone, 1mL/ampul
cat. # 31825 (ea.)

Method 525.2 Surrogate Standard Mix

2-nitro-*m*-xylene
perylene-d12
pyrene-d10
triphenylphosphate

1,000µg/mL each in acetone, 1mL/ampul
cat. # 31826 (ea.)

Method 525.2 GC/MS Performance Check Mix

4,4'-DDT
DFTPP (decafluorotriphenylphosphine)
endrin

1,000µg/mL each in acetone, 1mL/ampul
cat. # 31827 (ea.)

also available

See page 444 for 502.2 MegaMix® and 502.2 calibration mixes.

Antifoam Agent for Purge & Trap Samples

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

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

No data pack available.

Method 526 (Semivolatile Organics)

Semivolatile Calibration Mix, EPA 526

(11 components)

acetochlor
cyanazine
diazinon
2,4-dichlorophenol
1,2-diphenylhydrazine
disulfoton
fonofos
nitrobenzene
prometon
terbufos
2,4,6-trichlorophenol

200µg/mL each in ethyl acetate, 1mL/ampul
cat. # 31691 (ea.)

Internal Standard Mix, EPA 526

acenaphthene-d10
chrysene-d12
phenanthrene-d10

500µg/mL each in acetone, 1mL/ampul
cat. # 31692 (ea.)

Surrogate Standard Mix, EPA 526

2-nitro-*m*-xylene
triphenylphosphate

500µg/mL each in acetone, 1mL/ampul
cat. # 31693 (ea.)

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

PBDE Mix

new!

2,2',4,4',5-pentabromodiphenyl ether (BDE-99)
2,2',4,4',5,5'-hexabromobiphenyl
2,2',4,4',5,5'-hexabromodiphenyl ether (BDE-153)
2,2',4,4',6-pentabromodiphenyl ether (BDE-100)
2,2',4,4'-tetrabromodiphenyl ether (BDE-47)

50µg/mL each in isooctane:ethyl acetate (4:1), 1mL/ampul
cat. # 33098 (ea.)

Pesticides Mix #1, Method 527 (16 components)

atrazine
bifenthrin
esbiol (Bioallethrin®, S-cyclopentyl isomer)
bromacil
esfenvalarate
fenvalarate
hexazinone
kepone
mirex
nitrofen
norflurazon
oxychlordane
prometryne
propazine
thiobencarb
vinclozolin

500µg/mL each in ethyl acetate, 1mL/ampul
cat. # 33007 (ea.)

Pesticides Mix #2, Method 527

chloropyrifos (Dursban®)
dimethoate
malathion
parathion
terbufos sulfone

500µg/mL each in ethyl acetate, 1mL/ampul
cat. # 33008 (ea.)

Surrogate Standard, Method 527

1,3-dimethyl-2-nitrobenzene
perylene-d12
triphenylphosate

500µg/mL each in acetone, 1mL/ampul
cat. # 33009 (ea.)

Method 527 (Pesticides & Flame Retardants-GC/MS) *cont'd*

Method 525.2 Surrogate Standard Mix

2-nitro-*m*-xylene
perylene-d12
pyrene-d10
triphenylphosphate

1,000µg/mL each in acetone, 1mL/ampul
cat. # 31826 (ea.)

Internal Standard, Method 527

acenaphthene-d10
chrysene-d12
phenanthrene-d10

500µg/mL each in acetone, 1mL/ampul
cat. # 33010 (ea.)

Method 525.2 Internal Standard Mix

acenaphthene-d10
chrysene-d12
phenanthrene-d10

1,000µg/mL each in acetone, 1mL/ampul
cat. # 31825 (ea.)

Method 528 (Phenols)

Phenol Calibration Mix, EPA 528 (12 components)

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

2,000µg/mL each in methylene chloride, 1mL/ampul
cat. # 31694 (ea.)

Internal Standard Mix, EPA 528

3-nitro-*o*-xylene	1,000µg/mL
2,3,4,5-tetrachlorophenol	2,000

In methylene chloride, 1mL/ampul
cat. # 31696 (ea.)

Phenols Fortification Mix, EPA 528

(12 components)

4-chloro-3-methylphenol	100µg/mL
2-chlorophenol	100
o-cresol	100
2,4-dichlorophenol	100
2,4-dimethylphenol	100
2,4-dinitrophenol	500
2-methyl-4,6-dinitrophenol	500
2-nitrophenol	100
4-nitrophenol	500
pentachlorophenol	500
phenol	100
2,4,6-trichlorophenol	100

In methanol, 1mL/ampul
cat. # 31695 (ea.)

Surrogate Standard Mix, EPA 528

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

In methanol, 1mL/ampul
cat. # 31697 (ea.)

free data

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Method 529 (Nitroaromatics & Nitramines)

Nitroaromatics and Nitramine Explosives in Drinking Water (14 components)

3,5-dinitroaniline	2-nitrotoluene
1,3-dinitrobenzene	3-nitrotoluene
2-amino-4,6-dinitrotoluene	4-nitrotoluene
4-amino-2,6-dinitrotoluene	RDX
2,4-dinitrotoluene	tetryl
2,6-dinitrotoluene	1,3,5-trinitrobenzene
nitrobenzene	2,4,6-trinitrotoluene

1,000µg/mL each in acetonitrile, 1mL/ampul
cat. # 33900 (ea.)

3,4-Dinitrotoluene

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

2-Nitromesitylene

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

1,2,4-Trimethyl-5-nitrobenzene

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

Nitrobenzene-d5

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

Method 531.1, 531.2 (Carbamates)

Internal Standard

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

531.1 Performance Check Mix

aldicarb sulfoxide	100µg/mL	3-hydroxycarbofuran	2
BDMC	10	methiocarb	20

In methanol, 1mL/ampul
cat. # 32275 (ea.)

531.1 Carbamate Pesticide Calibration Mixture

(10 components)

aldicarb	3-hydroxycarbofuran
aldicarb sulfone	methiocarb
aldicarb sulfoxide	methomyl
carbaryl (Sevin®)	oxamyl
carbofuran	propoxur (Baygon®)

100µg/mL each in methanol, 1mL/ampul
cat. # 32273 (ea.)

531.2 Carbamate Pesticide Calibration Mixture

(11 components)

aldicarb	methiocarb
aldicarb sulfone	methomyl
aldicarb sulfoxide	1-naphthol
carbaryl (Sevin®)	oxamyl
carbofuran	propoxur (Baygon®)
3-hydroxycarbofuran	

100µg/mL in acetonitrile, 1mL/ampul
cat. # 32435 (ea.)

Method 532 (Phenylurea Pesticides)

Phenylurea Surrogate Mixture

carbazole	monuron

500µg/mL each in methanol:acetonitrile (50:50), 1mL/ampul
cat. # 32433 (ea.)

Phenylurea Pesticide Mixture (8 components)

diflubenzuron	propanil
diuron	siduron
fluometuron	tebuthiuron
linuron	thidiazuron

200µg/mL each in acetonitrile:acetone (90:10), 1mL/ampul
cat. # 32434 (ea.)

also available

See the LC Applications section for a carbamate pesticides chromatogram - page 532.

did you know?

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See page 427 for our Custom Reference Materials Request Form.

Method 547 (Glyphosate)

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

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

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

Method 549.2 (Paraquat/Diquat)

Paraquat & Diquat Calibration Mix
diquat dibromide
paraquat dichloride
1,000µg/mL each in water, 1mL/ampul
cat. # 32437 (ea.)

Ultra Quat Reagent Solution
Use with Ultra Quat HPLC column. Dilute to 1 liter water, per instructions.
In water, 20mL/bottle
cat. # 32441 (ea.)

Method 551.1 (Chlorinated Pesticides & Herbicides)

551.1 Internal Standard
1-bromo-4-fluorobenzene
1,000µg/mL in acetone, 1mL/ampul
cat. # 31854 (ea.)

551.1 Surrogate Standard
decafluorobiphenyl
1,000µg/mL in acetone, 1mL/ampul
cat. # 31855 (ea.)

Method 551.1 Pesticide/Herbicide Mix
(16 components)

alachlor	heptachlor
atrazine	heptachlor epoxide (isomer B)
bromacil	hexachlorobenzene
cyanazine (Bladex)	hexachlorocyclopentadiene
endrin	methoxychlor
endrin aldehyde	metolachlor
endrin ketone	simazine
γ-BHC (lindane)	trifluralin

1,000µg/mL each in acetone, 1mL/ampul
cat. # 32438 (ea.)

Method 551.1 MTBE Lab Performance Check Mix (7 components)

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

In methyl *tert*-butyl ether, 1mL/ampul
cat. # 32440 (ea.)

Method 551.1 (Chlorinated Pesticides & Herbicides) *cont'd*

Disinfection By-Product and Chlorinated Solvents Mix (19 components)

bromochloroacetonitrile	1,2-dibromoethane (EDB)
bromodichloromethane	dichloroacetonitrile
bromoform	1,1-dichloro-2-propanone
carbon tetrachloride	tetrachloroethylene
chloroform	trichloroacetonitrile
chloropicrin	1,1,1-trichloroethane
dibromoacetonitrile	1,1,2-trichloroethane
dibromochloromethane	trichloroethylene
1,2-dibromo-3-chloropropane (DBCP)	1,2,3-trichloropropane
	1,1,1-trichloro-2-propanone

2000µg/mL each in acetone, 1mL/ampul
cat. # 30615 (ea.)

Chloral Hydrate
chloral hydrate
1,000µg/mL in acetonitrile, 1mL/ampul
cat. # 30609 (ea.)

Disinfection By-Product Mix (7 components)

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

2000µg/mL each in acetone, 1mL/ampul
cat. # 30616 (ea.)

Laboratory Performance Check Solution/ Pentane Extract (7 components)

alachlor	83µg/mL	endrin	30
γ-BHC	0.2	hexachlorocyclopentadiene	20
bromacil	83	trichloroethylene	30
bromodichloromethane	30		

In pentane, 1mL/ampul
cat. # 32442 (ea.)

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

Haloacetic Acid Mix (9 components)

bromochloroacetic acid	monobromoacetic acid
bromodichloroacetic acid	monochloroacetic acid
chlorodibromoacetic acid	tribromoacetic acid
dibromoacetic acid	trichloroacetic acid
dichloroacetic acid	

1,000µg/mL each in methyl *tert*-butyl ether, 1mL/ampul
cat. # 31896 (ea.)

Haloacetic Acid Methyl Ester Mix (9 components)

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

1,000µg/mL each in methyl *tert*-butyl ether, 1mL/ampul
cat. # 31897 (ea.)

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

Haloacetic Acid Mix #1 (6 components)

bromochloroacetic acid	monobromoacetic acid
dibromoacetic acid	monochloroacetic acid
dichloroacetic acid	trichloroacetic acid

2,000µg/mL each in MTBE, 1mL/ampul
cat. # 31644 (ea.)

Haloacetic Acid Methyl Ester Mix #1 (6 components)

methyl bromochloroacetate	methyl monobromoacetate
methyl dibromoacetate	methyl monochloroacetate
methyl dichloroacetate	methyl trichloroacetate

1,000µg/mL each in MTBE, 1mL/ampul
cat. # 31645 (ea.)

Haloacetic Acid Mix #2 (9 components)

bromochloroacetic acid	400µg/mL
bromodichloroacetic acid	400
chlorodibromoacetic acid	1000
dibromoacetic acid	200
dichloroacetic acid	600
monobromoacetic acid	400
monochloroacetic acid	600
tribromoacetic acid	2000
trichloroacetic acid	200

In MTBE, 1mL/ampul
cat. # 31646 (ea.)

Haloacetic Acid Methyl Ester Mix #2 (9 components)

methyl bromochloroacetate	400µg/mL
methyl bromodichloroacetate	400
methyl chlorodibromoacetate	1000
methyl dibromoacetate	200
methyl dichloroacetate	600
methyl monobromoacetate	400
methyl monochloroacetate	600
methyl tribromoacetate	2000
methyl trichloroacetate	200

In MTBE, 1mL/ampul
cat. # 31647 (ea.)

Dalapon (2,2-dichloropropionic acid)

dalapon
1,000µg/mL in acetonitrile, 1mL/ampul
cat. # 32432 (ea.)
1,000µg/mL in methanol, 1mL/ampul
cat. # 32253 (ea.)
2,000µg/mL in methanol, 1mL/ampul
cat. # 32056 (ea.)

Dalapon Methyl Ester

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

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

Internal Standards and Surrogates

Compound	cat.# (ea.)
Internal Standard:	
1,000µg/mL in MTBE, 1mL/ampul	
1,2,3-trichloropropane	31648
Surrogates for Method 552, 552.1:	
1,000µg/mL in MTBE, 1mL/ampul	
2,3-dichloropropionic acid	31650
3,5-dichlorobenzoic acid	31652
3,5-dichlorobenzoic acid methyl ester	31649
2,3-dichloropropionic acid methyl ester	31651
Surrogates for Method 552.2:	
1,000µg/mL in MTBE, 1mL/ampul	
2-bromopropionic acid	31653
2,3-dibromopropionic acid	31655
methyl 2-bromopropionate	31654
methyl-2,3-dibromopropionate	31656
Surrogates for Method 552.3:	
1,000µg/mL in MTBE, 1mL/ampul	
2-bromobutanoic acid	31881
2-bromobutyrate	31882

Method 555 (Chlorinated Acids)

Chlorinated Acids by HPLC, Mix A (8 components)

acifluorfen (Blazer®)	dicamba
bentazon	dichlorprop
chloramben	picloram
2,4-D	2,4,5-TP (Silvex)

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

Chlorinated Acids by HPLC, Mix B (8 components)

2,4-DB	MCPP (mecoprop)
3,5-dichlorobenzoic acid	4-nitrophenol
dinoseb	pentachlorophenol
MCPA	2,4,5-T

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

Chlorinated Acid Herbicide Mix

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

Drinking Water Odor Standard

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

(+/-)-geosmin	2-methylisoborneol

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

did you **know**?

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

See **page 427** for our Custom Reference Materials Request Form.

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

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

did you know?

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Method 601 (Purgeable Hydrocarbons)

VOA Purgeable Halocarbon Mix #1 (23 components)

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

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

Method 602 (Purgeable Aromatics)

602 Purgeable Aromatics Calibration Mix

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

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

Method 603 (Acrolein/Acrylonitrile)

Acrolein/Acrylonitrile

acrolein
acrylonitrile

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

Acrolein

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

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

Acrylonitrile

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

Method 604 (Phenols)

604 Phenols Calibration Mix (11 components)

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

2,000µg/mL each in methanol, 1mL/ampul
cat. # 31029 (ea.)

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

605 Benzidines Calibration Mix

benzidine
3,3'-dichlorobenzidine

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

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

Method 606 (Phthalate Esters)

606 Phthalate Esters Calibration Mix

bis(2-ethylhexyl)phthalate
butyl benzyl phthalate
diethyl phthalate
dimethyl phthalate
di-*n*-butyl phthalate
di-*n*-octyl phthalate

2,000µg/mL each in methanol, 1mL/ampul
cat. # 31031 (ea.)

Method 607 (Nitrosamines)

607 Nitrosamines Calibration Mix

N-nitrosodimethylamine
N-nitroso-di-*n*-propylamine
N-nitrosodiphenylamine

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

Method 608 (Organochlorine Pesticides & PCBs)

608 Calibration Mix (16 components)

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

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

Organochlorine Pesticide System Evaluation Mix

4,4'-DDT 200µg/mL
endrin 100µg/mL

In MTBE, 1mL/ampul
cat. # 32417 (ea.)

Method 609 (Nitroaromatics/Isophorone)

609 Nitroaromatics & Isophorone Calibration Mix

2,4-dinitrotoluene
isophorone
2,6-dinitrotoluene
nitrobenzene

2,000µg/mL each in hexane, 1mL/ampul
cat. # 31033 (ea.)

Method 610 (Polycyclic Aromatic Hydrocarbons [PAHs])

SV Calibration Mix #5 / 610 PAH Mix

(16 components)

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

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

610 PAH Calibration Mix A (16 components)

For HPLC/fluorescence detection.

acenaphthene	1000µg/mL	chrysene	500
acenaphthylene	1000	dibenzo(a,h)anthracene	500
anthracene	1000	fluoranthene	500
benzo(a)anthracene	500	fluorene	1000
benzo(a)pyrene	500	indeno(1,2,3-cd)pyrene	500
benzo(b)fluoranthene	500	naphthalene	1000
benzo(k)fluoranthene	500	phenanthrene	500
benzo(ghi)perylene	500	pyrene	500

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

610 PAH Calibration Mix B (16 components)

For HPLC/UV detection.

acenaphthene	1000µg/mL	chrysene	100
acenaphthylene	2000	dibenzo(a,h)anthracene	200
anthracene	100	fluoranthene	200
benzo(a)anthracene	100	fluorene	200
benzo(a)pyrene	100	indeno(1,2,3-cd)pyrene	100
benzo(b)fluoranthene	200	naphthalene	1000
benzo(k)fluoranthene	100	phenanthrene	100
benzo(ghi)perylene	200	pyrene	100

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

Method 611 (Haloethers)

611 Haloethers Calibration Mix

bis(2-chloroethoxy)methane
bis(2-chloroethyl)ether
bis(2-chloroisopropyl)ether
4-bromophenyl phenyl ether
4-chlorophenyl phenyl ether

2,000µg/mL each in acetone, 1mL/ampul
cat. # 31034 (ea.)

Method 612 (Chlorinated Hydrocarbons)

612 Chlorinated Hydrocarbons Calibration Mix

(9 components)

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

2,000µg/mL each in isooctane, 1mL/ampul
cat. # 31035 (ea.)

Method 615 (Chlorinated Acid Herbicides)

Herbicide Surrogate

Free Acid Form:

2,4-dichlorophenylacetic acid (DCAA)

200µg/mL in methanol, 1mL/ampul
cat. # 32049 (ea.)

1,000µg/mL in acetone, 1mL/ampul
cat. # 32439 (ea.)

Derivatized Form:

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

200µg/mL in hexane, 1mL/ampul
cat. # 32050 (ea.)

Herbicide Mix #1 (7 components)

Free Acid Form:

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

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

Derivatized Form:

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

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

Herbicide Mix #2

Free Acid Form:

dalapon

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

Derivatized Form:

dalapon methyl ester

2,000µg/mL in hexane, 1mL/ampul
cat. # 32057 (ea.)

Herbicide Mix #3

Free Acid Form:

MCPA
MCPP

20,000µg/mL each in methanol, 1mL/ampul
cat. # 32058 (ea.)

Derivatized Form:

MCPA methyl ester
MCPP methyl ester

20,000µg/mL each in hexane, 1mL/ampul
cat. # 32059 (ea.)

also **available**

Additional chlorinated acid herbicides mixes:

see Method 555, page 453
and Method 8321, page 470

dependable **execution**

Chris has given the Analytical Reference Materials Group invaluable feedback on many new reference materials for environmental applications, and is always ready to help with redesigning mixes to meet changes in methods or to improve shelf life. In addition, he runs many applications that appear in Restek *Advantage* newsletter articles, to help promote awareness of new mixes.

Chris English,
Innovations Group Leader

John Lidgett
Analytical Reference Materials Technical Specialist
16+ years of service!

also available

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

See page 87 for more information.

Antifoam Agent for Purge & Trap Samples

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

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

No data pack available.

Method 624 (Purgeable Halocarbons)

Volatiles MegaMix®, EPA Method 624

(26 components)

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

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

624 Internal Standard Mix

bromochloromethane
2-bromo-1-chloropropane
1,4-dichlorobutane

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

624 Surrogate Standard Mix

4-bromofluorobenzene
fluorobenzene
pentafluorobenzene

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

Surrogate Standard

4-bromofluorobenzene
α,α,α-trifluorotoluene

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

624 Calibration Mix #1 (gases)

bromomethane
chloroethane
chloromethane
trichlorofluoromethane (CFC-11)
vinyl chloride

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

624 Calibration Mix #2 (12 components)

benzene
carbon tetrachloride
chlorobenzene
2-chloroethyl vinyl ether
dibromochloromethane
1,1-dichloroethane
1,1-dichloroethene
1,2-dichloropropane
methylene chloride
tetrachloroethene
1,1,2-trichloroethane
trichloroethene

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

624 Calibration Mix #3 (14 components)

bromodichloromethane
bromoform
chloroform
1,2-dichlorobenzene
1,3-dichlorobenzene
1,4-dichlorobenzene
1,2-dichloroethane
trans-1,2-dichloroethene
cis-1,3-dichloropropene
trans-1,3-dichloropropene
ethylbenzene
1,1,2,2-tetrachloroethane
toluene
1,1,1-trichloroethane

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

Individual VOA Surrogate and Internal Standards for EPA Methods

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

Method 625 (Semivolatiles)

Semivolatiles MegaMix®, EPA Method 625

(54 components)

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

1,000µg/mL each in methylene chloride:benzene (75:25), 1mL/ampul
cat. # 31829 (ea.)

*Listed as an "additional compound" in Method 625 (listed compound N-nitrosodiphenylamine decomposes to MegaMix® component diphenylamine). The six other "additional compounds" are components in other Restek reference mixes used for Method 625: benzidine is included in cat.# 31030 (page 454); β-BHC, δ-BHC, endosulfan I, endosulfan II, endrin are in cat.# 32291 (page 460) and cat.# 32415 (page 460).

Individual Semivolatile Surrogate and Internal Standards for EPA Methods

Compound	cat.# (ea.)
2,000µg/mL in methylene chloride, 1mL/ampul	
anthracene-d10	31037
4,4'-dibromobiphenyl	31039
4,4'-dibromooctafluorobiphenyl	31040
decafluorobiphenyl	31041
naphthalene-d8	31043
nitrobenzene-d5	31044
phenanthrene-d10	31045
pyridine-d5	31046
2-fluorophenol	31047
pentafluorophenol	31048
phenol-d6	31049
2-fluorobiphenyl	31091
1-fluoronaphthalene	31092
p-terphenyl-d14	31828
1,000µg/mL in acetone, 1mL/ampul	
decafluorobiphenyl	31855
1,000µg/mL in methanol, 1mL/ampul	
2,4,6-tribromophenol	31401

SV Internal Standard Mix

acenaphthene-d10 — naphthalene-d8
chrysene-d12 — perylene-d12
1,4-dichlorobenzene-d4 — phenanthrene-d10

2,000µg/mL each in methylene chloride, 1mL/ampul
cat. # 31206 (ea.)

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

Tuning Mixtures

VOA Tuning Compound

4-bromofluorobenzene

5,000µg/mL in P&T methanol, 1mL/ampul
cat. # 30003 (ea.)

SV Tuning Compound

decafluorotriphenylphosphine (DFTPP)

2,500µg/mL in methylene chloride, 1mL/ampul
cat. # 31001 (ea.)

PFTBA (MS Tuning Compound)

perfluorotributylamine (PFTBA)

Neat

1mL cat. # 30482 (ea.)
1g cat. # 33027 (ea.)

No data pack available.

GC/MS Tuning Mixture

benzidine — DFTPP
4,4'-DDT — pentachlorophenol

1,000µg/mL each in methylene chloride, 1mL/ampul
cat. # 31615 (ea.)

Aroclor Solutions

Compound	cat.# (ea.)
1,000µg/mL in hexane, 1mL/ampul	
Aroclor 1016	32006
Aroclor 1221	32007
Aroclor 1232	32008
Aroclor 1242	32009
Aroclor 1248	32010
Aroclor 1254	32011
Aroclor 1260	32012
Aroclor 1016/1260	32039
Aroclor 1262	32409
Aroclor 1268	32410
200µg/mL in isooctane, 1mL/ampul	
Aroclor 1016	32064
Aroclor 1221	32065
Aroclor 1232	32066
Aroclor 1242	32067
Aroclor 1248	32068
Aroclor 1254	32069
Aroclor 1260	32070
Aroclor 1016/1260	32299

Technical Chlordane, Toxaphene Solutions

Compound	cat.# (ea.)
1,000µg/mL in hexane, 1mL/ampul	
chlordane (technical)	32021
toxaphene	32005
5,000µg/mL in isooctane, 1mL/ampul	
chlordane (technical)	32072
toxaphene	32071
2,000µg/mL in methanol, 1mL/ampul	
chlordane (technical)	32016
toxaphene	32015

for **more** info

For a complete listing of solutions of individual environmental compounds, please see **pages 429-440**.

also **available**

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

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

See **page 76** for more information.

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

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

free data

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

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

Method 418.1 (Total Recoverable Petroleum Hydrocarbons [TRPH])

418.1 Calibration Mix

chlorobenzene	25.0% (v/v)
n-hexadecane	37.5%
isooctane	37.5%

1mL/ampul

cat. # 30080 (ea.)

Method 1311 (Toxicity Characteristics Leaching Procedure [TCLP])

TCLP VOA Mix (11 components)

benzene
2-butanone (MEK)
carbon tetrachloride
chlorobenzene
chloroform
1,4-dichlorobenzene
1,2-dichloroethane
1,1-dichloroethene
tetrachloroethene
trichloroethene
vinyl chloride

2,000µg/mL each in P&T methanol:water (90:10), 1mL/ampul

cat. # 30024 (ea.)

TCLP Acid Mix

2-methylphenol
3-methylphenol
4-methylphenol
pentachlorophenol
2,4,5-trichlorophenol
2,4,6-trichlorophenol

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

cat. # 31027 (ea.)

TCLP B/N Mix (7 components)

1,4-dichlorobenzene
2,4-dinitrotoluene
hexachlorobenzene
hexachlorobutadiene
hexachloroethane
nitrobenzene
pyridine

2,000µg/mL each in acetone, 1mL/ampul

cat. # 31028 (ea.)

TCLP Pesticide Mix

γ-BHC (lindane)
endrin
heptachlor
heptachlor epoxide (isomer B)
methoxychlor

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

cat. # 32013 (ea.)

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

TCLP Herbicide Mix

2,4-D (free acid)
Silvex (free acid)

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

cat. # 32014 (ea.)

TCLP Toxaphene Mix

toxaphene

2,000µg/mL in methanol, 1mL/ampul

cat. # 32015 (ea.)

TCLP Chlordane Mix

chlordane (technical)

2,000µg/mL in methanol, 1mL/ampul

cat. # 32016 (ea.)

Method 1664 (Oil & Grease)

1664 Oil & Grease Mix

hexadecane
stearic acid

4,000µg/mL each in acetone, 5mL/ampul

cat. # 31457 (ea.)

See page 371 for Resprep™ Oil & Grease SPE Disks.

Method 3500 (Organic Extraction Surrogates)

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

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

See Method 8270, pages 467-469.

Method 8010 (Halogenated Volatile Organics)

Note:
Method 8010 does not specify internal standards to be used. The analyst must select appropriate internal standards based on the particular samples being analyzed. Potential internal standards are listed on page 456.

624 Internal Standard Mix

bromochloromethane
2-bromo-1-chloropropane
1,4-dichlorobutane

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

502.2 Calibration Mix #1 (gases)

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

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

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

8010A Calibration Mix #2 (15 components)

benzyl chloride
bromodichloromethane
bromoform
carbon tetrachloride
chlorobenzene
1,2-dichlorobenzene
1,3-dichlorobenzene
1,1-dichloroethene
trans-1,2-dichloroethene
cis-1,3-dichloropropene
trans-1,3-dichloropropene
methylene chloride
tetrachloroethene
trichloroethene
1,2,3-trichloropropane

2,000µg/mL each in P&T methanol, 1mL/ampul
cat. # 30056 (ea.)

8010A Calibration Mix #3 (13 components)

bromobenzene
2-chloroethyl vinyl ether
chloroform
dibromochloromethane
dibromomethane
1,4-dichlorobenzene
1,1-dichloroethane
1,2-dichloroethane
1,2-dichloropropane
1,1,1,2-tetrachloroethane
1,1,2,2-tetrachloroethane
1,1,1-trichloroethane
1,1,2-trichloroethane

2,000µg/mL each in P&T methanol, 1mL/ampul
cat. # 30057 (ea.)

8010B Calibration Mix #4

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

2,000µg/mL each in P&T methanol, 1mL/ampul
cat. # 30058 (ea.)

BTEX Standard

benzene
ethylbenzene
toluene
m-xylene
o-xylene
p-xylene

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

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

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

Method 8010 (Halogenated Volatile Organics) *cont'd*

BTEX Gas Mix

Cylinder Construction: aluminum
Cylinder Fitting: CGA-180 outlet

benzene
ethylbenzene
toluene
m-xylene
o-xylene
p-xylene

In nitrogen, 104 liters @ 1,800psi
1ppm cat. # 34414 (ea.)
100ppb cat. # 34428 (ea.)

In nitrogen, 110 liters @ 1,800psi (Pi-marked Cylinder)
1ppm cat. # 34414-PI (ea.)
100ppb cat. # 34428-PI (ea.)

Requires a high-purity VOC single-stage regulator. See page 415.
No data pack available.

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

8011 Calibration Mix—EDB/DBCP

1,2-dibromo-3-chloropropane (DBCP)
1,2-dibromoethane (EDB)

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

Method 8020 (Aromatic Volatile Organics)

Internal and Surrogate Standards

Compound	cat.# (ea.)
2,000µg/mL in P&T methanol, 1mL/ampul	
α,α,α-trifluorotoluene	30048
4-bromofluorobenzene	30026
1,4-difluorobenzene	30032
fluorobenzene	30030

8020A Calibration Mix (10 components)

benzene
chlorobenzene
1,2-dichlorobenzene
1,3-dichlorobenzene
1,4-dichlorobenzene
ethylbenzene
toluene
m-xylene
o-xylene
p-xylene

2,000µg/mL each in P&T methanol, 1mL/ampul
cat. # 30222 (ea.)

Method 8021 (Volatile Organics)

502.2 Internal Standard Mix #2

2-bromo-1-chloropropane
fluorobenzene

2,000µg/mL each in P&T methanol, 1mL/ampul
cat. # 30041 (ea.)

8021 Surrogate Mix

2-bromochlorobenzene
1,4-dichlorobutane

1,500µg/mL each in P&T methanol, 1mL/ampul
cat. # 30086 (ea.)

did you know?

Restek reference materials include a silanized vial for sample transfer.

tech tip

To analyze compounds listed in Methods 8010 and 8020 concurrently, add BTEX Standard to the calibration curve mix (see bottom of first column on this page).

Method 8021 (Volatile Organics) *cont'd*

8021/502.2 Surrogate Mix #1

1-bromo-2-chloroethane
1-chloro-3-fluorobenzene
fluorobenzene

2,000µg/mL each in P&T methanol, 1mL/ampul
cat. # 30463 (ea.)

8021/502.2 Surrogate Mix #2

1-bromo-2-chloroethane
4-bromochlorobenzene
1-chloro-3-fluorobenzene
fluorobenzene

2,000µg/mL each in P&T methanol, 1mL/ampul
cat. # 30464 (ea.)

Method 8040 (Phenols)

8040 Surrogate Mix

2-fluorophenol
2,4,6-tribromophenol

2,000µg/mL each in isopropanol, 1mL/ampul
cat. # 31090 (ea.)

8040 Phenols Mix #1 (9 components)

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

2,000µg/mL each in isopropanol, 1mL/ampul
cat. # 31088 (ea.)

8040 Phenols Mix #2 (9 components)

sec-butyl-4,6-dinitrophenol (dinoseb)
2-chlorophenol
2,6-dichlorophenol
2,4-dimethylphenol
2,4-dinitrophenol
2-methylphenol
4-methylphenol
2,3,4,6-tetrachlorophenol
2,4,5-trichlorophenol

2,000µg/mL each in isopropanol, 1mL/ampul
cat. # 31089 (ea.)

Method 8061A (Phthalate Esters)

8061A Matrix Spike Solution

benzyl butyl phthalate
bis(2-ethylhexyl)phthalate

2,000µg/mL in acetone, 1mL/ampul
cat. # 31846 (ea.)

Benzyl Benzoate (Internal Standard)

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

8061A Surrogate Standard

dibenzyl phthalate
diphenyl isophthalate
diphenyl phthalate

500µg/mL in acetone, 1mL/ampul
cat. # 31848 (ea.)

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

Phthalate Ester Mix, EPA 8061A (16 components)

benzyl butyl phthalate
bis(2-ethoxyethyl)phthalate
bis(2-ethylhexyl)phthalate
bis(2-methoxyethyl)
bis(2-*n*-butoxyethyl)
bis(4-methyl-2-pentyl)
di-*n*-butylphthalate
di-*n*-hexyl phthalate
di-*n*-octyl phthalate
di-nonyl phthalate
diethylphthalate
dimethylphthalate
dipentylphthalate
hexyl 2-ethylhexyl phthalate
phthalic acid dicyclohexyl
phthalic acid diisobutyl ester

1000µg/mL each in hexane, 1mL/ampul
cat. # 31849 (ea.)

Method 8080, 8081 (Chlorinated Pesticides)

Organochlorine Pesticide Mix AB #1

(20 components)

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

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

Organochlorine Pesticide Mix AB #2

(20 components)

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

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

Organochlorine Pesticide Mix AB # 3

(20 components)

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

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

Method 8080, 8081 (Chlorinated Pesticides) *cont'd*

Pesticide Surrogate Mix

decachlorobiphenyl 2,4,5,6-tetrachloro-*m*-xylene
200µg/mL each in acetone, 1mL/ampul
cat. # 32000 (ea.)

Pesticide Surrogate Mix

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

In P&T methanol, 1mL/ampul
cat. # 32453 (ea.)

Method 8082, 8082A (PCBs)

PCB Congener Mix, Method 8082A

(19 components)

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

100µg/mL each in isooctane, 1mL/ampul
cat. # 32416 (ea.)

Method 8095 (Explosives by GC)

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

8095 Surrogate

3,4-dinitrotoluene

1,000µg/mL in methanol, 1mL/ampul
cat. # 31452 (ea.)

8095 Surrogate

2-methyl-4-nitroaniline

1,000µg/mL in methanol, 1mL/ampul
cat. # 31612 (ea.)

Method 8095 (Explosives by GC) *cont'd*

8095 Matrix Spike Mix A (10 components)

2-amino-4,6-dinitrotoluene	HMX*
4-amino-2,6-dinitrotoluene	RDX
1,3-dinitrobenzene	tetryl
2,4-dinitrotoluene	1,3,5-trinitrobenene
2,6-dinitrotoluene	2,4,6-trinitrotoluene

200µg/mL in acetonitrile (*HMX at 2,000µg/mL), 1mL/ampul
cat. # 31609 (ea.)

8095 Matrix Spike Mix B (7 components)

3,5-dinitroaniline*	3-nitrotoluene
nitrobenzene	4-nitrotoluene
nitroglycerine	PETN
2-nitrotoluene	

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

8095 Calibration Mix A (10 components)

2-amino-4,6-dinitrotoluene	HMX
4-amino-2,6-dinitrotoluene	RDX
1,3-dinitrobenzene	tetryl
2,4-dinitrotoluene	1,3,5-trinitrobenzene
2,6-dinitrotoluene	2,4,6-trinitrotoluene

1,000µg/mL each in acetonitrile, 1mL/ampul
cat. # 31607 (ea.)

8095 Calibration Mix B (7 components)

3,5-dinitroaniline*	3-nitrotoluene
nitrobenzene	4-nitrotoluene
nitroglycerine	PETN
2-nitrotoluene	

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

Single-Component Explosives Solutions

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

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

ACN=acetonitrile
M = methanol

new!

free data

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

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

References (Not available from Restek.)
[1]US 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.
[2]M. E. Walsh, T. Ranney, J. Chromatogr. Sci., Vol. 36, pp. 406-416, August 1998.

also available

Restek offers the ChemService product line of neat pesticides and metabolites.

See pages 429-440 for more information.

Chem Service

Method 8100 (Polycyclic Aromatic Hydrocarbons)

PAH Supplement Mix for Method 8100

(8 components)

benzo(j)fluoranthene	dibenzo(a,e)pyrene
dibenzo(a,h)acridine	dibenzo(a,h)pyrene
dibenzo(a,j)acridine	dibenzo(a,i)pyrene
7H-dibenzo(c,g)carbazole	3-methylcholanthrene

1000µg/mL each in methylene chloride, 1mL/ampul
cat. # 31857 (ea.)

SV Calibration Mix #5 / 610 PAH Mix

(16 components)

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

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

also available

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

See page 77 for details.

also available

Additional nitrogen/phosphorus pesticide mixes are listed on page 449.

Methods 8140, 8141 (Organophosphorus Pesticides)

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

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

8140/8141 Internal Standards & Surrogates

NPD Detector:

1,000µg/mL in acetone, 1mL/ampul
Internal Standard: 1-bromo-2-nitrobenzene
cat. # 32279 (ea.)

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

FPD Detector:

1,000µg/mL in acetone, 1mL/ampul
Internal Standard: none suggested
Surrogate: tributylphosphate
cat. # 32280 (ea.)

Surrogate: triphenylphosphate
cat. # 32281 (ea.)

8140/8141 OP Pesticide Calibration Mix A

(20 components)

azinphos methyl	fenthion
bolstar (sulprofos)	merphos
chlorpyrifos	methyl parathion
coumaphos	mevinphos
demeton, O & S	naled
diazinon	phorate
dichlorvos	ronnel
disulfoton	stirofos
ethoprop	tokuthion (prothiofos)
fensulfothion	trichloronate

200µg/mL each in hexane:acetone (95:5), 1mL/ampul
cat. # 32277 (ea.)

8141 OP Pesticide Calibration Mix B

(7 components)

dimethoate	parathion
EPN	sulfotepp
malathion	TEPP
monocrotophos	

200µg/mL each in hexane:acetone (95:5), 1mL/ampul
cat. # 32278 (ea.)

please note

Restek OPP standards are stable for at least 12 months.

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

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

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

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

Herbicide Mix #1 (7 components)
Free Acid Form:
2,4-D
2,4-DB
2,4,5-T
2,4,5-TP
dicamba
dichlorprop
dinoseb
200µg/mL each in methanol, 1mL/ampul
cat. # 32054 (ea.)

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

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

Derivatized Form:
dalapon methyl ester
2,000µg/mL in hexane, 1mL/ampul
cat. # 32057 (ea.)
1,000µg/mL in methanol, 1mL/ampul
cat. # 32254 (ea.)

Herbicide Mix #3
Free Acid Form:
MCPA
MCPP
20,000µg/mL each in methanol, 1mL/ampul
cat. # 32058 (ea.)

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

MCPA
1,000µg/mL in methanol, 1mL/ampul
cat. # 32269 (ea.)

MCPP
1,000µg/mL in methanol, 1mL/ampul
cat. # 32271 (ea.)

Herbicide Mix #4 (8 components)
Free Acid Form:
acifluorfen
bentazon
chloramben
DCPA diacid
3,5-dichlorobenzoic acid
4-nitrophenol
pentachlorophenol
picloram
200µg/mL each in methanol, 1mL/ampul
cat. # 32061 (ea.)

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

Picloram
1,000µg/mL in methanol, 1mL/ampul
cat. # 32265 (ea.)

3,5-Dichlorobenzoic Acid Surrogate Standard
3,5-dichlorobenzoic acid
1,000µg/mL in MTBE, 1mL/ampul
cat. # 31652 (ea.)

3,5-Dichlorobenzoic Acid Methyl Ester Surrogate Standard
3,5-dichlorobenzoic acid methyl ester
1,000µg/mL in MTBE, 1mL/ampul
cat. # 31649 (ea.)
1,000µg/mL in methanol, 1mL/ampul
cat. # 32264 (ea.)

Mike Shuey
Customer Service Representative
4+ years of service!

did you **know**?
We have more than 2,000 pure, characterized, neat compounds in our inventory! If you do not see the EXACT mixture you need listed on any of these pages, call us.

See **page 427** for our Custom Reference Materials Request Form.

also **available**
Additional chlorinated acid herbicides mixes:

see Method 555, **page 453** and Method 8321, **page 470**

restek
innovation!

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

Note: Because chloroprene is not analyzed by many laboratories, it is not included in our 8240 VOA mixes. Chloroprene is included in our 8260B MegaMix® Calibration Mix. Refer to **page 465.**

Method 8240 (Volatile Organic Compounds [VOC])

502.2 Calibration Mix #1 (gases)

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

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

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

VOA Calibration Mix #1 (ketones)

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

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

VOA Purgeable Halocarbon Mix #1

(23 components)

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

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

8240 Volatiles Mix #1A (12 components)

allyl chloride
benzyl chloride
1,2-dibromo-3-chloropropane
1,2-dibromoethane
dibromomethane
cis-1,4-dichloro-2-butene
trans-1,4-dichloro-2-butene
1,4-dioxane
iodomethane
pentachloroethane
1,1,1,2-tetrachloroethane
1,2,3-trichloropropane

2,000µg/mL each in P&T methanol, 1mL/ampul
cat. # 30217 (ea.)

8240 Volatiles Mix #2A

carbon disulfide
2-picoline
pyridine

2,000µg/mL each in P&T methanol, 1mL/ampul
cat. # 30218 (ea.)

Method 8240 (Volatile Organic Compounds [VOC]) *cont'd*

8240 Nitriles Mix (7 components)

acrylonitrile
ethyl methacrylate
malononitrile
methacrylonitrile
methyl methacrylate
propionitrile
styrene

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

8240 Alcohols Mix

allyl alcohol
2-chloroethanol
ethanol
isobutyl alcohol
propargyl alcohol

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

Glycols Standard

ethylene glycol
propylene glycol

50,000µg/mL each in DI water, 1mL/ampul
cat. # 30471 (ea.)

BTEX Standard

benzene
ethylbenzene
toluene
m-xylene
o-xylene
p-xylene

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

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

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

BTEX Gas Mix

Cylinder Construction: aluminum
Cylinder Fitting: CGA-180 outlet

benzene
ethylbenzene
toluene
m-xylene
o-xylene
p-xylene

In nitrogen, 104 liters @ 1,800psi
1ppm cat. # 34414 (ea.)
100ppb cat. # 34428 (ea.)

In nitrogen, 110 liters @ 1,800psi (Pi-marked Cylinder)
1ppm cat. # 34414-PI (ea.)
100ppb cat. # 34428-PI (ea.)

Requires a high-purity VOC single-stage regulator. See page 415.
No data pack available.

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

8260A Internal Standard Mix

chlorobenzene-d5
1,4-dichlorobenzene-d4
fluorobenzene

2,500µg/mL each in P&T methanol, 1mL/ampul
cat. # 30241 (ea.)

8260 Internal Standard Mix

chlorobenzene-d5
1,4-dichlorobenzene-d4
1,4-difluorobenzene
pentafluorobenzene

2,500µg/mL each in P&T methanol, 1mL/ampul
cat. # 30074 (ea.)

8260A Surrogate Mix

4-bromofluorobenzene
dibromofluoromethane
1,2-dichloroethane-d4
toluene-d8

2,500µg/mL each in P&T methanol, 1mL/ampul
cat. # 30240 (ea.)

8260 Surrogate Mix

4-bromofluorobenzene
dibromofluoromethane
toluene-d8

2,500µg/mL each in P&T methanol, 1mL/ampul
cat. # 30073 (ea.)

8260B Matrix Spike Mix

benzene
chlorobenzene
1,1-dichloroethene
toluene
trichloroethylene

2,500µg/mL each in P&T methanol, 1mL/ampul
cat. # 30479 (ea.)

8240/8260 System Performance Check Mix

bromoform
chlorobenzene
chloromethane
1,1-dichloroethane
1,1,2,2-tetrachloroethane

2,000µg/mL each in P&T methanol, 1mL/ampul
cat. # 30075 (ea.)

4-Bromofluorobenzene

2,500µg/mL in P&T methanol, 1mL/ampul
cat. # 30067 (ea.)

10,000µg/mL in P&T methanol, 1mL/ampul
cat. # 30082 (ea.)

1,4-Dioxane-d8

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

PFTBA (MS Tuning Compound)

perfluorotributylamine (PFTBA)

Neat

1mL cat. # 30482 (ea.)
1g cat. # 33027 (ea.)

No data pack available.

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

8260B MegaMix® Calibration Mix (76 components)

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

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

2-Chloroethyl Vinyl Ether

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

8260B MegaMix® Calibration Mix Kit

kit

30633: 8260B MegaMix®
30265: 2-chlorethyl vinyl ether

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

8240/8260 Calibration Check Mix

chloroform
1,1-dichloroethene
1,2-dichloropropane
ethylbenzene
toluene
vinyl chloride

2,000µg/mL each in P&T methanol, 1mL/ampul
cat. # 30427 (ea.)

Antifoam Agent for Purge & Trap Samples

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

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

No data pack available.

also available

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

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

See page 87 for more information.

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

502.2 Calibration Mix #1 (gases)

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

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

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

VOA Calibration Mix #1 (ketones)

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

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

8260B Acetate Mix

vinyl acetate
ethyl acetate
isopropyl acetate
n-propyl acetate
n-butyl acetate

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

8260B Acetate Mix (Revised) (7 components)

n-amyl acetate
butyl acetate
ethyl acetate
isopropyl acetate
methyl acetate
propyl acetate
vinyl acetate

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

California Oxygenates Mix

diisopropyl ether	2,000µg/mL	*tert*-butyl alcohol	10,000
ethyl-*tert*-butyl ether	2,000	methyl *tert*-butyl ether	2,000
tert-amyl methyl ether	2,000		

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

Oxygenates

tert-amyl ethyl ether (TAEE)	2,000µg/mL
tert-amyl methyl ether (TAME)	2,000
tert-butyl alcohol (TBA)	10,000
diisopropyl ether (DIPE)	2,000
ethyl-*tert*-butyl ether (ETBE)	2,000
methyl *tert*-butyl ether (MTBE)	2,000

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

Single-Component Oxygenates Solutions

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

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

PTM = purge & trap grade methanol
W = DI water

Acrolein

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

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

1,2-Dichlorotetrafluoroethane (CFC-114)

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

Chloroprene

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

Vinyl Acetate

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

free data

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

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

Method 8270D, 8270C (Semivolatile Organic Compounds)

SV Internal Standard Mix

acenaphthene-d10
chrysene-d12
1,4-dichlorobenzene-d4
naphthalene-d8
perylene-d12
phenanthrene-d10

2,000µg/mL each in methylene chloride, 1mL/ampul
cat. # 31206 (ea.)

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

Revised SV Internal Standard Mix

(7 components)

acenaphthane-d10
chrysene-d12
1,4-dichlorobenzene-d4
1,4-dioxane-d8
naphthalene-d8
perylene-d12
phenanthrene-d10

2,000µg/mL each in methylene chloride, 1mL/ampul
cat. # 31885 (ea.)

4,000µg/mL each in methylene chloride, 1mL/ampul
cat. # 31886 (ea.)

B/N Surrogate Mix (4/89 SOW)

2-fluorobiphenyl
nitrobenzene-d5
p-terphenyl-d14

1,000µg/mL each in methylene chloride, 1mL/ampul
cat. # 31024 (ea.)

5,000µg/mL each in methylene chloride, 1mL/ampul
cat. # 31062 (ea.)

5,000µg/mL each in methylene chloride, 5mL/ampul
cat. # 31086 (ea.)

5,000µg/mL each in methylene chloride, 10mL/ampul
cat. # 33028 (ea.)

Revised B/N Surrogate Mix

2-fluorobiphenyl
nitrobenzene-d5
p-terphenyl-d14
pyrene-d10

1,000µg/mL each in methylene chloride, 1mL/ampul
cat. # 31887 (ea.)

5,000µg/mL each in methylene chloride, 1mL/ampul
cat. # 31888 (ea.)

5,000µg/mL each in methylene chloride, 5mL/ampul
cat. # 31889 (ea.)

Acid Surrogate Mix (4/89 SOW)

2-fluorophenol
phenol-d6
2,4,6-tribromophenol

2,000µg/mL each in methanol, 1mL/ampul
cat. # 31025 (ea.)

10,000µg/mL each in methanol, 1mL/ampul
cat. # 31063 (ea.)

10,000µg/mL each in methanol, 5mL/ampul
cat. # 31087 (ea.)

10,000µg/mL each in methylene chloride, 10mL/ampul
cat. # 33029 (ea.)

B/N Matrix Spike Mix

acenaphthene
1,4-dichlorobenzene
2,4-dinitrotoluene
N-nitroso-di-*n*-propylamine
pyrene
1,2,4-trichlorobenzene

1,000µg/mL each in methanol, 1mL/ampul
cat. # 31004 (ea.)

5,000µg/mL each in methanol, 1mL/ampul
cat. # 31074 (ea.)

5,000µg/mL each in methanol, 5mL/ampul
cat. # 31084 (ea.)

5,000µg/mL each in methylene chloride, 10mL/ampul
cat. # 33030 (ea.)

Acid Matrix Spike Mix

4-chloro-3-methylphenol
2-chlorophenol
4-nitrophenol
pentachlorophenol
phenol

2,000µg/mL each in methanol, 1mL/ampul
cat. # 31014 (ea.)

10,000µg/mL each in methylene chloride, 10mL/ampul
cat. # 33031 (ea.)

10,000µg/mL each in methanol, 1mL/ampul
cat. # 31061 (ea.)

10,000µg/mL each in methanol, 5mL/ampul
cat. # 31071 (ea.)

GC/MS Tuning Mixture

benzidine
4,4'-DDT
DFTPP
pentachlorophenol

1,000µg/mL each in methylene chloride, 1mL/ampul
cat. # 31615 (ea.)

SV Tuning Compound

decafluorotriphenylphosphine (DFTPP)

2,500µg/mL in methylene chloride, 1mL/ampul
cat. # 31001

PFTBA (MS Tuning Compound)

perfluorotributylamine (PFTBA)

Neat

1mL cat. # 30482 (ea.)

1g cat. # 33027 (ea.)

No data pack available.

8270 B/N Calibration Check Mix (7 components)

acenaphthene
benzo(a)pyrene
1,4-dichlorobenzene
di-*n*-octyl phthalate
diphenylamine
fluoranthene
hexachlorobutadiene

2,000µg/mL each in methylene chloride, 1mL/ampul
cat. # 31616 (ea.)

8270 Acid Calibration Check Mix

4-chloro-3-methylphenol
2,4-dichlorophenol
2-nitrophenol
pentachlorophenol
phenol
2,4,6-trichlorophenol

2,000µg/mL each in methylene chloride, 1mL/ampul
cat. # 31617 (ea.)

SV System Performance Check Mix (SPCC)

2,4-dinitrophenol
hexachlorocyclopentadiene
4-nitrophenol
N-nitroso-di-*n*-propylamine

2,000µg/mL each in methylene chloride, 1mL/ampul
cat. # 31689 (ea.)

605 Benzidines Calibration Mix

benzidine
3,3'-dichlorobenzidine

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

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

8270 Benzidines Mix

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

2,000µg/mL each in methanol, 1mL/ampul
cat. # 31688 (ea.)

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

Ken Poorman
International Customer Service Representative

did you **know**?

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

See page 427 for our Custom Reference Materials Request Form.

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

ordering note

Easier calibration!
8270 MegaMix® and 8270 Matrix Spike Mix include 3-methylphenol and 4-methylphenol at 1/2 x concentration of other components.

did you know?

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

See **page 427** for our Custom Reference Materials Request Form.

8270 MegaMix® (76 components)

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

1,000µg/mL each in methylene chloride, 1mL/ampul*
cat. # 31850 (ea.)

*3-methylphenol and 4-methylphenol concentration is 500µg/mL.
[1]1,2-diphenylhydrazine (8270-listed analyte) decomposes to azobenzene (mix component) in the injector.
[2]N-nitrosodiphenylamine (8270-listed analyte) decomposes to diphenylamine (mix component) in the injector.

8270 Matrix Spike Mix (76 components)

same list as 8270 MegaMix® above

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

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

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

8270/Appendix IX Kit

kit

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

Contains 1mL each of these mixtures.
cat. # 31815 (kit)

Benzoic Acid

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

Appendix IX Mix #1 (18 components)

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

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

Appendix IX Mix #2 (32 components)

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

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

Organophosphorus Pesticide Mix, 8270/Appendix IX (9 components)

dimethoate
disulfoton
famphur
methyl parathion
O,O,O-triethyl phosphorothioate
parathion (ethyl parathion)
phorate
sulfotepp
zinophos (thionazine)

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

Organochlorine Pesticide Mix AB # 3

(20 components)

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

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

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

8270 Calibration Mix #1 (19 components)

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

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

8270 Calibration Mix #2 (11 components)

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

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

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

8270 Calibration Mix #3 (23 components)

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

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

8270 Calibration Mix #4 (22 components)

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

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

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

8270 Calibration Mix #5 (19 components)

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

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

8270 Calibration Mix #6 (10 components)

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

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

Aramite

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

605 Benzidines Calibration Mix

benzidine
3,3'-dichlorobenzidine

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

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

Aroclor Solutions

Compound	cat.# (ea.)
1,000µg/mL in hexane, 1mL/ampul	
Aroclor 1016	32006
Aroclor 1221	32007
Aroclor 1232	32008
Aroclor 1242	32009
Aroclor 1248	32010
Aroclor 1254	32011
Aroclor 1260	32012
Aroclor 1016/1260	32039
Aroclor 1262	32409
Aroclor 1268	32410
200µg/mL in isooctane, 1mL/ampul	
Aroclor 1016	32064
Aroclor 1221	32065
Aroclor 1232	32066
Aroclor 1242	32067
Aroclor 1248	32068
Aroclor 1254	32069
Aroclor 1260	32070
Aroclor 1016/1260	32299

free data

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

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

Method 8310 (Polycyclic Aromatic Hydrocarbons [PAHs])

EPA Method 8310 PAH Mixture

(18 components)

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

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

cat. # 31841 (ea.)

EPA Method 8310 Surrogate Standard

decafluorobiphenyl

1,000µg/mL in acetonitrile, 1mL/ampul

cat. # 31842 (ea.)

EPA Method 8310 Quality Control Check

(18 components)

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

In acetonitrile, 1mL/ampul

cat. # 31843 (ea.)

Method 8315 (Aldehydes/Ketones-DNPH by HPLC)

Aldehyde-Ketone-DNPH TO-11A Calibration Mix

(15 components)

acetaldehyde-DNPH	formaldehyde-DNPH
acetone-DNPH	hexaldehyde-DNPH
acrolein-DNPH	isovaleraldehyde-DNPH
benzaldehyde-DNPH	propionaldehyde-DNPH
n-butyraldehyde-DNPH	*m*-tolualdehyde-DNPH
crotonaldehyde-DNPH	*o*-tolualdehyde-DNPH
2,5-dimethylbenz aldehyde-DNPH	*p*-tolualdehyde-DNPH
	valeraldehyde-DNPH

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

cat. # 31808 (ea.)

*Concentration calculated as aldehyde.

Formaldehyde-DNPH Mix

formaldehyde-DNPH

500µg/mL* in acetonitrile, 1mL/ampul

cat. # 31837 (ea.)

*Concentration calculated as aldehyde.

Method 8315 (Aldehydes/Ketones-DNPH by HPLC) *cont'd*

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

new!

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

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

cat. # 33093 (ea.)

DNPH Reference Materials

new!

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

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

ACN=acetonitrile

Method 8321 (Chlorinated Acids by HPLC)

Chlorinated Acids by HPLC, Mix A (8 components)

acifluorfen (Blazer®)	dicamba
bentazon	dichlorprop
chloramben	picloram
2,4-D	2,4,5-TP (Silvex)

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

cat. # 32431 (ea.)

Chlorinated Acids by HPLC, Mix B (8 components)

2,4-DB	MCPP (mecoprop)
3,5-dichlorobenzoic acid	4-nitrophenol
dinoseb	pentachlorophenol
MCPA	2,4,5-T

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

cat. # 32430 (ea.)

Chlorinated Acid Herbicide Mix

2,4-dichlorophenoxyacetic acid (2,4-D)	2,4,5-TP (Silvex)

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

cat. # 32429 (ea.)

Dalapon (2,2-dichloropropionic acid)

1,000µg/mL in acetonitrile, 1mL/ampul

cat. # 32432 (ea.)

1,000µg/mL in methanol, 1mL/ampul

cat. # 32253 (ea.)

2,000µg/mL in methanol, 1mL/ampul

cat. # 32056 (ea.)

also available

See page 457 for chlordane and toxaphene reference materials.

did you know?

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

See page 427 for our Custom Reference Materials Request Form.

Rob Lindquist
Pricing & Content Systems Coordinator
12+ years of service!

Method 8330 (Nitroaromatics and Nitramines by HPLC)

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

8330 Internal Standards

3,4-dinitrotoluene

1,000µg/mL in methanol, 1mL/ampul
cat. # 31452 (ea.)

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

new!

8330 Surrogate

1,2-dinitrobenzene

1,000µg/mL in methanol, 1mL/ampul
cat. # 31453 (ea.)

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

new!

2-amino-4,6-dinitrotoluene
4-amino-2,6-dinitrotoluene
3,5-dinitroaniline
1,3-dinitrobenzene
2,4-dinitrotoluene
2,6-dinitrotoluene
HMX
nitrobenzene
nitroglycerin
2-nitrotoluene
3-nitrotoluene
4-nitrotoluene
PETN
RDX
tetryl
1,3,5-trinitrobenzene
2,4,6-trinitrotoluene

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

Nitroaromatics and Nitramine Explosives by HPLC (14 components)

1,3-dinitrobenzene
2-amino-4,6-dinitrotoluene
4-amino-2,6-dinitrotoluene
2,4-dinitrotoluene
2,6-dinitrotoluene
HMX
nitrobenzene
2-nitrotoluene
3-nitrotoluene
4-nitrotoluene
RDX
tetryl
1,3,5-trinitrobenzene
2,4,6-trinitrotoluene

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

8330 Calibration Mix #1 (7 components)

1,3-dinitrobenzene
2,4-dinitrotoluene
HMX
nitrobenzene
RDX
1,3,5-trinitrobenzene
2,4,6-trinitrotoluene

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

8330 Calibration Mix #2 (7 components)

2-amino-4,6-dinitrotoluene
4-amino-2,6-dinitrotoluene
2,6-dinitrotoluene
2-nitrotoluene
3-nitrotoluene
4-nitrotoluene
tetryl

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

Single-Component Explosives Solutions

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

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

ACN=acetonitrile
M = methanol

it's a fact

For excellent resolution and confirmation of EPA Method 8330B compounds, we recommend:

Ultra C18 primary column (250 x 4.6mm, cat.# 9174575, **page 322**)

Pinnacle™ II Biphenyl confirmation column (150 x 4.6mm, cat.# 9209565, **page 317**)

For example chromatography, dowload our *Trace-Level Explosives Analysis by HPLC* applications note from **www.restek.com**.
lit. cat.# 59361A

also available

See materials for GC Method 8095 on **pages 461.**

did you know?

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

EPA Superfund Contract Lab Program (CLP)

Joe Moodler
Analytical Reference Materials Technical Supervisor
18+ years of service!

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

SOM01.1 (Volatiles), QA Mixes

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

benzene-d6
chloroethane-d5
chloroform-d
1,2-dichlorobenzene-d4
1,2-dichloroethane-d4
1,1-dichloroethene-d2
1,2-dichloropropane-d6
1,3-dichloropropene-d4*
1,1,2,2-tetrachloroethane-d2
toluene-d8
vinyl chloride-d3

500µg/mL each in deuterated methanol (MeOD), 1mL/ampul
cat. # 30624 (ea.)

1,000µg/mL each in deuterated methanol (MeOD), 1mL/ampul
cat. # 30635 (ea.) **new!**

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

SOM01.1 VOA Ketone Deuterated Monitoring Compounds

2-butanone-d5
2-hexanone-d5

500µg/mL each in deuterium oxide (D_2O), 1mL/ampul
cat. # 30625 (ea.)

1,000µg/mL each in deuterium oxide (D_2O), 1mL/ampul
cat. # 30636 (ea.) **new!**

SOM01.1 VOA DMC Kit

30624: Non-Ketones
30625: Ketones

kit

500µg/mL. 1mL each of these mixtures.
cat. # 30630 (kit)

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

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

CLP 04.1 VOA Internal Standard/SMC Spike Mix

bromochloromethane
4-bromofluorobenzene
chlorobenzene-d5
1,2-dichloroethane-d4
1,4-difluorobenzene
toluene-d8

2,500µg/mL each in P&T methanol, 1mL/ampul
cat. # 30457 (ea.)

VOA Internal Standard Mix

bromochloromethane
1,4-difluorobenzene
chlorobenzene-d5

2,500µg/mL each in P&T methanol, 1mL/ampul
cat. # 30011 (ea.)

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

VOA Surrogate Spike Mix

4-bromofluorobenzene
1,2-dichloroethane-d4
toluene-d8

2,500µg/mL each in P&T methanol, 1mL/ampul
cat. # 30004 (ea.)

VOA Matrix Spike Mix

benzene
chlorobenzene
1,1-dichloroethene
toluene
trichloroethene

2,500µg/mL each in P&T methanol, 1mL/ampul
cat. # 30005 (ea.)

VOA Screening Mix #1

benzene
ethylbenzene
toluene
o-xylene
p-xylene

1,000µg/mL each in P&T methanol, 1mL/ampul
cat. # 30001 (ea.)

VOA Screening Mix #2

n-dodecane
n-nonane

1,000µg/mL each in P&T methanol, 1mL/ampul
cat. # 30002 (ea.)

VOA Tuning Compound

4-bromofluorobenzene

5,000µg/mL in P&T methanol, 1mL/ampul
cat. # 30003 (ea.)

PFTBA (MS Tuning Compound)

perfluorotributylamine (PFTBA)

Neat

1mL cat. # 30482 (ea.)
1g cat. # 33027 (ea.)

No data pack available.

L/C VOA Lab Control Sample #1 (11 components)

benzene
bromoform
carbon tetrachloride
1,2-dibromoethane
1,4-dichlorobenzene
1,2-dichloroethane
1,2-dichloropropane
cis-1,3-dichloropropene
tetrachloroethene
1,1,2-trichloroethane
trichloroethene

2,500µg/mL each in P&T methanol, 1mL/ampul
cat. # 30092 (ea.)

free data

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

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

also available

See **pages 563-574** for volatiles analysis chromatograms.

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

L/C VOA Lab Control Sample #2

vinyl chloride

2,500µg/mL in P&T methanol, 1mL/ampul

cat. # 30093 (ea.)

L/C VOA Internal Standard Mix

chlorobenzene-d5
1,4-dichlorobenzene-d4
1,4-difluorobenzene

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

cat. # 30091 (ea.)

04.2 and 04.1 (Volatiles), Calibration Mixes

CLP 04.1 VOA CAL2000 MegaMix®

(40 components)

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

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

cat. # 30456 (ea.)

502.2 Calibration Mix #1 (gases)

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

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

cat. # 30439 (ea.)

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

cat. # 30042 (ea.)

VOA Calibration Mix #1 (ketones)

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

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

cat. # 30006 (ea.)

3/90 SOW (Volatiles), Calibration Mixes

CLP VOA CAL2000 MegaMix® (28 components)

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

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

cat. # 30632 (ea.)

Vinyl Acetate

2,000µg/mL in P&T methanol, 1mL/ampul

cat. # 30216 (ea.)

CLP VOA CAL2000 MegaMix® Kit

kit

30632: CLP VOA CAL2000 MegaMix®
30216: vinyl acetate

Contains 1mL each of these mixtures.

cat. # 30438 (kit)

VOA Calibration Mix #2 (7 components)

benzene
carbon disulfide
ethylbenzene
toluene
vinyl acetate
o-xylene
p-xylene

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

cat. # 30007 (ea.)

VOA Calibration Mix #3 (10 components)

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

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

cat. # 30008 (ea.)

VOA Calibration Mix #4 (12 components)

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

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

cat. # 30009 (ea.)

VOA Calibration Mix #5 (gases)

bromomethane
chloroethane
chloromethane
vinyl chloride

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

cat. # 30010 (ea.)

frequently asked question

Why don't MegaMix® mixtures contain ketones required by the methods?

In methanol solution, ketones can interact with other compounds, resulting in a methoxy addition to the ketone.[1] The presence of halogenated compounds greatly speeds the reaction, limiting shelf-life to less than two months. Because none of eighteen preservatives (including water) was successful at inhibiting the reaction, we do not combine ketones with halogenated compounds in any of our calibration mixtures.

Reference

[1] *A comparison of ketone stability in calibration mixes for EPA Method 524.2 Revision 4.0,* Christopher Cox, et. al., 1997 Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, poster number 467P.

Antifoam Agent for Purge & Trap Samples

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

Neat, 1mL/ampul

cat. # 31822 (ea.)

No data pack available.

OLC 03.2 (Volatiles), Calibration Mixes

OLC 03.2 VOA MegaMix® (42 components)

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

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

L/C VOA Calibration Mix #6

bromochloromethane
1,2-dibromo-3-chloropropane (DBCP)
1,2-dibromoethane
1,2-dichlorobenzene
1,3-dichlorobenzene
1,4-dichlorobenzene

2,000µg/mL each in P&T methanol, 1mL/ampul
cat. # 30090 (ea.)

Additional VOA Calibration Mixes Required:

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

See pages 472–473 for mix compositions.

SOM01.1 (Semivolatiles), QA Mixes

SOM01.1 Deuterated Monitoring Compound Mix w/ SIM Compounds (18 components)

acenaphthylene-d8
anthracene-d10
benzo(a)pyrene-d12
bis(2-chloroethyl)ether-d8
4-chloroaniline-d4
2-chlorophenol-d4
2,4-dichlorophenol-d3
dimethylphthalate-d6
4,6-dinitro-2-methylphenol-d
fluoranthene-d10
fluorene-d10
2-methylnaphthalene-d10
4-methylphenol-d8
nitrobenzene-d5
2-nitrophenol-d4
4-nitrophenol-d4
phenol-d5
pyrene-d10

2,000µg/mL each in methylene chloride, 1mL/ampul
cat. # 33918 (ea.)

SOM01.1 Deuterated Monitoring Compound Mix SIM Compounds

fluoranthene-d10
2-methylnaphthalene-d10

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

CCME F2 Surrogate Standard

2-methylnonane

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

Antifoam Agent for Purge & Trap Samples

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

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

No data pack available.

also available

OLC 03.2 SVOA Deuterated Monitoring Compounds. See page 478.

SOM01.1 (Semivolatiles), QA Mixes *cont'd*

SOM01.1 SVOA B/N Matrix Spike Mix

acenaphthene
2,4-dinitrotoluene
N-nitroso-di-*n*-propylamine
pyrene

5,000µg/mL each in methanol, 1mL/ampul
cat. # 33916 (ea.)

5,000µg/mL each in methanol, 5mL/ampul
cat. # 33917 (ea.)

04.2, 04.1, 4/89, and 3/90 SOW (Semivolatiles), QA Mixes

SV Internal Standard Mix

acenaphthene-d10
chrysene-d12
1,4-dichlorobenzene-d4
naphthalene-d8
perylene-d12
phenanthrene-d10

2,000µg/mL each in methylene chloride, 1mL/ampul
cat. # 31206 (ea.)

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

Revised SV Internal Standard Mix (7 components)

acenaphthane-d10
chrysene-d12
1,4-dichlorobenzene-d4
1,4-dioxane-d8
naphthalene-d8
perylene-d12
phenanthrene-d10

2,000µg/mL each in methylene chloride, 1mL/ampul
cat. # 31885 (ea.)

4,000µg/mL each in methylene chloride, 1mL/ampul
cat. # 31886 (ea.)

Acid Surrogate Standard Mix (3/90 SOW)

2-chlorophenol-d4
2-fluorophenol
phenol-d6
2,4,6-tribromophenol

1,500µg/mL each in methanol, 1mL/ampul
cat. # 31003 (ea.)

7,500µg/mL each in methanol, 1mL/ampul
cat. # 31073 (ea.)

7,500µg/mL each in methanol, 5mL/ampul
cat. # 31083 (ea.)

Acid Surrogate Mix (4/89 SOW)

2-fluorophenol
phenol-d6
2,4,6-tribromophenol

2,000µg/mL each in methanol, 1mL/ampul
cat. # 31025 (ea.)

10,000µg/mL each in methanol, 1mL/ampul
cat. # 31063 (ea.)

10,000µg/mL each in methanol, 5mL/ampul
cat. # 31087 (ea.)

10,000µg/mL each in methylene chloride, 10mL/ampul
cat. # 33029 (ea.)

Revised B/N Surrogate Mix

2-fluorobiphenyl
nitrobenzene-d5
p-terphenyl-d14
pyrene-d10

1,000µg/mL each in methylene chloride, 1mL/ampul
cat. # 31887 (ea.)

5,000µg/mL each in methylene chloride, 1mL/ampul
cat. # 31888 (ea.)

5,000µg/mL each in methylene chloride, 5mL/ampul
cat. # 31889 (ea.)

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

CLP 04.1 BNA Surrogate Mix (8 components)

2-chlorophenol-d4	1,500µg/mL	nitrobenzene-d5	1,000
1,2-dichlorobenzene-d4	1,000	phenol-d6	1,500
2-fluorobiphenyl	1,000	*p*-terphenyl-d14	1,000
2-fluorophenol	1,500	2,4,6-tribromophenol	1,500

In methylene chloride, 1mL/ampul
cat. # 31493 (ea.)

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

1,2-dichlorobenzene-d4 — nitrobenzene-d5
2-fluorobiphenyl — *p*-terphenyl-d14

1,000µg/mL each in methylene chloride, 1mL/ampul
cat. # 31002 (ea.)

5,000µg/mL each in methylene chloride, 1mL/ampul
cat. # 31072 (ea.)

5,000µg/mL each in methylene chloride, 5mL/ampul
cat. # 31082 (ea.)

B/N Surrogate Mix (4/89 SOW)

2-fluorobiphenyl — *p*-terphenyl-d14
nitrobenzene-d5

1,000µg/mL each in methylene chloride, 1mL/ampul
cat. # 31024 (ea.)

5,000µg/mL each in methylene chloride, 1mL/ampul
cat. # 31062 (ea.)

5,000µg/mL each in methylene chloride, 5mL/ampul
cat. # 31086 (ea.)

5,000µg/mL each in methylene chloride, 10mL/ampul
cat. # 33028 (ea.)

Acid Matrix Spike Mix

4-chloro-3-methylphenol — pentachlorophenol
2-chlorophenol — phenol
4-nitrophenol

1,500µg/mL each in methanol, 1mL/ampul
cat. # 31005 (ea.)

7,500µg/mL each in methanol, 1mL/ampul
cat. # 31075 (ea.)

7,500µg/mL each in methanol, 5mL/ampul
cat. # 31085 (ea.)

CLP 04.1 B/N Matrix Spike Mix

acenaphthene — N-nitroso-di-*n*-propylamine
2,4-dinitrotoluene — pyrene

1,000µg/mL each in methanol, 1mL/ampul
cat. # 31492 (ea.)

B/N Matrix Spike Mix

acenaphthene — N-nitroso-di-*n*-propylamine
1,4-dichlorobenzene — pyrene
2,4-dinitrotoluene — 1,2,4-trichlorobenzene

1,000µg/mL each in methanol, 1mL/ampul
cat. # 31004 (ea.)

5,000µg/mL each in methanol, 1mL/ampul
cat. # 31074 (ea.)

5,000µg/mL each in methanol, 5mL/ampul
cat. # 31084 (ea.)

5,000µg/mL each in methylene chloride, 10mL/ampul
cat. # 33030 (ea.)

SV Screening Mix

di-*n*-octyl phthalate — phenol
phenanthrene

2,500µg/mL each in methylene chloride, 1mL/ampul
cat. # 31000 (ea.)

Low Concentration Semivolatiles, QA Mixes

L/C Acid Surrogate Mix

2-fluorophenol 1000µg/mL — 2,4,6-tribromophenol 3000
phenol-d6 1000

In methanol, 1mL/ampul
cat. # 31207 (ea.)

L/C Acid Lab Control Sample

2-chlorophenol — 2,4,6-trichlorophenol
phenol

2,000µg/mL each in methanol, 1mL/ampul
cat. # 31212 (ea.)

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

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

Ampul 1:

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

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

Ampul 2:

4-chloroaniline

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

cat. # 31241 (ea.)

SV Tuning Compound

decafluorotriphenylphosphine (DFTPP)

2,500µg/mL in methylene chloride, 1mL/ampul
cat. # 31001 (ea.)

PFTBA (MS Tuning Compound)

perfluorotributylamine (PFTBA)

Neat

1mL cat. # 30482 (ea.)
1g cat. # 33027 (ea.)

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Velvet Rossman
International Customer Service Representative

tech tip

CLP OLM 04.1 Semivolatiles Dilution

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

SOM01.1 (Semivolatiles), Calibration Mixes

SOM01.1 SVOA MegaMix®

(67 components)

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

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

*3-methylphenol and 4-methylphenol concentration is 500µg/mL.
[1] N-nitrosodiphenylamine (CLP-listed analyte) decomposes to diphenylamine (mix component) in the injector.

Benzaldehyde

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

SOM01.1 SVOA MegaMix® Kit

33019: SOM01.1 SVOA MegaMix® 1,000µg/mL
33017: Benzaldehyde 2,000µg/mL
kit

Contains 1mL each of these mixtures.
cat. # 33005 (kit)

04.2 and 04.1 (Semivolatiles), Calibration Mixes

CLP 04.1 B/N MegaMix® (49 components)

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

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

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

Benzaldehyde

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

CLP 04.1 B/N MegaMix® Kit

33018: CLP 04.1 B/N MegaMix® 1,000µg/mL
33017: Benzaldehyde 2,000µg/mL
kit

Contains 1mL each of these mixtures.
cat. # 33014 (kit)

CLP 04.1 Phenols Calibration Mix (14 components)

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

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

Benzidine Mix

benzidine
3,3'-dichlorobenzidine

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

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

SV Calibration Mix #1

benzyl alcohol
4-chloroaniline
2-nitroaniline
3-nitroaniline
4-nitroaniline

2,000µg/mL each in methylene chloride, 1mL/ampul
cat. # 31007 (ea.)

SV Calibration Mix #2 (15 components)

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

2,000µg/mL each in methylene chloride, 1mL/ampul
cat. # 31008 (ea.)

SV Calibration Mix #3 (14 components)

bis(2-chloroethoxy)methane
bis(2-chloroethyl)ether
bis(2-chloroisopropyl)ether
bis(2-ethylhexyl)phthalate
4-bromophenyl phenyl ether
butyl benzyl phthalate
2-chloronaphthalene
4-chlorophenyl phenyl ether
dimethylphthalate
di-*n*-butylphthalate
di-*n*-octylphthalate
N-nitrosodimethylamine
N-nitroso-di-*n*-propylamine
N-nitrosodiphenylamine

2,000µg/mL each in methylene chloride, 1mL/ampul
cat. # 31009 (ea.)

SV Calibration Mix #4 (13 components)

carbazole
dibenzofuran
diethyl phthalate
2,4-dinitrotoluene
2,6-dinitrotoluene
hexachlorobenzene
hexachlorobutadiene
hexachlorocyclopentadiene
hexachloroethane
isophorone
2-methylnaphthalene
nitrobenzene
1,2,4-trichlorobenzene

2,000µg/mL each in methylene chloride, 1mL/ampul
cat. # 31010 (ea.)

SV Calibration Mix #5 / 610 PAH Mix

(16 components)

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

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

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

SV Calibration Mix #6 (18 components)

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

2,000µg/mL each in toluene:hexane (1:1), 1mL/ampul
cat. # 31012 (ea.)

SV Calibration Mix #7

1,2-dichlorobenzene
1,3-dichlorobenzene
1,4-dichlorobenzene

2,000µg/mL each in methylene chloride, 1mL/ampul
cat. # 31013 (ea.)

3,3'-Dichlorobenzidine

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

2,000µg/mL in methylene chloride (methanol free), 1mL/ampul
cat. # 31835 (ea.)

605 Benzidines Calibration Mix

benzidine
3,3'-dichlorobenzidine

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

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

8270 Benzidines Mix

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

2,000µg/mL each in methanol, 1mL/ampul
cat. # 31688 (ea.)

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

also available

See pages 575-591 for chromatograms of semivolatiles analysis.

did you know?

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

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also available

See **page 76** for details on our Rxi™-5Sil MS Capillary Columns for semivolatiles analysis.

did you know?

Our **Pesticide Matrix Spike Mix** (cat.# 32018, **page 479**) can be used as a GPC calibration verification solution.

03.2 (Semivolatiles), Calibration Mixes

OLC 03.2 SVOA Deuterated Monitoring Compounds (DMC) (16 components)

acenaphthylene-d8
anthracene-d10
benzo(a)pyrene-d12
4-chloroaniline-d4
bis-(2-chloroethyl)ether-d8
2-chlorophenol-d4
2,4-dichlorophenol-d3
dimethylphthalate-d6
4,6-dinitro-methylphenol-d2
fluorene-d10
4-methylphenol-d8
nitrobenzene-d5
2-nitrophenol-d4
4-nitrophenol-d4
phenol-d5
pyrene-d10

2,000µg/mL each in methylene chloride, 1mL/ampul
cat. # 31810 (ea.)

OLC 03.2 SVOA MegaMix® (57 components)

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

1,000µg/mL each in methylene chloride, 1mL/ampul
cat. # 31862 (ea.)

Fortification Mix (7 components)

4,6-dinitro-2-methylphenol
2,4-dinitrophenol
2-nitroaniline
3-nitroaniline
4-nitroaniline
4-nitrophenol
2,4,5-trichlorophenol

2,000µg/mL each in methylene chloride, 1mL/ampul
cat. # 31813 (ea.)

3,3'-Dichlorobenzidine

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

Hexachlorophene

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

Low Concentration Semivolatiles, Calibration Mixes

L/C Phenol Mix A

2,4-dinitrophenol*
2-methyl-4,6-dinitrophenol*
4-nitrophenol*
pentachlorophenol*
2,4,6-tribromophenol (SUR)*
2,4,5-trichlorophenol*

2,000µg/mL each in methylene chloride, 1mL/ampul
cat. # 31208 (ea.)

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

L/C Phenol Mix B (11 components)

4-chloro-3-methylphenol
2-chlorophenol
2,4-dichlorophenol
2,4-dimethylphenol
2-fluorophenol
2-methylphenol
4-methylphenol
2-nitrophenol
phenol
phenol-d6 (SUR)
2,4,6-trichlorophenol

2,000µg/mL each in methylene chloride, 1mL/ampul
cat. # 31209 (ea.)

L/C Aniline Mix A

2-nitroaniline*
3-nitroaniline*
4-nitroaniline*

2,000µg/mL each in methylene chloride, 1mL/ampul
cat. # 31210 (ea.)

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

L/C Aniline Mix B

4-chloroaniline

2,000µg/mL in methylene chloride, 1mL/ampul
cat. # 31211 (ea.)

Additional Required SV Calibration Mixes:

See pages 475 and 477 for mix compositions.

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

GPC Calibration Mix

Qualitative mixture useful for determining GPC dump/collect times. The compounds are dissolved in methylene chloride at the concentrations listed. Data packs are not available.

CLP GPC Calibration Mix

bis(2-ethylhexyl) phthalate	10mg/mL	methoxychlor	2.0
corn oil	250	perylene	0.2
		sulfur	0.8

In methylene chloride, 1mL/ampul
cat. # 32019 (ea.)

In methylene chloride, 5mL/ampul
cat. # 32023 (ea.)

Revised GPC Calibration Mix

bis(2-ethylhexyl) phthalate	5mg/mL	methoxychlor	1.0
corn oil	250	perylene	0.2
		sulfur	0.8

In methylene chloride, 1mL/ampul
cat. # 32041 (ea.)

In methylene chloride, 5mL/ampul
cat. # 32042 (ea.)

SOM01.1 (Pesticides), QA Mixes

Pesticide Surrogate Mix

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

In P&T methanol, 1mL/ampul

cat. # 32453 (ea.)

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

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

In hexane:toluene, 1mL/ampul

cat. # 32454 (ea.)

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

Pesticide Surrogate Mix

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

200µg/mL each in acetone, 1mL/ampul

cat. # 32000 (ea.)

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

200µg/mL in acetone, 1mL/ampul

cat. # 32027 (ea.)

200µg/mL in acetone, 5mL/ampul

cat. # 32028 (ea.)

Decachlorobiphenyl (BZ #209)

200µg/mL in acetone, 1mL/ampul

cat. # 32029 (ea.)

200µg/mL in acetone, 5mL/ampul

cat. # 32030 (ea.)

10µg/mL in isooctane, 1mL/ampul

cat. # 32289 (ea.)

Dibutylchlorendate

200µg/mL in acetone, 1mL/ampul

cat. # 32025 (ea.)

Florisil® Cartridge Check Standard

2,4,5-trichlorophenol

1,000µg/mL in acetone, 1mL/ampul

cat. # 32017 (ea.)

Organochlorine Pesticide System Evaluation Mix

4,4'-DDT	200µg/mL
endrin	100µg/mL

In MTBE, 1mL/ampul

cat. # 32417 (ea.)

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

Pesticide Resolution Check Mix (7 components)

γ-chlordane	1µg/mL	endosulfan I	1
4,4'-DDE	2	endosulfan sulfate	2
dieldrin	2	endrin ketone	2
		methoxychlor	10

In hexane, 1mL/ampul

cat. # 32001 (ea.)

Pesticide Resolution Check Mix w/Surrogates (9 components)

γ-chlordane	1µg/mL	endosulfan sulfate	2
4,4'-DDE	2	endrin ketone	2
decachlorobiphenyl (SUR)	2	methoxychlor	10
dieldrin	2	2,4,5,6-tetrachloro-*m*-xylene (SUR)	2
endosulfan I	1		

In hexane, 1mL/ampul

cat. # 32073 (ea.)

Pesticide Performance Evaluation Mix

α-BHC	1µg/mL	4,4'-DDT	10
β-BHC	1	endrin	5
γ-BHC (lindane)	1	methoxychlor	25

In hexane, 1mL/ampul

cat. # 32002 (ea.)

Pesticide Performance Evaluation Mix w/Surrogates (8 components)

α-BHC	1µg/mL	decachlorobiphenyl (SUR)	2
β-BHC	1	endrin	5
γ-BHC (lindane)	1	methoxychlor	25
4,4'-DDT	10	2,4,5,6-tetrachloro-*m*-xylene (SUR)	2

In hexane, 1mL/ampul

cat. # 32074 (ea.)

CLP Pesticides Mixtures, QA Mixes

Pesticide Matrix Spike Mix

aldrin	25µg/mL	dieldrin	50
γ-BHC (lindane)	25	endrin	50
4,4'-DDT	50	heptachlor	25

In acetone, 1mL/ampul

cat. # 32018 (ea.)

Pesticide Matrix Spike Mix (2/88 SOW)

aldrin	200µg/mL	dieldrin	500
γ-BHC (lindane)	200	endrin	500
4,4'-DDT	500	heptachlor	200

In methanol, 1mL/ampul

cat. # 32031 (ea.)

Pesticide Evaluation Mix (2/88 SOW)

aldrin	4,4'-DDT
dibutylchlorendate (SUR)	endrin

100µg/mL each in hexane, 1mL/ampul

cat. # 32032 (ea.)

See complete listing of PCBs, pages 481-482.

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 200µg/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.

also available

See pages 78-81 for Rtx®-CLPesticides and Rtx®-CLPesticide2 capillary columns for pesticides analysis.

See pages 481-482 for our complete listing of PCBs and congeners.

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 200µg/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.

Low Concentration Pesticides Mixtures, QA Mixes

L/C Pesticide Lab Control Sample (7 components)

γ-BHC (lindane)	10µg/mL	endosulfan sulfate	20
γ-chlordane	10	endrin	20
4,4'-DDE	20	heptachlor epoxide (isomer B)	10
dieldrin	20		

In acetone, 1mL/ampul

cat. # 32040 (ea.)

CLP Pesticides Mixtures, Calibration Mixes

Pesticide Standard Mix A (2/88 SOW)

(10 components)

aldrin	10µg/mL	endrin aldehyde	25
γ-BHC (lindane)	5	heptachlor	10
4,4'-DDT	20	heptachlor epoxide (isomer B)	10
dieldrin	10	methoxychlor	100
endosulfan I	10		
endosulfan II	20		

In hexane, 1mL/ampul

cat. # 32033 (ea.)

Pesticide Standard Mix B (2/88 SOW)

(11 components)

aldrin	10µg/mL	4,4'-DDD	20
α-BHC	5	4,4'-DDE	10
β-BHC	10	endosulfan sulfate	20
δ-BHC	10	endrin	10
α-chlordane	10	endrin ketone	20
γ-chlordane	10		

In hexane, 1mL/ampul

cat. # 32034 (ea.)

Pesticide Standard Mix A (9 components)

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

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

cat. # 32297 (ea.)

Pesticide Standard Mix B (11 components)

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

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

cat. # 32298 (ea.)

CLP Pesticides Mixtures, Calibration Mixes *cont'd*

Organochlorine Pesticide Mix AB #1

(20 components)

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

200µg/mL each in hexane:toluene (1:1), 1mL/ampul

cat. # 32291 (ea.)

Organochlorine Pesticide Mix AB #2

(20 components)

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

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

cat. # 32292 (ea.)

Organochlorine Pesticide Mix AB # 3

(20 components)

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

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

cat. # 32415 (ea.)

Pesticides Calibration Mixtures

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

Pesticide Standard Mix A w/Surrogates

(11 components)

α-BHC	8μg/mL	endosulfan I	8
γ-BHC (lindane)	8	endrin	16
4,4'-DDD	16	heptachlor	8
4,4'-DDT	16	methoxychlor	80
decachlorobiphenyl (SUR)	16	2,4,5,6-tetrachloro-*m*-xylene (SUR)	8
dieldrin	16		

In hexane, 1mL/ampul

cat. # 32003 (ea.)

Pesticide Standard Mix B w/Surrogates

(13 components)

aldrin	8μg/mL	endosulfan sulfate	16
β-BHC	8	endrin aldehyde	16
δ-BHC	8	endrin ketone	16
α-chlordane	8	heptachlor epoxide (isomer B)	8
γ-chlordane	8	2,4,5,6-tetrachloro-*m*-xylene (SUR)	8
4,4'-DDE	16		
decachlorobiphenyl (SUR)	16		
endosulfan II	16		

In hexane, 1mL/ampul

cat. # 32004 (ea.)

Technical Chlordane, Toxaphene Solutions

Compound	cat.# (ea.)
1,000μg/mL in hexane, 1mL/ampul	
chlordane (technical)	32021
toxaphene	32005
2,000μg/mL in methanol, 1mL/ampul	
chlordane (technical)	32016
toxaphene	32015
5,000μg/mL in isooctane, 1mL/ampul	
chlordane (technical)	32072
toxaphene	32071

Aroclor Solutions

Compound	cat.# (ea.)
1,000μg/mL in hexane, 1mL/ampul	
Aroclor 1016	32006
Aroclor 1221	32007
Aroclor 1232	32008
Aroclor 1242	32009
Aroclor 1248	32010
Aroclor 1254	32011
Aroclor 1260	32012
Aroclor 1016/1260	32039
Aroclor 1262	32409
Aroclor 1268	32410
200μg/mL in isooctane, 1mL/ampul	
Aroclor 1016	32064
Aroclor 1221	32065
Aroclor 1232	32066
Aroclor 1242	32067
Aroclor 1248	32068
Aroclor 1254	32069
Aroclor 1260	32070
Aroclor 1016/1260	32299
400μg/mL in acetone, 1mL/ampul	
Aroclor 1016/1260	32456
50mg/kg in transformer oil (PCB-free)	
Aroclor 1016	32075
Aroclor 1221	32077
Aroclor 1232	32079
Aroclor 1242	32081
Aroclor 1248	32083
Aroclor 1254	32085
Aroclor 1260	32087
500mg/kg in transformer oil (PCB-free)	
Aroclor 1016	32076
Aroclor 1221	32078
Aroclor 1232	32080
Aroclor 1242	32082
Aroclor 1248	32084
Aroclor 1254	32086
Aroclor 1260	32088

please **note**

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

Miscellaneous
PCB Congeners
Organotins
Minnesota Dept. of Agriculture List 1 Pesticides

PCB Congeners

Compound	cat.# (ea.)
10µg/mL in isooctane, 1mL/ampul	
2,4,4'-trichlorobiphenyl (BZ #28)	32283
2,2',5,5'-tetrachlorobiphenyl (BZ #52)	32284
2,2',4,5,5'-pentachlorobiphenyl (BZ #101)	32285
2,3',4,4',5-pentachlorobiphenyl (BZ #118)	32293
2,2',3,4,4',5'-hexachlorobiphenyl (BZ #138)	32286
2,2',4,4',5,5'-hexachlorobiphenyl (BZ #153)	32287
2,2',3,4,4',5,5'-heptachlorobiphenyl (BZ #180)	32288
decachlorobiphenyl (BZ #209)	32289

PCB Congener Standard #1

2,4,4'-trichlorobiphenyl (BZ #28)
2,2',5,5'-tetrachlorobiphenyl (BZ #52)
2,2',4,5,5'-pentachlorobiphenyl (BZ #101)
2,2',3,4,4',5'-hexachlorobiphenyl (BZ #138)
2,2',4,4',5,5'-hexachlorobiphenyl (BZ #153)
2,2',3,4,4',5,5'-heptachlorobiphenyl (BZ #180)

10µg/mL each in isooctane, 1mL/ampul
cat. # 32290 (ea.)

PCB Congener Standard #2

2,4,4'-trichlorobiphenyl (BZ #28)
2,2',5,5'-tetrachlorobiphenyl (BZ #52)
2,2',4,5,5'-pentachlorobiphenyl (BZ #101)
2,3',4,4',5-pentachlorobiphenyl (BZ #118)
2,2',3,4,4',5'-hexachlorobiphenyl (BZ #138)
2,2',4,4',5,5'-hexachlorobiphenyl (BZ #153)
2,2',3,4,4',5,5'-heptachlorobiphenyl (BZ #180)

10µg/mL each in isooctane, 1mL/ampul
cat. # 32294 (ea.)

also available

Additional PCB congener mixes:

See EPA Method 8082 cat.# 32416 page 461.

See EPA Method 525 cat.# 32420 page 449.

Organotin Mixes

Butyltin Chloride Calibration Mixture

butyltin trichloride
dibutyltin dichloride
tetrabutyltin
tributyltin chloride

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

Tributyltin Chloride Calibration Mixture

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

Phenyltin Chloride Calibration Mixture

diphenyltin dichloride
phenyltin trichloride
tetraphenyltin
triphenyltin chloride

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

Tri-*n*-propyltin Chloride Surrogate

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

Tripentyltin Chloride Surrogate

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

Tetra-*n*-propyltin Internal Standard

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

Tetrapentyltin Internal Standard

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

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Minnesota Department of Agriculture List 1 Pesticdes

Minnesota Ag List 1 Pesticides Mix A

(16 components)

acetochlor	metolachlor
alachlor	metribuzin
atrazine	pendimethalin
cyanazine	prometon
desethylatrazine	propachlor
desisopropylatrazine	propazine
dimethenamid*	simazine
ethalfluralin	trifluralin

200ppm each in acetone, 1mL/ampul

cat. # 32406 (ea.)

Minnesota Ag List 1 Pesticides Mix B

chlorpyrifos	phorate
EPTC	terbufos
fonofos	triallate

200ppm each in acetone, 1mL/ampul

cat. # 32407 (ea.)

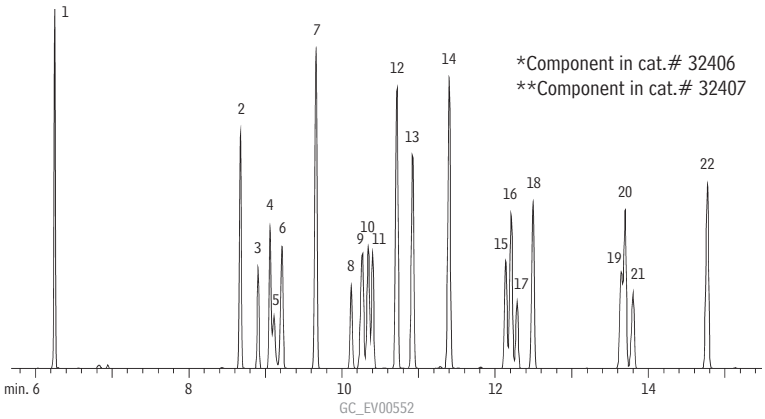
Jonathan Keim
Technical Service Supervisor
7+ years of service!

*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.

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

Minnesota Dept. of Agriculture List 1 Pesticides

1. EPTC** (eptam, eradicane)
2. propachlor*
3. ethalfluralin*
4. trifluralin*
5. desisopropylatrazine*
6. desethylatrazine*
7. phorate**
8. prometon*
9. simazine*
10. atrazine*
11. propazine*
12. terbufos**
13. fonofos**
14. triallate**
15. dimethenamid*
16. acetochlor*
17. metribuzin*
18. alachlor*
19. metolachlor*
20. chlorpyrifos** (chlorpyrifos ethyl)
21. cyanazine*
22. pendimethalin*



Column:	Rtx®-5SilMS, 30m, 0.28mmID, 0.5µm (cat.# 12794)
Inj.:	1µL splitless 0.5 min., 10ppm calibration standard in methylene chloride/acetone, 10ng on column concentration
Oven temp.:	35°C (hold 0.5 min.) to 160°C @ 50°C/min. to 190°C @ 10°C/min. to 300°C @ 5°C/min.
Inj. temp:	250°C
Det:	Agilent 5973 MS, scan 35-550amu

free data

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

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

Tom Bloom
International Technical Support Manager
18+ years of service!

International Environmental Mixes

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

Canada

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

CCME F1 Surrogate Standard
n-undecane (C11)
1,000µg/mL in methylene chloride, 1mL/ampul
cat. # 30612 (ea.)

CCME F2 Surrogate Standard
2-methylnonane
1,000µg/mL in methylene chloride, 1mL/ampul
cat. # 31870 (ea.)

CCME F1 Retention Time Marker
n-decane (C10)
n-hexane (C6)
toluene
2,000µg/mL each in methanol, 1mL/ampul
cat. # 30611 (ea.)

CCME PAH Calibration Mix (10 components)
benzo(a)anthracene
benzo(a)pyrene
benzo(b)fluoranthene
benzo(k)fluoranthene
dibenzo(a,h)anthracene
fluoranthene
indeno(1,2,3-cd)pyrene
naphthalene
phenanthrene
pyrene
2,000µg/mL each in methylene chloride, 1mL/ampul
cat. # 31869 (ea.)

CCME PHC Calibration Mix
n-decane (C10)
n-hexadecane (C16)
n-tetratriacontane (C34)
5,000µg/mL each in toluene, 1mL/ampul
cat. # 31684 (ea.)

Canada *cont'd*

Canadian Drinking Water Volatiles Mix
(19 components)
benzene
bromodichloromethane
bromoform
carbon tetrachloride
chlorobenzene
chloroform
dibromochloromethane
1,2-dichlorobenzene
1,4-dichlorobenzene
1,2-dichloroethane
1,1-dichloroethene
ethylbenzene
methylene chloride
tetrachloroethene
toluene
trichloroethene
m-xylene
o-xylene
p-xylene
2,000µg/mL each in P&T methanol, 1mL/ampul
cat. # 30610 (ea.)

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

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

Canadian Drinking Water Carbamates Mix
aldicarb
bendiocarb
carbaryl (Sevin®)
carbofuran
triallate
100µg/mL each in acetonitrile, 1mL/ampul
cat. # 31865 (ea.)

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

Canadian Drinking Water OP Pesticides Mix
(9 components)
azinphos methyl (Guthion®)
chlorpyrifos (Dursban®)
Diazinon
dimethoate
malathion
parathion (ethyl)
phorate
temephos (Abate®)
terbufos
1,000µg/mL each in acetonitrile, 1mL/ampul
cat. # 31867 (ea.)

free data

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

also available

New Petroleum Standards & Sulfur Standards!
See pages 502-505 for more information.

Canada - Atlantic Provinces

Atlantic RBCA EPH Mix (11 components)

acenaphthene
anthracene
benzo(a)pyrene
chrysene
n-decane (C10)
n-dodecane (C12)
n-dotriacontane (C32)
n-heneicosane (C21)
n-hexadecane (C16)
n-octacosane (C28)
naphthalene

1,000µg/mL each in hexane:methylene chloride, 1mL/ampul
cat. # 31872 (ea.)

Atlantic RBCA EPH Surrogate Standard

n-dotriacontane (C32)
isobutylbenzene

1,000µg/mL each in methylene chloride, 1mL/ampul
cat. # 31873 (ea.)

Atlantic RBCA VPH Mix (12 components)

benzene
n-decane (C10)
ethylbenzene
n-heptane (C7)
n-hexane (C6)
1-methyl-3-ethylbenzene
n-octane (C8)
toluene
1,2,4-trimethylbenzene
1,3,5-trimethylbenzene
o-xylene
p-xylene

1,000µg/mL each in P&T methanol, 1mL/ampul
cat. # 31871 (ea.)

Atlantic RBCA VPH Surrogate Standard

isobutylbenzene

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

Europe

Organophosphorus Pesticide Mix, European Formulation (16 components)

acephate	200µg/mL	methamidophos	500
azinphos methyl (Guthion®)	400	methidathion	200
chlorpyrifos	100	omethoate	1000
demeton-s-methyl	200	pirimiphos methyl	100
dichlorvos (DDVP)	500	profenfos	200
dimethoate	200	pyrazophos	500
ethion	200	tokuthion (prothiofos)	200
malathion	200	tolclofos-methyl	100

In acetone, 1mL/ampul
cat. # 32418 (ea.)

PCB Congener Standard #1

2,4,4'-trichlorobiphenyl (BZ #28)
2,2',5,5'-tetrachlorobiphenyl (BZ #52)
2,2',4,5,5'-pentachlorobiphenyl (BZ #101)
2,2',3,4,4',5'-hexachlorobiphenyl (BZ #138)
2,2',4,4',5,5'-hexachlorobiphenyl (BZ #153)
2,2',3,4,4',5,5'-heptachlorobiphenyl (BZ #180)

10µg/mL each in isooctane, 1mL/ampul
cat. # 32290 (ea.)

PCB Congener Standard #2

2,4,4'-trichlorobiphenyl (BZ #28)
2,2',5,5'-tetrachlorobiphenyl (BZ #52)
2,2',4,5,5'-pentachlorobiphenyl (BZ #101)
2,3',4,4',5-pentachlorobiphenyl (BZ #118)
2,2',3,4,4',5'-hexachlorobiphenyl (BZ #138)
2,2',4,4',5,5'-hexachlorobiphenyl (BZ #153)
2,2',3,4,4',5,5'-heptachlorobiphenyl (BZ #180)

10µg/mL each in isooctane, 1mL/ampul
cat. # 32294 (ea.)

Europe *cont'd*

Desethyl-atrazine

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

Desisopropylatrazine

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

Terbuthylazine

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

Propazine

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

Prometryne

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

Japan

Japan Calibration Mix (9 components)

Cylinder Construction: aluminum
Cylinder Fitting: CGA-180 outlet

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

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

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

Requires a high-purity VOC single-stage regulator. See page 415. No data pack available.

Drinking Water Odor Standard

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

(+/-)-geosmin
2-methylisoborneol

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

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

See **page 427** for our Custom Reference Materials Request Form.

also **available**

Pi-marked Gas Cylinders Now Available for EU Countries
Our new Pi-marked gas standards from Scott Specialty Gases meet the requirements of Transportable Pressure Equipment Directive (TPED) implemented in 2001 that regulates the safe transport of pressurized containers used throughout the European community.

See **pages 413-417** for more information.

Kristy Myers
Export Compliance Specialist
4+ years of service!

Korea

Korean Drinking Water—Pesticides Mix

carbaryl (Sevin®) malathion
diazinon parathion, ethyl
fenitrothion

1,000µg/mL each in P&T methanol, 1mL/ampul
cat. # 32411 (ea.)

No data pack available.

Korean Drinking Water—VOC Mix A

(17 components)

benzene phenol
bromodichloromethane tetrachloroethene
bromoform toluene
carbon tetrachloride 1,1,1-trichloroethane
chloroform trichloroethene
dibromochloromethane *m*-xylene
1,1-dichloroethene *o*-xylene
ethylbenzene *p*-xylene
methylene chloride

100µg/mL each in P&T methanol, 1mL/ampul
cat. # 30480 (ea.)

No data pack available.

ISO/DIS 9377 Water Quality Testing

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

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

Diesel #2/Motor Oil

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

Diesel #2/Mineral Oil

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

Standard Mixture Stock Solution

diesel #2 (additive free)
mineral oil (additive free [i.e., USP grade] bp 325-460 or C18-C32 retention time range)

5,000µg/mL each in cyclohexane, 1mL/ampul
(prepares 8mL of 1.25µg/µL calibration curve high point)
Total hydrocarbon concentration 10,000µg/mL
cat. # 31630 (ea.)

Quality Control Standard Mixture, Revised

diesel #2 (additive-free)
motor oil (additive-free bp 325–460 or C18–C32 retention time range)

500µg/mL each in acetone, 1mL/ampul
(1mL is enough mix to spike one 900mL quality control sample).
Total hydrocarbon concentration 1,000µg/mL
cat. # 31641 (ea.)

ISO/DIS 9377 Water Quality Testing *cont'd*

Quality Control Standard Mixture

diesel #2 (additive-free)
mineral oil (additive-free [i.e., USP grade] bp 391–522 or C24–C40 retention time range)

500µg/mL each in acetone, 1mL/ampul
(1mL is enough mix to spike one quality control sample).
Total hydrocarbon concentration 1,000µg/mL
cat. # 31631 (ea.)

System Performance Test Standard Mixture of *n*-Alkanes (16 components)

n-decane (C10) *n*-hexacosane (C26)
n-dodecane (C12) *n*-octacosane (C28)
n-tetradecane (C14) *n*-triacontane (C30)
n-hexadecane (C16) *n*-dotriacontane (C32)
n-octadecane (C18) *n*-tetratriacontane (C34)
n-eicosane (C20) *n*-hexatriacontane (C36)
n-docosane (C22) *n*-octatriacontane (C38)
n-tetracosane (C24) *n*-tetracontane (C40)

50µg/mL each in hexane, 1mL/ampul
cat. # 31678 (ea.)

Extraction Solvent Stock Solution #1

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

Extraction Solvent Stock Solution #2

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

Stearyl Stearate Test Solution

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

Florisil® Cartridge Quality Control Standard Mixture, Rev.3

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

Florisil® Cartridge Quality Control Standard Mixture, Rev.2

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

n-Tetracontane (C40)

Neat, 100mg
cat. # 31859 (ea.)

n-Decane (C10)

Neat, 1mL
cat. # 31858 (ea.)

Stearyl Stearate

Neat, 100mg
cat. # 31860 (ea.)

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

Underground Storage Tank Monitoring (UST): General

Category	Compound Class
Retention Time Standards	Hydrocarbons
Fuel Composite Standards	Hydrocarbons
Motor Oil Composite Standards	Hydrocarbons
Single Source Fuel Standards	Hydrocarbons
Military Fuels (Jet Propellant)	Hydrocarbons
Fuel Oil Degradation Test	Hydrocarbons
Mineral Spirits	Hydrocarbons
PVOC, GRO and BTEX	Hydrocarbons
Gasoline Surrogate and Internal Standards	Volatiles
Diesel Surrogate and Internal Standards	Hydrocarbons
Diesel/Biodiesel Blend	Hydrocarbons

Retention Time Standards

Used during initial sample screening, to determine retention time windows for each petroleum product. Gasoline generally elutes in the window from C6 to C10 (or C12), and diesel fuel from C10 (or C12) to C24 (or C28). Retention above C24 (or C28) indicates oil or lubricant contamination.

Leaking Underground Storage Tank Retention Time Standard (7 components)

n-hexane (C6)
n-decane (C10)
n-dodecane (C12)
n-tetracosane (C24)
n-octacosane (C28)
n-triacontane (C30)
n-tetracontane (C40)

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

Retention Time Marker Standard

n-decane (C10)
n-pentacosane (C25)
n-hexatriacontane (C36)

1,000µg/mL each in hexane, 1mL/ampul
cat. # 31637 (ea.)

Retention Time Marker

n-hexane (C6)
n-decane (C10)
n-dodecane (C12)

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

TNRCC 1005 Retention Time Markers Mix

n-hexane (C6)
n-dodecane (C12)
n-octacosane (C28)
n-pentatriacontane (C35)

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

Retention Time Marker - Alaska

n-hexane (C6)
n-decane (C10)
n-pentacosane (C25)
n-hexatriacontane (C36)

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

Fuel Composite Standards

Unleaded Gasoline Composite Standard

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

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

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

Diesel Fuel #2 Composite Standard

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

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

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

Kerosene Composite Standard

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

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

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

Motor Oil Composite Standards

Motor Oil Composite Standard

Prepared from an equal volume blend of 5W30, 10W30, 10W40, and 20W50 motor oils. After blending, a precisely weighed amount of the composite is added to a volumetric flask to produce the standard.

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

Used Motor Oil Composite Standard

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

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

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EPA Office of Underground Storage Tanks (OUST) Recommended Methods

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Fast Facts
lit. cat.# 59397

See **pages 491-497** for information on UST technical literature for individual states.

also available

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

Single Source Fuels

Unleaded Gasoline Standard
Prepared from a single source (one refinery) product.
5,000µg/mL in P&T methanol, 1mL/ampul
cat. # 30096 (ea.)

Kerosene Standard
Prepared from a single source (one refinery) product.
5,000µg/mL in methylene chloride, 1mL/ampul
cat. # 31229 (ea.)

Diesel Fuel #2 Standard
Prepared from a single source (one refinery) product.
5,000µg/mL in methylene chloride, 1mL/ampul
cat. # 31233 (ea.)

Fuel Oil #4 Standard
Fuel oil #4 is typically used in limited applications in which the fuel cannot be preheated prior to burning. The fuel is a blend of distillate (fuel oil #2) and residual (fuel oil #6) to meet ASTM viscosity specifications. Fuel oil #4 used to prepare this mixture has a kinematic viscosity of 21.9 at 38°C (100°F), measured using ASTM D-445.

5,000µg/mL in methylene chloride, 1mL/ampul
cat. # 31216 (ea.)
50,000µg/mL in methylene chloride, 1mL/ampul
cat. # 31244 (ea.)

Fuel Oil #5 Standard
Fuel oil #5 is typically used in applications in which there is little or no preheating of the fuel prior to burning. A blend of distillate (fuel oil #2) and residual (fuel oil #6), the fuel oil #5 used to prepare this mixture has a kinematic viscosity of 106.5 at 38°C (100°F), measured using ASTM D-445.

5,000µg/mL in methylene chloride, 1mL/ampul
cat. # 31217 (ea.)
50,000µg/mL in methylene chloride, 1mL/ampul
cat. # 31246 (ea.)

Fuel Oil #6 Standard
This fuel, sometimes called bunker C or residual, is a black viscous oil. Applications in which it may be used require the ability to preheat the fuel prior to pumping and burning.

5,000µg/mL in methylene chloride, 1mL/ampul
cat. # 31218 (ea.)
50,000µg/mL in methylene chloride, 1mL/ampul
cat. # 31248 (ea.)
50,000µg/mL in methylene chloride, 5mL/ampul
cat. # 31249 (ea.)

Diesel/Biodiesel 80:20 Blend Standard
The biodiesel component is methyl soyate.
diesel/biodiesel 80:20
5,000µg/mL in methylene chloride, 1mL/ampul
cat. # 31880 (ea.)

Single Source Fuels *cont'd*

Aviation Gas Standard
100-octane low-lead fuel currently used in piston-type aircraft.

2,500µg/mL in P&T methanol, 1mL/ampul
cat. # 30094 (ea.)
50,000µg/mL in P&T methanol, 1mL/ampul
cat. # 30207 (ea.)
50,000µg/mL in P&T methanol, 5mL/ampul
cat. # 30208 (ea.)

Jet Fuel A Standard
Commercial jet fuel A.
5,000µg/mL in methylene chloride, 1mL/ampul
cat. # 31215 (ea.)
50,000µg/mL in methylene chloride, 1mL/ampul
cat. # 31242 (ea.)
50,000µg/mL in methylene chloride, 5mL/ampul
cat. # 31243 (ea.)

Creosote Oil Standard
Creosote oil, a widely used wood preservative produced by distilling coal tar, contains chemicals that are classified as carcinogens (e.g., benzo(a)pyrene). We offer this high concentration standard.

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

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

Military Fuels (Jet Propellant)

JP-4 Military Fuel Standard
5,000µg/mL in methylene chloride, 1mL/ampul
cat. # 31219 (ea.)
50,000µg/mL in methylene chloride, 1mL/ampul
cat. # 31250 (ea.)
50,000µg/mL in P&T methanol, 1mL/ampul
cat. # 30472 (ea.)

JP-5 Military Fuel Standard
5,000µg/mL in methylene chloride, 1mL/ampul
cat. # 31220 (ea.)
50,000µg/mL in methylene chloride, 1mL/ampul
cat. # 31252 (ea.)
50,000µg/mL in methylene chloride, 5mL/ampul
cat. # 31253 (ea.)

JP-8 Military Fuel Standard
5,000µg/mL in methylene chloride, 1mL/ampul
cat. # 31262 (ea.)
50,000µg/mL in methylene chloride, 1mL/ampul
cat. # 31254 (ea.)

did you know?

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

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Fuel Oil Degradation Test

Subsurface degradation of fuel oil spills can be estimated by examining the ratios of C17/pristane and C18/phytane.[1] To assist in identifying these four compounds from the complex fuel oil analysis, we offer a product that contains these compounds for retention time determination.

Fuel Oil Degradation Mix

heptadecane (C17)
octadecane (C18)
pristane (2,6,10,14-tetramethylpentadecane)
phytane (2,6,10,14-tetramethylhexadecane)

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

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

Mineral Spirits

There are four general types of mineral spirits, classified according to boiling point range (BPR):

- Type I (Stoddard solvent) BPR 149–182°C
- Type II (high flash point) BPR 177–196°C
- Type III (odorless) BPR 149–196°C
- Type IV (low dry point) BPR 149–174°C

We prepare our solutions from an equal volume blend of Type I, II, and III mineral spirits.

Mineral Spirits Standards

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

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

50,000µg/mL in methylene chloride, 5mL/ampul
cat. # 31261 (ea.)

Stoddard Solvent Standard

Stoddard solvent is also known as Type I mineral spirits, Texsolve S®, or Varsol 1® mineral spirits. We offer this reference material for those who need to calibrate Stoddard solvent separately. This standard is dissolved in methanol for analysis by either direct injection or purge and trap.

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

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

PVOC Mix (California) (7 components)

benzene
ethylbenzene
methyl *tert*-butyl ether (MTBE)
toluene
m-xylene
o-xylene
p-xylene

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

PVOC/GRO Mix (Wisconsin) (10 components)

benzene
ethylbenzene
methyl *tert*-butyl ether (MTBE)
naphthalene
toluene
1,2,4-trimethylbenzene
1,3,5-trimethylbenzene
m-xylene
o-xylene
p-xylene

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

GRO Mix (9 components)

benzene
ethylbenzene
3-methylpentane
naphthalene
toluene
1,2,4-trimethylbenzene
2,2,4-trimethylpentane (isooctane)
m-xylene
o-xylene

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

GRO Mix (EPA) (9 components)

benzene	500µg/mL	1,2,4-trimethylbenzene	1,000
ethylbenzene	500	2,2,4-trimethylpentane	1,500
heptane	500	*m*-xylene	1,000
2-methylpentane	1,500	*o*-xylene	1,000
toluene	1,500		

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

BTEX Standard

benzene
ethylbenzene
toluene
m-xylene
o-xylene
p-xylene

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

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

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

BTEX Gas Mix

Cylinder Construction: aluminum
Cylinder Fitting: CGA-180 outlet

benzene
ethylbenzene
toluene
m-xylene
o-xylene
p-xylene

In nitrogen, 104 liters @ 1,800psi
1ppm cat. # 34414 (ea.)
100ppb cat. # 34428 (ea.)

In nitrogen, 110 liters @ 1,800psi (Pi-marked Cylinder)
1ppm cat. # 34414-PI (ea.)
100ppb cat. # 34428-PI (ea.)

Requires a high-purity VOC single-stage regulator. See page 415. No data pack available.

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See **pages 491-497** for information on UST technical literature for individual states.

Brendan Conway
Analytical Reference Materials Manager
1+ year of service!

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

Gasoline Component Standard (10 components)

benzene	500µg/mL	1,2,4-trimethylbenzene	1000
ethylbenzene	500	2,2,4-trimethylpentane	1500
heptane	500	*m*-xylene	1000
2-methylpentane	1500	*o*-xylene	1000
toluene	1500	*p*-xylene	1000

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

Certified BTEX in Unleaded Gas Composite Standard (9 components)

Certified for:	
benzene*	naphthalene*
ethylbenzene*	toluene*
isopropyl benzene*	*m*-xylene*
methyl *tert*-butyl ether (MTBE)*	*o*-xylene*
	p-xylene*

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

*Concentration differs lot-to-lot. See on-line Certificate of Analysis for certified concentrations.

Certified Aromatics in Gasoline (16 components)

Certified for:	
benzene*	naphthalene*
ethylbenzene*	*n*-propylbenzene*
m-ethyltoluene*	toluene*
o-ethyltoluene*	1,2,3-trimethylbenzene*
p-ethyltoluene*	1,2,4-trimethylbenzene*
isopropylbenzene*	1,3,5-trimethylbenzene*
methyl *tert*-butyl ether (MTBE)*	*m*-xylene*
	o-xylene*
	p-xylene*

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

*Concentration differs lot-to-lot. See on-line Certificate of Analysis for certified concentrations.

Certified PAHs in Diesel (7 components)

Certified PAHs	
acenaphthene*	1-methylnaphthalene*
acenaphthylene*	2-methylnaphthalene*
fluorene*	naphthalene*
	phenanthrene*

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

*Concentration differs lot-to-lot. See on-line Certificate of Analysis for certified concentrations.

Gasoline Surrogate and Internal Standards

Compound	cat.# (ea.)
2,500µg/mL in P&T methanol, 1mL/ampul	
4-bromofluorobenzene	30067
α,α,α-trifluorotoluene	30068
10,000µg/mL in P&T methanol, 1mL/ampul	
4-bromofluorobenzene	30082
α,α,α-trifluorotoluene	30083
1-chlorooctane	30084

Recommended Internal Standard (PID) for EPA GRO Method

Compound	cat.# (ea.)
2,500µg/mL in P&T methanol, 1mL/ampul	
1-chloro-4-fluorobenzene	30066

Diesel Surrogate and Internal Standards

Compound	cat.# (ea.)
10,000µg/mL in methylene chloride, 1mL/ampul	
p-terphenyl	31095
2-fluorobiphenyl	31096
o-terphenyl	31097
1-chlorooctadecane	31098

Recommended Internal Standards

Compound	cat.# (ea.)
2,000µg/mL in methylene chloride, 1mL/ampul	
5-α-androstane	31065
2,000µg/mL in acetone, 1mL/ampul	
o-terphenyl	31066

Diesel/Biodiesel Standard

Diesel/Biodiesel 80:20 Blend Standard

The biodiesel component is methyl soyate.

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

also available

ASTM Method D6584-00 and EN14105 Biodiesel Standards.
See page 501.

Underground Storage Tank Monitoring (UST): State Specific Methods

State	Compound Class
Alaska	Hydrocarbons
Arizona	Hydrocarbons
California/Los Angeles	Hydrocarbons
Connecticut	Hydrocarbons
Florida	Hydrocarbons
Massachusetts	Hydrocarbons
Michigan	Hydrocarbons
Mississippi	Hydrocarbons
Northwest (Oregon & Washington)	Hydrocarbons
Pennsylvania	Hydrocarbons
Tennessee/Mississippi	Hydrocarbons
Texas	Hydrocarbons
Washington	Hydrocarbons
Wisconsin	Hydrocarbons

Alaska

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 procedurals manual indicates which products are to be tested for each petroleum range.

AK101

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

Retention Time Marker - Alaska

n-hexane (C6)
n-decane (C10)
n-pentacosane (C25)
n-hexatriacontane (C36)

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

Alaska *cont'd*

Alaska UST Method AK101AA (14 components)

benzene
ethylbenzene
1-ethyl-2-methylbenzene
1-ethyl-3-methylbenzene
1-ethyl-4-methylbenzene
isopropylbenzene
n-propylbenzene
toluene
1,2,3-trimethylbenzene
1,2,4-trimethylbenzene
1,3,5-trimethylbenzene
m-xylene
o-xylene
p-xylene

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

Unleaded Gasoline Composite Standard

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

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

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

1-Chloro-4-fluorobenzene Mix

2,500µg/mL in P&T methanol, 1mL/ampul
cat. # 30066 (ea.)

4-Bromofluorobenzene Mix

2,000µg/mL in P&T methanol, 1mL/ampul
cat. # 30026 (ea.)

α,α,α-Trifluorotoluene

2,000µg/mL in P&T methanol, 1mL/ampul
cat. # 30048 (ea.)

2,500µg/mL in P&T methanol, 1mL/ampul
cat. # 30068 (ea.)

10,000µg/mL in P&T methanol, 1mL/ampul
cat. # 30083 (ea.)

for more info

State of Alaska
Method and regulatory information is available from:

Alaska Department of Environmental Conservation
410 Willoughby Avenue
Juneau, AK 99801-1795
Phone: (907)465-5203
Fax: (907)465-5218

www.dec.state.ak.us/regulations/index.htm

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Fast Facts
lit. cat.# 59503

did you know?

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

See **page 427** for our Custom Reference Materials Request Form.

Alaska *cont'd*

AK102

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

DRO Mix (Tennessee/Mississippi) (16 components)

n-decane (C10)	*n*-octadecane (C18)
n-undecane (C11)	*n*-nonadecane (C19)
n-dodecane (C12)	*n*-eicosane (C20)
n-tridecane (C13)	*n*-heneicosane (C21)
n-tetradecane (C14)	*n*-docosane (C22)
n-pentadecane (C15)	*n*-tricosane (C23)
n-hexadecane (C16)	*n*-tetracosane (C24)
n-heptadecane (C17)	*n*-pentacosane (C25)

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

Kerosene Composite Standard

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

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

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

Diesel Fuel #2 Composite Standard

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

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

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

***o*-Terphenyl**

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

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

5-α-androstane

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

Alaska *cont'd*

AK103

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

Residual Range Calibration Standard (RCS)

SAE30 motor oil:SAE40 motor oil (1:1)

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

Residual Range Calibration Verification Standard (CVS)

SAE30 motor oil:SAE40 motor oil (1:1)

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

Motor Oil Composite Standard

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

Fuel Oil #6 Standard

This fuel, sometimes called bunker C or residual, is a black viscous oil. Applications in which it may be used require the ability to preheat the fuel prior to pumping and burning.

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

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

50,000µg/mL in methylene chloride, 5mL/ampul
cat. # 31249 (ea.)

***n*-Triacontane-d62**

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

Surrogate Standard Mixture

squalane
tetrahydronaphthol
o-terphenyl

1,000µg/mL each in methylene chloride, 1mL/ampul
cat. # 31638 (ea.)

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Fast Facts
lit. cat.# 59503

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

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

Arizona

Extraction Retention Time Standard

n-hexane(C6)
n-decane(C10)
n-docosane(C22)
n-dotriacontane(C32)

2,000µg/mL each in methylene chloride, 1mL/ampul
cat. # 31830 (ea.)

DRO/ORO Calibration Standard

10W30 motor oil:diesel fuel #2 (1:1 blend)

25,000µg/mL each in methylene chloride, 1mL/ampul
cat. # 31831 (ea.)

DRO/ORO Range Calibration Standard

(12 components)

n-decane (C10)
n-dodecane (C12)
n-tetradecane (C14)
n-hexadecane (C16)
n-octadecane (C18)
n-eicosane (C20)
n-docosane (C22)
n-tetracosane (C24)
n-hexacosane (C26)
n-octacosane (C28)
n-triacontane (C30)
n-dotriacontane (C32)

2,000µg/mL each in methylene chloride, 1mL/ampul
cat. # 31832 (ea.)

GRO P&T Retention Time Standard

benzene
naphthalene

1,000µg/mL each in P&T methanol, 1mL/ampul
cat. # 30496 (ea.)

o-Terphenyl

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

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

California

PVOC Mix (California) (7 components)

benzene
ethylbenzene
methyl *tert*-butyl ether (MTBE)
toluene
m-xylene
o-xylene
p-xylene

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

California Oxygenates Mix

diisopropyl ether (DIPE)	2,000µg/mL
ethyl-*tert*-butyl ether (ETBE)	2,000
tert-amyl methyl ether (TAME)	2,000
tert-butyl alcohol	10,000
methyl *tert*-butyl ether (MTBE)	2,000

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

Methanol

10,000µg/mL in DI Water, 1mL/ampul
cat. # 30467 (ea.)

Ethanol

10,000µg/mL in DI Water, 1mL/ampul
cat. # 30466 (ea.)

Glycols Standard

ethylene glycol
propylene glycol

50,000µg/mL each in DI water, 1mL/ampul
cat. # 30471 (ea.)

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

CA WIP VOA Standard (11 components)

benzene
chlorobenzene
1,2-dichlorobenzene
1,3-dichlorobenzene
1,4-dichlorobenzene
ethylbenzene
methyl *tert*-butyl ether (MTBE)
toluene
m-xylene
o-xylene
p-xylene

2,000µg/mL each in P&T methanol, 1mL/ampul
cat. # 30236 (ea.)

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

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Fast Facts
lit. cat.# 59433

Connecticut

Connecticut ETPH Calibration Mixture

(15 components)

n-nonane (C9)
n-decane (C10)
n-dodecane (C12)
n-tetradecane (C14)
n-hexadecane (C16)
n-octadecane (C18)
n-eicosane (C20)
n-docosane (C22)
n-tetracosane (C24)
n-hexacosane (C26)
n-octacosane (C28)
n-triacontane (C30)
n-dotriacontane (C32)
n-tetratriacontane (C34)
n-hexatriacontane (C36)

1,000µg/mL each in methylene chloride, 1mL/ampul
cat. # 31614 (ea.)

Florida

Florida TRPH Standard (17 components)

n-octane (C8)
n-decane (C10)
n-dodecane (C12)
n-tetradecane (C14)
n-hexadecane (C16)
n-octadecane (C18)
n-eicosane (C20)
n-docosane (C22)
n-tetracosane (C24)
n-hexacosane (C26)
n-octacosane (C28)
n-triacontane (C30)
n-dotriacontane (C32)
n-tetratriacontane (C34)
n-hexatriacontane (C36)
n-octatriacontane (C38)
n-tetracontane (C40)

500µg/mL each in hexane, 1mL/ampul
cat. # 31266 (ea.)

2,000µg/mL each in carbon disulfide, 1mL/ampul*
cat. # 31878 (ea.)

*Ground transportation shipments only.

Florida TRPH Surrogate Mix

n-nonatriacontane (C39)

3,000µg/mL in carbon disulfide, 1mL/ampul*
cat. # 31456 (ea.)

3,000µg/mL in carbon disulfide, 10mL/ampul*
cat. # 31877 (ea.)

*Ground transportation shipments only.

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Fast Facts
lit. cat.# 59395

Massachusetts

MA VPH Standard with Surrogate Rev. 1.1 (July 2004) (16 components)

benzene
n-butylcyclohexane
n-decane (C10)
2,5-dibromotoluene (SUR)
ethylbenzene
2-methylpentane
methyl *tert*-butyl ether (MTBE)
naphthalene
n-nonane (C9)
n-pentane (C5)
toluene
1,2,4-trimethylbenzene
2,2,4-trimethylpentane (isooctane)
m-xylene
o-xylene
p-xylene

10,000µg/mL in P&T methanol, 1mL/ampul
cat. # 30604 (ea.)

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

benzene
n-butylcyclohexane
n-decane (C10)
2,5-dibromotoluene (SUR)
ethylbenzene
2-methylpentane
methyl *tert*-butyl ether (MTBE)
naphthalene
n-nonane (C9)
n-pentane (C5)
toluene
1,2,4-trimethylbenzene
2,2,4-trimethylpentane (isooctane)
m-xylene
o-xylene
p-xylene

50µg/mL in P&T methanol, 1mL/ampul
cat. # 30605 (ea.)

MA Volatile Petroleum Hydrocarbon (VPH) Standard (13 components)

n-pentane (C5)	1,000µg/mL	naphthalene	1,000
n-nonane (C9)	1,000	toluene	1,500
benzene	500	1,2,4-trimethylbenzene	1,000
ethylbenzene	500	*m*-xylene	1,000
isooctane	1,500	*o*-xylene	1,000
2-methylpentane	1,500	*p*-xylene	1,000
methyl *tert*-butyl ether (MTBE)	1,500		

In P&T methanol, 1mL/ampul
cat. # 30434 (ea.)

MA VPH Standard with Surrogate (14 components)

n-pentane (C5)	1,000µg/mL	methyl *tert*-butyl ether (MTBE)	1,500
n-nonane (C9)	1,000	naphthalene	1,000
benzene	500	toluene	1,500
2,5-dibromotoluene (SUR)	1,000	1,2,4-trimethylbenzene	1,000
ethylbenzene	500	*m*-xylene	1,000
isooctane	1,500	*o*-xylene	1,000
2-methylpentane	1,500	*p*-xylene	1,000

In P&T methanol, 1mL/ampul
cat. # 30452 (ea.)

MA VPH Matrix Spike Mix with Surrogate (14 components)

n-pentane (C5)
n-nonane (C9)
benzene
2,5-dibromotoluene (SUR)
ethylbenzene
isooctane
2-methylpentane
methyl *tert*-butyl ether (MTBE)
naphthalene
toluene
1,2,4-trimethylbenzene
m-xylene
o-xylene
p-xylene

2,500µg/mL each in P&T methanol, 1mL/ampul
cat. # 30454 (ea.)

MA VPH Surrogate Standard

2,5-dibromotoluene

1,000µg/mL in P&T methanol, 1mL/ampul
cat. # 30435 (ea.)

10,000µg/mL in P&T methanol, 1mL/ampul
cat. # 30453 (ea.)

Massachusetts APH Mix (26 components)

Cylinder Construction: aluminum
Cylinder Fitting: CGA-180 outlet

benzene
1,3-butadiene
butylcyclohexane
cyclohexane
n-decane (C10)
2,3-dimethylheptane
2,3-dimethylpentane
n-dodecane (C12)
ethylbenzene
n-heptane (C7)
n-hexane (C6)
isopentane
isopropylbenzene
4-isopropyltoluene
methyl *tert*-butyl ether (MTBE)
1-methyl-3-ethylbenzene
n-nonane (C9)
n-octane (C8)
toluene
toluene-d8 (IS)
1,2,3-trimethylbenzene
1,3,5-trimethylbenzene
n-undecane (C11)
m-xylene
o-xylene
p-xylene

In nitrogen, 104 liters @ 1800psi
1ppm cat. # 34540 (ea.)

In nitrogen, 110 liters @ 1800psi (Pi-marked Cylinder)
1ppm cat. # 34540-PI (ea.)

Requires a high-purity VOC single-stage regulator. See page 415.
No data pack available.

MA EPH Aromatic Hydrocarbon Standard (17 components)

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

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

MA EPH Aliphatic Hydrocarbon Standard (14 components)

n-nonane (C9)
n-decane (C10)
n-dodecane (C12)
n-tetradecane (C14)
n-hexadecane (C16)
n-octadecane (C18)
n-nonadecane (C19)
n-eicosane (C20)
n-docosane (C22)
n-tetracosane (C24)
n-hexacosane (C26)
n-octacosane (C28)
n-triacontane (C30)
n-hexatriacontane (C36)

1,000µg/mL each in hexane, 1mL/ampul
cat. # 31459 (ea.)

MA EPH Matrix Spike Mix (10 components)

n-nonane (C9)
n-tetradecane (C14)
n-nonadecane (C19)
n-eicosane (C20)
n-octacosane (C28)
acenaphthene
anthracene
chrysene
naphthalene
pyrene

250µg/mL each in acetone, 1mL/ampul
cat. # 31460 (ea.)

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Massachusetts *cont'd*

MA EPH Internal Standard
5-α-androstane
2,000µg/mL in methylene chloride, 1mL/ampul
cat. # 31065 (ea.)

MA EPH Surrogate Spike Mix
1-chlorooctadecane
o-terphenyl
4,000µg/mL each in acetone, 1mL/ampul
cat. # 31479 (ea.)

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

Naphthalene-d8
2,000µg/mL in methylene chloride, 1mL/ampul
cat. # 31043 (ea.)

MA Fractionation Surrogate Spike Mix
2-bromonaphthalene
2-fluorobiphenyl
4,000µg/mL each in hexane, 1mL/ampul
cat. # 31480 (ea.)

MA Fractionation Check Mix (31 components)

PAHs:	Hydrocarbons:
acenaphthene	*n*-nonane (C9)
acenaphthylene	*n*-decane (C10)
anthracene	*n*-dodecane (C12)
benzo(a)anthracene	*n*-tetradecane (C14)
benzo(a)pyrene	*n*-hexadecane (C16)
benzo(b)fluoranthene	*n*-octadecane (C18)
benzo(k)fluoranthene	*n*-nonadecane (C19)
benzo(ghi)perylene	*n*-eicosane (C20)
chrysene	*n*-docosane (C22)
dibenzo(a,h)anthracene	*n*-tetracosane (C24)
fluoranthene	*n*-hexacosane (C26)
fluorene	*n*-octacosane (C28)
indeno(1,2,3-cd)pyrene	*n*-triacontane (C30)
2-methylnaphthalene	*n*-hexatriacontane (C36)
naphthalene	
phenanthrene	
pyrene	

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

Michigan

Michigan GRO Mix (14 components)

benzene	naphthalene
1,2-dibromoethane	toluene
1,2-dichloroethane	1,2,4-trimethylbenzene
ethylbenzene	1,3,5-trimethylbenzene
isopropylbenzene	*m*-xylene
2-methylnaphthalene	*o*-xylene
methyl *tert*-butyl-ether (MTBE)	*p*-xylene

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

Mississippi

DRO Mix (Tennessee/Mississippi) (16 components)

n-decane (C10)	*n*-octadecane (C18)
n-undecane (C11)	*n*-nonadecane (C19)
n-dodecane (C12)	*n*-eicosane (C20)
n-tridecane (C13)	*n*-heneicosane (C21)
n-tetradecane (C14)	*n*-docosane (C22)
n-pentadecane (C15)	*n*-tricosane (C23)
n-hexadecane (C16)	*n*-tetracosane (C24)
n-heptadecane (C17)	*n*-pentacosane (C25)

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

Gasoline Component Standard (10 components)

benzene	500µg/mL	1,2,4-trimethylbenzene	1000
ethylbenzene	500	2,2,4-trimethylpentane	1500
heptane	500	*m*-xylene	1000
2-methylpentane	1500	*o*-xylene	1000
toluene	1500	*p*-xylene	1000

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

Northwest USA Regional Method (Oregon & Washington)
also see Washington, page 497

NW TPH-HCID Retention Time Mix
n-dodecane (C12)
toluene
n-tetracosane (C24)
2,500µg/mL each in methylene chloride, 1mL/ampul
cat. # 31485 (ea.)

NW TPH-HCID Surrogate Mix
n-pentacosane (C25)
4-bromofluorobenzene
5,000µg/mL each in methylene chloride, 1mL/ampul
cat. # 31486 (ea.)

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

NW TPH-Dx Surrogate Mix Standards
Each at 10,000µg/mL in methylene chloride, 1mL/ampul

Compound	cat.# (ea.)
2-fluorobiphenyl	31096
o-terphenyl	31097
p-terphenyl	31095
pentacosane (C25)	31487

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also available
See the GC Applications section for glycols application chromatograms - **pages 634-635**.

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Pennsylvania

PA DEP UST Standard (11 components)

benzene
1,2-dibromoethane
1,2-dichloroethane
ethylbenzene
isopropyl benzene
methyl *tert*-butyl ether (MTBE)
naphthalene
toluene
m-xylene
o-xylene
p-xylene

2,000µg/mL each in P&T methanol, 1mL/ampul
cat. # 30433 (ea.)

Tennessee/Mississippi

DRO Mix (Tennessee/Mississippi) (16 components)

n-decane (C10)
n-undecane (C11)
n-dodecane (C12)
n-tridecane (C13)
n-tetradecane (C14)
n-pentadecane (C15)
n-hexadecane (C16)
n-heptadecane (C17)
n-octadecane (C18)
n-nonadecane (C19)
n-eicosane (C20)
n-heneicosane (C21)
n-docosane (C22)
n-tricosane (C23)
n-tetracosane (C24)
n-pentacosane (C25)

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

Gasoline Component Standard (10 components)

benzene	500µg/mL	1,2,4-trimethylbenzene	1000
ethylbenzene	500	2,2,4-trimethylpentane	1500
heptane	500	*m*-xylene	1000
2-methylpentane	1500	*o*-xylene	1000
toluene	1500	*p*-xylene	1000

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

Don't see the UST mix you need? We can custom blend a UST mix to meet the requirements of your method. Use the form on **page 427** or visit our web site at www.restek.com.

Texas

Texas TNRCC Method 1006

TNRCC 1006 Retention Time Marker Mix

(9 components)

n-hexane (C6)
n-heptane (C7)
n-octane (C8)
n-decane (C10)
n-dodecane (C12)
n-hexadecane (C16)
n-heneicosane (C21)
n-octacosane (C28)
n-pentatriacontane (C35)

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

Texas TNRCC Method 1005

TNRCC 1005 Retention Time Markers Mix

n-hexane (C6)
n-dodecane (C12)
n-octacosane (C28)
n-pentatriacontane (C35)

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

TX TPH Locator Mix

n-hexane (C6)
n-decane (C10)
n-octacosane (C28)

200µg/mL each in pentane, 1mL/ampul
cat. # 31482 (ea.)

TX TPH Calibration Mix

diesel fuel #2 composite
unleaded gasoline composite

10,000µg/mL each in pentane, 1mL/ampul
cat. # 31483 (ea.)

TX TPH Matrix Spike Mix

diesel fuel #2 composite
unleaded gasoline composite

10,000µg/mL each in P&T methanol, 1mL/ampul
cat. # 31484 (ea.)

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

n-hexane (C6)
n-octane (C8)
n-decane (C10)
n-dodecane (C12)
n-hexadecane (C16)
n-heneicosane (C21)
n-octacosane (C28)
n-pentatriacontane (C35)
n-hexatriacontane (C36)

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

α,α,α-Trifluorotoluene

2,000µg/mL in P&T methanol, 1mL/ampul
cat. # 30048 (ea.)

2,500µg/mL in P&T methanol, 1mL/ampul
cat. # 30068 (ea.)

10,000µg/mL in P&T methanol, 1mL/ampul
cat. # 30083 (ea.)

1-Chlorooctane

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

1-Chlorooctadecane Mix

1-chlorooctadecane

10,000µg/mL in methylene chloride, 1mL/ampul
cat. # 31098 (ea.)

free literature

Texas UST Monitoring

Download your free copy from www.restek.com.

Fast Facts
lit. cat.# 59394

did you know?

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

See **page 427** for our Custom Reference Materials Request Form.

Washington

WA VPH Marker Standard (9 components)

n-pentane (C5)
n-hexane (C6)
n-octane (C8)
n-decane (C10)
n-dodecane (C12)
1-methylnaphthalene
naphthalene
toluene
1,2,3-trimethylbenzene

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

WA VPH Standard (15 components)

n-pentane (C5)
n-hexane (C6)
n-octane (C8)
n-decane (C10)
n-dodecane (C12)
benzene
ethylbenzene
1-methylnaphthalene
methyl *tert*-butyl ether (MTBE)
naphthalene
toluene
1,2,3-trimethylbenzene
m-xylene
o-xylene
p-xylene

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

WA EPH Aromatic Hydrocarbon Mix

acenaphthene
benzo(ghi)perylene
naphthalene
pyrene
toluene
1,2,3-trimethylbenzene

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

WA EPH Aliphatic Hydrocarbon Mix

n-octane (C8)
n-decane (C10)
n-dodecane (C12)
n-hexadecane (C16)
n-heneicosane (C21)
n-tetratriacontane (C34)

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

WA EPH Aromatic Hydrocarbon Standard

(18 components)

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

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

Washington *cont'd*

WA EPH Matrix Spike Mix (10 components)

n-decane (C10)
n-dodecane (C12)
n-hexadecane (C16)
n-heneicosane (C21)
acenaphthene
anthracene
benzo(a)pyrene
benzo(ghi)perylene
naphthalene
pyrene

250µg/mL each in acetone, 1mL/ampul
cat. # 31490 (ea.)

WA EPH Fractionation Check Mix (22 components)

n-octane (C8)
n-decane (C10)
n-dodecane (C12)
n-hexadecane (C16)
n-heneicosane (C21)
n-tetratriacontane (C34)
acenaphthene
acenaphthylene
anthracene
benzo(a)anthracene
benzo(a)pyrene
benzo(b)fluoranthene
benzo(k)fluoranthene
benzo(ghi)perylene
chrysene
dibenzo(a,h)anthracene
fluoranthene
fluorene
indeno(1,2,3-cd)pyrene
naphthalene
phenanthrene
pyrene

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

Wisconsin

PVOC/GRO Mix (Wisconsin) (10 components)

benzene
ethylbenzene
methyl *tert*-butyl ether
naphthalene
toluene
1,2,4-trimethylbenzene
1,3,5-trimethylbenzene
m-xylene
o-xylene
p-xylene

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

DRO Mix (EPA/Wisconsin) (10 components)

n-decane (C10)
n-dodecane (C12)
n-tetradecane (C14)
n-hexadecane (C16)
n-octadecane (C18)
n-eicosane (C20)
n-docosane (C22)
n-tetracosane (C24)
n-hexacosane (C26)
n-octacosane (C28)

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

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Northwest Regional/Washington UST Monitoring

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Fast Facts
lit. cat.# 59396

free literature

Wisconsin UST Monitoring

Download your free copy from www.restek.com.

Fast Facts
lit. cat.# 59392

Eric Steindl
Sales & Distribution Manager for Canada, Latin America, Africa, and the Middle East
18+ years of service!

Other Materials

Top: Diane Thompson, Shipping Technician

Bottom: Mike Moore and Lynn Hall, Shipping Technicians

ASTM Methods

Method	Type
E1387	Fire Debris
E1618	Fire Debris
D2887-01	Simulated Distillation Petrochemical
D2887	Simulated Distillation Petrochemical
D3710-95	Simulated Distillation Petrochemical
D4059-96	PCB Standards in Oil
D5197 new!	Formaldehyde and Other Carbonyl Compounds in Air
D5836-03	Air: Isocyanates & Oxazoladines
D6042-96	Plastic Container Testing
D6352-98	Polywax® Standards
D6584-00	Biodiesel

ASTM E1387 and E1618 (Fire Debris Analysis)

These materials also can be used for underground storage tank monitoring.

E1387 Column Resolution Check Mix

(13 components)

n-hexane (C6)	*n*-eicosane (C20)
n-octane (C8)	2-ethyltoluene
n-decane (C10)	3-ethyltoluene
n-dodecane (C12)	toluene
n-tetradecane (C14)	1,2,4-trimethylbenzene
n-hexadecane (C16)	*p*-xylene
n-octadecane (C18)	

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

cat. # 31224 (ea.)

E1618 Test Mix (13 components)

Components in this mix (0.5µL/mL or 0.05% volume/volume each) are at 10X the concentration of the final test solution specified in ASTM 1618 and ASTM 1387.

n-hexane (C6)	*n*-eicosane (C20)
n-octane (C8)	2-ethyltoluene
n-decane (C10)	3-ethyltoluene
n-dodecane (C12)	toluene
n-tetradecane (C14)	1,2,4-trimethylbenzene
n-hexadecane (C16)	*p*-xylene
n-octadecane (C18)	

0.05% volume/volume each in methylene chloride, 1mL/ampul

cat. # 31613 (ea.)

ASTM Simulated Distillation Petrochemical Mixtures

American Society for Testing and Materials (ASTM International) Method D2887-01 is used to determine the boiling range distribution of petroleum products and fractions having a final boiling point of 538°C (1000°F) or lower; a boiling range greater than 55°C (131°F) and a vapor pressure sufficiently low to permit sampling at ambient temperature.

ASTM D2887-01 Calibration Mix (20 components)

n-pentane (C5)	*n*-hexadecane (C16)
n-hexane (C6)	*n*-heptadecane (C17)
n-heptane (C7)	*n*-octadecane (C18)
n-octane (C8)	*n*-eicosane (C20)
n-nonane (C9)	*n*-tetracosane (C24)
n-decane (C10)	*n*-octacosane (C28)
n-undecane (C11)	*n*-dotriacontane (C32)
n-dodecane (C12)	*n*-hexatriacontane (C36)
n-tetradecane (C14)	*n*-tetracontane (C40)
n-pentadecane (C15)	*n*-tetratetracontane (C44)

1% weight each in carbon disulfide, 1g solution/ampul*

cat. # 31674 (ea.)

5% w/w, 1g /ampul**

cat. # 31675 (ea.)

No data pack available.

*This standard may only be shipped by FedEx® ground, and only within the US.

**The 5% w/w blend of neat hydrocarbons can be shipped in the US (overnight) and to our international customers.

ASTM Methods D2887 and D3710-95

These calibration mixtures are made using pure, highly characterized neat material, prepared using NIST-traceable balance and weights. Each ampul is supplied with a data sheet indicating the exact concentration, and a sample chromatogram.

D2887 Calibration Mix (17 components)

Compound	Conc. (% w/w)	Compound	Conc. (% w/w)
n-hexane (C6)	6	*n*-octadecane (C18)	5
n-heptane (C7)	6	*n*-eicosane (C20)	2
n-octane (C8)	8	*n*-tetracosane (C24)	2
n-nonane (C9)	8	*n*-octacosane (C28)	1
n-decane (C10)	12	*n*-dotriacontane (C32)	1
n-undecane (C11)	12	*n*-hexatriacontane (C36)	1
n-dodecane (C12)	12	*n*-tetracontane (C40)	1
n-tetradecane (C14)	12	*n*-tetratetracontane (C44)	1
n-hexadecane (C16)	10		

Packaged 1mL/ampul

cat. # 31222 (ea.)

No data pack available.

D3710-95 Calibration Mix (16 components)

Compound	Conc. (% w/w)	Compound	Conc. (% w/w)
n-pentane (C5)	8	*n*-pentadecane (C15)	2
n-hexane (C6)	6	2-methylbutane	10
n-heptane (C7)	10	2-methylpentane	6
n-octane (C8)	5	2,4-dimethylpentane	6
n-decane (C10)	4	toluene	12
n-dodecane (C12)	4	*p*-xylene	14
n-tridecane (C13)	2	*n*-propylbenzene	5
n-tetradecane (C14)	2	*n*-butylbenzene	4

Packaged 1mL/ampul

cat. # 31223 (ea.)

No data pack available.

Lisa Pantzar
R&D Chemist
1+ year of service!

ASTM Method D4059-96 (PCB Standards in Oil)

ASTM Method D4059-96 is used for determining PCB concentrations in various types of transformer oil, using GC/ECD detection. The analyst must dilute transformer oil samples in a solvent prior to injection. The oil in the sample has been shown to quench the ECD. Calibration mixtures of PCBs in transformer oil must be prepared and diluted identically to eliminate the detector quenching bias resulting when samples are analyzed.

We prepare these solutions in a mineral oil-based transformer oil (Exxon® Univolt® N-61), which has been tested to ensure it is PCB-free.

PCB-Free Transformer Oil

Neat

5mL cat. # 32424 (ea.)

50mL cat. # 32425 (ea.)

No data pack available.

Aroclor Standards

Compound	cat.# (ea.)
50mg/kg in transformer oil (PCB-free)	
Aroclor 1016	32075
Aroclor 1221	32077
Aroclor 1232	32079
Aroclor 1242	32081
Aroclor 1248	32083
Aroclor 1254	32085
Aroclor 1260	32087
500mg/kg in transformer oil (PCB-free)	
Aroclor 1016	32076
Aroclor 1221	32078
Aroclor 1232	32080
Aroclor 1242	32082
Aroclor 1248	32084
Aroclor 1254	32086
Aroclor 1260	32088

ASTM Method D5197 (Formaldehyde and Other Carbonyl Compounds in Air)

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

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

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

ASTM Method D5197 (Formaldehyde and Other Carbonyl Compounds in Air) *cont'd*

DNPH Reference Materials

Compound	cat.# (ea.)
100µg/mL in acetonitrile, 1mL/ampul	
acetaldehyde-2,4-DNPH	33074
acetone-2,4-DNPH	33075
acrolein-2,4-DNPH	33076
benzaldehyde-2,4-DNPH	33077
2-butanone-2,4-DNPH	33078
n-butyraldehyde-2,4-DNPH	33079
crotonaldehyde-2,4-DNPH	33080
2,5-dimethylbenzaldehyde-2,4-DNPH	33081
formaldehyde-2,4-DNPH	33082
glycolaldehyde-2,4-DNPH	33091
hexaldehyde-2,4-DNPH	33083
isobutyraldehyde-2,4-DNPH	33084
isovaleraldehyde-2,4-DNPH	33085
methacrolein-2,4-DNPH	33095
propionaldehyde-2,4-DNPH	33086
m-tolualdehyde-2,4-DNPH	33088
o-tolualdehyde-2,4-DNPH	33087
p-tolualdehyde-2,4-DNPH	33089
valeraldehyde-2,4-DNPH	33090

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

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 an analysis 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)piperzine (1-2pp) derivative.

Isocyanates Singles

Compound	cat.# (ea.)
1,000µg/mL in dimethyl sulfoxide, 1mL/ampul	
2,6-TDIP	33000
2,4-TDIP	33001
1,6-HDIP	33002
4,4'-MDIP	33003

Formaldehyde Oxazoladine

2,000µg/mL in toluene, 1mL/ampul
cat. # 33004 (ea.)

free data

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

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

ASTM Method D6042-96 (Plastic Container Testing)

American Society for Testing and Materials (ASTM International) Method D6042-96—*Test Method for Determination of Phenolic Antioxidants and Erucamide Slip Additives in Polypropylene Homopolymer Formulations Using Liquid Chromatography*—is a "consensus" or "referee" method used among plastic manufacturers and the pharmaceutical companies that purchase plastic containers. Plastic container manufacturers use this test to ensure the quality of their product to their pharmaceutical customers. Pharmaceutical companies also specify this test and provide their own lists of target compounds and concentration limits in purchase agreements.

This test calls for isopropanol extraction, HPLC separation, and UV detection. Restek offers a variety of reversed phase HPLC columns suitable for these separations. Restek also designed an analytical reference material to validate this method. This mixture contains the common antioxidants and slips listed in ASTM D6042-96, along with BHT.

ASTM D6042-96 Calibration Mix (7 components)

BHT
erucamide slip
vitamin E
Irgafos® 168
Irganox® 3114
Irganox® 1010
Irganox® 1076

50µg/mL each in isopropanol, 1mL/ampul
cat. # 31628 (ea.)

No data pack available.

ASTM D6042-96 Internal Standard Mix

Tinuvin® P

51.8µg/mL in isopropanol, 1mL/ampul
cat. # 31629 (ea.)

No data pack available.

Other Additives—Available From Restek as Custom Formulations

Similar methods for extractables in plastic pharmaceutical containers are cited in the United States Pharmacopoeia (USP), British Pharmacopoeia (BP), European Pharmacopoeia (EP), and Japanese Pharmacopoeia (JP). Customers may also have formulation-specific or product-specific test mixtures. Please contact us for a custom mixture. Our current inventory of raw materials includes these popular antioxidants. We have many more that are not listed and can obtain most compounds you may need.

- Ethanox® 323
- Ethanox® 330
- Ethanox® 702
- Ethanox® 703
- Irganox® L06
- Irganox® L57
- Irganox® L64
- Irganox® L109
- Irganox® L134
- Irganox® L135
- Irganox® 1035
- Santanox R
- Ultranox® 626
- Vanlube® 81
- Vanlube® 848
- Vanlube® 7723
- Vanlube® AZ
- Vanlube® NA
- Vanlube® PCX
- Vanlube® SL
- Vanlube® SS

ASTM Method D6352-98 (Polywax® Standards)

These high molecular weight hydrocarbon waxes are useful for simulated distillation and other high-temperature GC work.

Compound	qty.	cat.# (ea.)
1mL/ampul		
Polywax® 500	1g	36224
Polywax® 655	1g	36225
Polywax® 850	1g	36226
Polywax® 1000	1g	36227

No data pack available.

ASTM Method D6584-00 and EN14105 (Biodiesel)

Determining Free and Total Glycerin in B-100 Biodiesel Methyl Esters by GC

In the manufacture of biodiesel fuel, triglycerides are split into their monoalkyl ester components via transesterification. The fatty acid monoalkyl esters can be used as fuel in diesel engines. Amounts of free glycerin and total glycerin indicate the quality of the conversion of the oil or fat to monoalkyl esters. D6584-00 is a test method for quantitative determination of free glycerin, total glycerin, and mono-, di-, and triglycerides in biodiesel fuel methyl esters by GC, after silylation of the sample with N-methyl-N-(trimethylsilyl) trifluoroacetamide (MSTFA).

(s)-(-)-1,2,4-Butanetriol

(s)-(-)-1,2,4-butanetriol
1,000µg/mL in pyridine, 1mL/ampul
cat. # 33024 (ea.)
1,000µg/mL in pyridine, 5mL/ampul
cat. # 33032 (ea.)

Diolein

diolein (1,3-di[*cis*-octadecenoyl]glycerol)
5,000µg/mL in pyridine, 1mL/ampul
cat. # 33022 (ea.)

Glycerin

glycerin
500µg/mL in pyridine, 1mL/ampul
cat. # 33020 (ea.)

Monolein

monolein (1-mono[*cis*-9-octadecenoyl]-rac-glycerol)
5,000µg/mL in pyridine, 1mL/ampul
cat. # 33021 (ea.)

Monopalmitin

monopalmitin
5,000µg/mL in pyridine, 1mL/ampul
cat. # 33026 (ea.)

Tricaprin

tricaprin (1,2,3-tricaprinoylglycerol)
8,000µg/mL in pyridine, 1mL/ampul
cat. # 33025 (ea.)
8,000µg/mL in pyridine, 5mL/ampul
cat. # 33033 (ea.)

Triolein

triolein (1,2,3-tri[*cis*-octadecenoyl]glycerol)
5,000µg/mL in pyridine, 1mL/ampul
cat. # 33023 (ea.)

also available

Restek offers a full range of derivatization reagents in 10 x 1g and 25g package sizes. See page 514.

Diesel/Biodiesel 80:20 Blend Standard

The biodiesel component is methyl soyate.

diesel/biodiesel 80:20

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

Petroleum Standards

These petroleum standards are gravimetrically prepared, NIST-traceable by weight, and verified by one or more analytical methods.

Index

also available

Custom ULSD and LSD calibration standards are also available in 100mL, 200mL, 500mL, and 1 liter bottles.

Call our Analytical Reference Department at 800-356-1688 or 814-353-1300, or your Restek representative for details.

Sulfur Simulated Distillation Standard new!

SSDS

30 ppm total sulfur by weight from ethanethiol
60 ppm total sulfur by weight from 1-propanethiol
30 ppm total sulfur by weight from 1-butanethiol
60 ppm total sulfur by weight from 1-pentanethiol
30 ppm total sulfur by weight from 1-hexanethiol
60 ppm total sulfur by weight from 1-heptanethiol
30 ppm total sulfur by weight from 3,5-dimethlybenzenethiol
60 ppm total sulfur by weight from 1-octanethiol
30 ppm total sulfur by weight from 1-nonanethiol
60 ppm total sulfur by weight from 1-decanethiol
30 ppm total sulfur by weight from 1-pentadecanethiolol
60 ppm total sulfur by weight from 1-hexadecanethiol
30 ppm total sulfur by weight from 1-octadecanethiol
Balance: toluene/isooctane 1/15

1mL pre-scored amber ampul.

cat. # 33049 (ea.)

Speciated Sulfur System Suitability Checkout Standard new!

SSSSCS

0.50 ppm total sulfur by weight from dimethylsulfide
35.0 ppm total sulfur by weight from tertiary butyl mercaptan
50.0 ppm total sulfur by weight from thiopene
15.0 ppm total sulfur by weight from dimethyl disulfide
25.0 ppm total sulfur by weight from benzothiopene
Balance: isooctane

1mL pre-scored amber ampul.

cat. # 33050 (ea.)

EPA Ultra Low & Low Sulfur Diesel Standards and Samples in Diesel Fuel to Meet EPA Requirements for Lab Qualification new!

EPA Ultra Low Sulfur Diesel Precision Sample # 1

EPA Section 80.580-80.585 Title 40, Chapter 1, Part 80

Homogenous commercially available diesel fuel with sulfur content of 5-15 ppm. 1 x 200mL amber bottle.

cat. # 33051 (ea.)

EPA Low Sulfur Diesel Precision Sample # 2

EPA Section 80.580-80.585 Title 40, Chapter 1, Part 80

Homogenous commercially available diesel fuel with sulfur content of 200-500 ppm. 1 x 200mL amber bottle.

cat. # 33052 (ea.)

EPA Ultra Low Sulfur Diesel Accuracy Standard # 1

EPA Section 80.520(a)(1) and 80.510(b)

1-10 ppm total sulfur in a diesel fuel matrix for motor vehicle diesel and diesel additives subject to the 15 ppm sulfur standard.
1 x 200mL amber bottle.

cat. # 33053 (ea.)

EPA Ultra Low Sulfur Diesel Accuracy Standard # 2

EPA Section 80.520(a)(1) and 80.510(b)

10-20 ppm total sulfur in a diesel fuel matrix for motor vehicle diesel and diesel additives subject to the 15 ppm sulfur standard.
1 x 200mL amber bottle.

cat. # 33054 (ea.)

EPA Low Sulfur Diesel Accuracy Standard # 3

EPA Section 80.520(c) and 80.510(c)

100-200 ppm total sulfur in a diesel fuel matrix for motor vehicle diesel and diesel additives subject to the 500 ppm sulfur standard.
1 x 200mL amber bottle.

cat. # 33055 (ea.)

EPA Low Sulfur Diesel Accuracy Standard # 4

EPA Section 80.520(c) and 80.510(c)

400-500 ppm total sulfur in a diesel fuel matrix for motor vehicle diesel and diesel additives subject to the 500 ppm sulfur standard.
1 x 200mL amber bottle.

cat. # 33056 (ea.)

Ultra Low & Low Sulfur in Diesel Fuel Calibration Kits new!

EPA Section 80.580-80.585 Title 40, Chapter 1, Part 80

Cal Kit ULSD 1 - 20 kit

Blank
1.0 ppm total sulfur from di-*n*-butylsulfide in diesel fuel
2.5 ppm total sulfur from di-*n*-butylsulfide in diesel fuel
5.0 ppm total sulfur from di-*n*-butylsulfide in diesel fuel
10.0 ppm total sulfur from di-*n*-butylsulfide in diesel fuel
15.0 ppm total sulfur from di-*n*-butylsulfide in diesel fuel
20.0 ppm total sulfur from di-*n*-butylsulfide in diesel fuel

Set of seven 20mL bottles.

cat. # 33060 (kit)

Cal Kit ULSD 20 - 100 kit

Blank
20.0 ppm total sulfur from di-*n*-butylsulfide in diesel fuel
35.0 ppm total sulfur from di-*n*-butylsulfide in diesel fuel
50.0 ppm total sulfur from di-*n*-butylsulfide in diesel fuel
75.0 ppm total sulfur from di-*n*-butylsulfide in diesel fuel
100 ppm total sulfur from di-*n*-butylsulfide in diesel fuel

Set of six 20mL bottles.

cat. # 33061 (kit)

Cal Kit LSD 100 - 500 kit

Blank
100 ppm total sulfur from di-*n*-butylsulfide in diesel fuel
200 ppm total sulfur from di-*n*-butylsulfide in diesel fuel
300 ppm total sulfur from di-*n*-butylsulfide in diesel fuel
400 ppm total sulfur from di-*n*-butylsulfide in diesel fuel
500 ppm total sulfur from di-*n*-butylsulfide in diesel fuel

Set of six 20mL bottles.

cat. # 33062 (kit)

Low Sulfur in Gasoline Calibration Standards new!

EPA Section 80.190-80.415 Title 40, Chapter 1, Part 80

Cal Kit SG 10 - 50 kit

Blank
10 ppm sulfur from di-*n*-butylsulfide in gasoline by weight
20 ppm sulfur from di-*n*-butylsulfide in gasoline by weight
30 ppm sulfur from di-*n*-butylsulfide in gasoline by weight
40 ppm sulfur from di-*n*-butylsulfide in gasoline by weight
50 ppm sulfur from di-*n*-butylsulfide in gasoline by weight

Set of six 5mL amber bottles.

cat. # 33043 (kit)

Check Standard SG 25

25 ppm sulfur from di-*n*-butylsulfide in gasoline by weight.
Set of five 5mL amber bottles.

cat. # 33044 (ea.)

Low Sulfur in Gasoline Calibration Standards *cont'd*

Cal Kit SG 50 - 125 kit

Blank
50 ppm sulfur from di-*n*-butylsulfide in gasoline by weight
65 ppm sulfur from di-*n*-butylsulfide in gasoline by weight
80 ppm sulfur from di-*n*-butylsulfide in gasoline by weight
95 ppm sulfur from di-*n*-butylsulfide in gasoline by weight
110 ppm sulfur from di-*n*-butylsulfide in gasoline by weight
125 ppm sulfur from di-*n*-butylsulfide in gasoline by weight

Set of seven 5mL amber bottles.

cat. # 33045 (kit)

Check Standard SG 75

75 ppm sulfur from di-*n*-butylsulfide in gasoline by weight.
Set of five 5mL amber bottles.

cat. # 33046 (ea.)

Cal Kit SG 110 - 500 kit

Blank
110 ppm sulfur from di-*n*-butylsulfide
200 ppm sulfur from di-*n*-butylsulfide
300 ppm sulfur from di-*n*-butylsulfide
400 ppm sulfur from di-*n*-butylsulfide
500 ppm sulfur from di-*n*-butylsulfide

Set of six 5mL amber bottles.

cat. # 33047 (kit)

Check Standard SG 175

175 ppm sulfur from di-*n*-butylsulfide in gasoline by weight.
Set of five 5mL amber bottles.

cat. # 33048 (ea.)

Sulfur in Isooctane Calibration Kits and Check Standards new!

ASTM Methods D3120, D4045, D5453, D6920

Cal Kit SISO 0.125 - 2.5ppm kit

Blank
0.125 w/w ppm total sulfur from di-*n*-butylsulfide in isooctane
0.25 w/w ppm total sulfur from di-*n*-butylsulfide in isooctane
0.50 w/w ppm total sulfur from di-*n*-butylsulfide in isooctane
1.00 w/w ppm total sulfur from di-*n*-butylsulfide in isooctane
2.50 w/w ppm total sulfur from di-*n*-butylsulfide in isooctane

Calibration kit for total sulfur by weight from di-*n*-butylsulfide in isooctane 0.125-2.5ppm range. Set of six 1mL pre-scored ampuls.

cat. # 33035 (kit)

Check Standard SISO 0.75

0.75ppm total sulfur by weight from di-*n*-butylsulfide in isooctane.
Set of five 1mL pre-scored ampuls.

cat. # 33036 (ea.)

also available

Custom ULSD and LSD calibration standards are also available in 100mL, 200mL, 500mL, and 1 liter bottles.

Call our Analytical Reference Department at 800-356-1688 or 814-353-1300, or your Restek representative for details.

please note

These petroleum standards are gravimetrically prepared, NIST-traceable by weight, and verified by one or more analytical methods.

also available

Custom total sulfur & total nitrogen in isooctane check standards also available.

Call our Analytical Reference Department at 800-356-1688 or 814-353-1300, or your Restek representative for details.

free data

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

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

Sulfur in Isooctane Calibration Kits and Check Standards *cont'd*

Cal Kit SISO 2.5 - 50 ppm — kit

Blank
2.50 w/w ppm total sulfur from di-*n*-butylsulfide in isooctane
5.00 w/w ppm total sulfur from di-*n*-butylsulfide in isooctane
10.00 w/w ppm total sulfur from di-*n*-butylsulfide in isooctane
15.00 w/w ppm total sulfur from di-*n*-butylsulfide in isooctane
20.00 w/w ppm total sulfur from di-*n*-butylsulfide in isooctane
25.00 w/w ppm total sulfur from di-*n*-butylsulfide in isooctane
50.00 w/w ppm total sulfur from di-*n*-butylsulfide in isooctane

Calibration kit for total sulfur by weight from di-*n*-butylsulfide in isooctane 2.5-50 ppm range. Set of eight 1mL pre-scored ampuls.

cat. # 33037 (kit)

Check Standard SISO 30

30 ppm total sulfur by weight from di-*n*-butylsulfide in isooctane. Set of five 1mL pre-scored ampuls.

cat. # 33038 (ea.)

Cal Kit SISO 50 - 1000 ppm — kit

Blank
50 w/w ppm total sulfur from di-*n*-butylsulfide in isooctane
75 w/w ppm total sulfur from di-*n*-butylsulfide in isooctane
100 w/w ppm total sulfur from di-*n*-butylsulfide in isooctane
250 w/w ppm total sulfur from di-*n*-butylsulfide in isooctane
500 w/w ppm total sulfur from di-*n*-butylsulfide in isooctane
1000 w/w ppm total sulfur from di-*n*-butylsulfide in isooctane

Calibration kit for total sulfur by weight from di-*n*-butylsulfide in isooctane 50-100 ppm range. Set of seven 1mL pre-scored ampuls.

cat. # 33039 (kit)

Check Standard SISO 300

300 ppm total sulfur by weight from di-*n*-butylsulfide in isooctane. Set of five 1mL pre-scored ampuls.

cat. # 33040 (ea.)

Cal Kit SISO 1000 - 6000 — kit

Blank
1000 w/w ppm total sulfur from di-*n*-butylsulfide in isooctane
1500 w/w ppm total sulfur from di-*n*-butylsulfide in isooctane
2000 w/w ppm total sulfur from di-*n*-butylsulfide in isooctane
4000 w/w ppm total sulfur from di-*n*-butylsulfide in isooctane
6000 w/w ppm total sulfur from di-*n*-butylsulfide in isooctane

Calibration kit for total sulfur by weight from di-*n*-butylsulfide in isooctane 1000 - 6000 ppm range. Set of six 1mL pre-scored ampuls.

cat. # 33041 (kit)

Check Standard SISO 3000

3000 pm total sulfur by weight from di-*n*-butylsulfide in isooctane. Set of five 1mL pre-scored ampuls.

cat. # 33042 (ea.)

Total Sulfur & Total Nitrogen in Isooctane Calibration Kits — new!

ASTM Methods D3120, D4045, D4629, D5453, D5762, D6069, D6920

Cal Kit SNISO 0.125 - 5.0 — kit

Blank
0.125 w/w ppm total sulfur from thiophene & total nitrogen from pyridine in isooctane
0.25 w/w ppm total sulfur from thiophene & total nitrogen from pyridine in isooctane
0.50 w/w ppm total sulfur from thiophene & total nitrogen from pyridine in isooctane
1.00 w/w ppm total sulfur from thiophene & total nitrogen from pyridine in isooctane
2.50 w/w ppm total sulfur from thiophene & total nitrogen from pyridine in isooctane
5.00 w/w ppm total sulfur from thiophene & total nitrogen from pyridine in isooctane

Set of seven 1mL pre-scored amber ampuls.

cat. # 33057 (kit)

Cal Kit SNISO 5.0 - 50.0 — kit

Blank
5.00 w/w ppm total sulfur from thiophene & total nitrogen from pyridine in isooctane
10.0 w/w ppm total sulfur from thiophene & total nitrogen from pyridine in isooctane
25.0 w/w ppm total sulfur from thiophene & total nitrogen from pyridine in isooctane
50.0 w/w ppm total sulfur from thiophene & total nitrogen from pyridine in isooctane

Set of five 1mL pre-scored amber ampuls.

cat. # 33058 (kit)

Cal Kit SNISO 50.0 - 1000 — kit

Blank
50.0 w/w ppm total sulfur from thiophene & total nitrogen from pyridine in isooctane
75.0 w/w ppm total sulfur from thiophene & total nitrogen from pyridine in isooctane
100 w/w ppm total sulfur from thiophene & total nitrogen from pyridine in isooctane
250 w/w ppm total sulfur from thiophene & total nitrogen from pyridine in isooctane
500 w/w ppm total sulfur from thiophene & total nitrogen from pyridine in isooctane
1000 w/w ppm total sulfur from thiophene & total nitrogen from pyridine in isooctane

Set of seven 1mL pre-scored amber ampuls.

cat. # 33059 (kit)

Sulfur in Mineral Oil Calibration Kits and Check Standards

new!

ASTM Methods D2622, D3120, D4045, D4294, D5453, D6212, D6313, D6428, D6445, D7039

Cal Kit SMO 2 - 20 — kit

Blank
2.00 w/w ppm total sulfur from di-*n*-butylsulfide in mineral oil
5.00 w/w ppm total sulfur from di-*n*-butylsulfide in mineral oil
7.00 w/w ppm total sulfur from di-*n*-butylsulfide in mineral oil
10.00 w/w ppm total sulfur from di-*n*-butylsulfide in mineral oil
15.00 w/w ppm total sulfur from di-*n*-butylsulfide in mineral oil
20.00 w/w ppm total sulfur from di-*n*-butylsulfide in mineral oil

Set of seven 100mL bottles.

cat. # 33063 (kit)

Check Standard SMO 11

11.0 w/w ppm total sulfur from di-*n*-butylsulfide in mineral oil.
1 liter bottle.

cat. # 33064 (ea.)

Cal Kit SMO 10 - 100 — kit

Blank
10.0 w/w ppm total sulfur from di-*n*-butylsulfide in mineral oil
25.0 w/w ppm total sulfur from di-*n*-butylsulfide in mineral oil
50.0 w/w ppm total sulfur from di-*n*-butylsulfide in mineral oil
100 w/w ppm total sulfur from di-*n*-butylsulfide in mineral oil

Set of five 100mL bottles.

cat. # 33065 (kit)

Check Standard SMO 30

30.0 w/w ppm total sulfur from di-*n*-butylsulfide in mineral oil.
1 liter bottle.

cat. # 33066 (ea.)

Cal Kit SMO 100 - 1000 — kit

Blank
100 w/w ppm total sulfur from di-*n*-butylsulfide in mineral oil
200 w/w ppm total sulfur from di-*n*-butylsulfide in mineral oil
300 w/w ppm total sulfur from di-*n*-butylsulfide in mineral oil
400 w/w ppm total sulfur from di-*n*-butylsulfide in mineral oil
500 w/w ppm total sulfur from di-*n*-butylsulfide in mineral oil
600 w/w ppm total sulfur from di-*n*-butylsulfide in mineral oil
750 w/w ppm total sulfur from di-*n*-butylsulfide in mineral oil
1000 w/w ppm total sulfur from di-*n*-butylsulfide in mineral oil

Set of nine 100mL bottles.

cat. # 33067 (kit)

Check Standard SMO 350

350 w/w ppm total sulfur from di-*n*-butylsulfide in mineral oil.
1 liter bottle.

cat. # 33068 (ea.)

Cal Kit SMO 1000 - 25000 — kit

Blank
1000 w/w ppm total sulfur from di-*n*-butylsulfide in mineral oil
2500 w/w ppm total sulfur from di-*n*-butylsulfide in mineral oil
5000 w/w ppm total sulfur from di-*n*-butylsulfide in mineral oil
1.00% total sulfur by weight from di-*n*-butylsulfide in mineral oil
1.50% total sulfur by weight from di-*n*-butylsulfide in mineral oil
2.00% total sulfur by weight from di-*n*-butylsulfide in mineral oil
2.50% total sulfur by weight from di-*n*-butylsulfide in mineral oil

Set of eight 100mL bottles.

cat. # 33069 (kit)

Check Standard SMO 3000

3000 w/w ppm total sulfur from di-*n*-butylsulfide. 1 liter bottle.

cat. # 33070 (ea.)

Cal Kit SMO 25000 - 50000 — kit

Blank
2.50% total sulfur by weight from di-*n*-butylsulfide in mineral oil
3.00% total sulfur by weight from di-*n*-butylsulfide in mineral oil
3.50% total sulfur by weight from di-*n*-butylsulfide in mineral oil
4.00% total sulfur by weight from di-*n*-butylsulfide in mineral oil
4.50% total sulfur by weight from di-*n*-butylsulfide in mineral oil
5.00% total sulfur by weight from di-*n*-butylsulfide in mineral oil

Set of seven 100mL bottles.

cat. # 33071 (kit)

Check Standard SMO 37000

3.70% total sulfur by weight from di-*n*-butylsulfide in mineral oil.
1 liter bottle.

cat. # 33072 (ea.)

please note

These petroleum standards are gravimetrically prepared, NIST-traceable by weight, and verified by one or more analytical methods.

Weathered Petrochemical Standards

These solutions are prepared from a single source (one refinery) product. The weathered materials indicate the percent weight loss from the original material. Samples of regular and premium grade unleaded gasoline were blended in equal volumes.

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

Stoddard Solvent Standard

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

We prepare our mineral spirits solutions from an equal volume blend of Type I, II, and III mineral spirits.

Compound	cat.# (ea.)
5,000µg/mL in P&T methanol, 1mL/ampul	
unleaded gasoline: 25% weathered	30097
unleaded gasoline: 50% weathered	30098
unleaded gasoline: 75% weathered	30099
unleaded gasoline: 99% weathered	30436
unleaded gasoline: unweathered	30096
5,000µg/mL in methylene chloride, 1mL/ampul	
kerosene: 25% weathered	31230
kerosene: 50% weathered	31231
kerosene: 75% weathered	31232
kerosene: unweathered	31229
5,000µg/mL in methylene chloride, 1mL/ampul	
diesel fuel #2: 25% weathered	31234
diesel fuel #2: 50% weathered	31235
diesel fuel #2: 75% weathered	31236
diesel fuel #2: unweathered	31233
5,000µg/mL in methylene chloride, 1mL/ampul	
mineral spirits: 25% weathered	31226
mineral spirits: 50% weathered	31227
mineral spirits: 75% weathered	31228
mineral spirits: unweathered	31225
50,000µg/mL in methylene chloride, 1mL/ampul unless otherwise noted	
mineral spirits: unweathered	31260
mineral spirits: unweathered (5mL)	31261

Weathered Petrochemical Standards *cont'd*

Weathered Gasoline Kit

kit

30096: Unleaded Gasoline Standard
30097: Unleaded Gas Standard: 25% Weathered
30098: Unleaded Gas Standard: 50% Weathered
30099: Unleaded Gas Standard: 75% Weathered

Contains 1mL each of these mixtures.
cat. # 30100 (kit)

Weathered Gasoline Kit #2

kit

30096: Unleaded Gasoline Standard
30097: Unleaded Gas Standard: 25% Weathered
30098: Unleaded Gas Standard: 50% Weathered
30099: Unleaded Gas Standard: 75% Weathered
30436: Unleaded Gas Standard: 99% Weathered

Contains 1mL each of these mixtures.
cat. # 30437 (kit)

Weathered Kerosene Kit

kit

31229: Kerosene Standard
31230: Kerosene Standard: 25% Weathered
31231: Kerosene Standard: 50% Weathered
31232: Kerosene Standard: 75% Weathered

Contains 1mL each of these mixtures.
cat. # 31238 (kit)

Weathered Diesel Fuel #2 Kit

kit

31233: Diesel Fuel #2 Standard
31234: Diesel Fuel #2 Standard: 25% Weathered
31235: Diesel Fuel #2 Standard: 50% Weathered
31236: Diesel Fuel #2 Standard: 75% Weathered

Contains 1mL each of these mixtures.
cat. # 31239 (kit)

Weathered Mineral Spirits Kit

kit

31225: Mineral Spirits Standard
31226: Mineral Spirits Standard: 25% Weathered
31227: Mineral Spirits Standard: 50% Weathered
31228: Mineral Spirits Standard: 75% Weathered

Contains 1mL each of these mixtures.
cat. # 31237 (kit)

please **note**

We can custom prepare weathered accelerants for fire debris analysis.

Please complete the custom reference material request form on page 427.

We'll be glad to work with you!

Blood Alcohol Standards

We have developed calibration mixtures for performing multi-point instrument calibrations so that laboratories can construct calibration curves. The data pack (which can be downloaded from our website at www.restek.com/datapacks) includes a Certificate of Analysis, raw material testing results, statistical QA results, analytical balance printout, and gravimetric weight of each analyte. Ethanol in these mixes is National Institute of Standards and Technology (NIST)-traceable.

Compound	qty.	cat.#
0.010g/dL forensic ethanol solution		
1mL/ampul	5-pk.	36276
1mL/ampul	10-pk.	36278
5mL/ampul	ea.	36277
0.015g/dL forensic ethanol solution		
1mL/ampul	5-pk.	36232
1mL/ampul	10-pk.	36332
20mL/ampul	ea.	36248
0.02g/dL forensic ethanol solution		
1mL/ampul	5-pk.	36233
1mL/ampul	10-pk.	36333
20mL/ampul	ea.	36249
0.025g/dL forensic ethanol solution		
1mL/ampul	5-pk.	36234
1mL/ampul	10-pk.	36334
5mL/ampul	ea.	36242
0.04g/dL forensic ethanol solution		
1mL/ampul	5-pk.	36235
1mL/ampul	10-pk.	36335
5mL/ampul	ea.	36243
20mL/ampul	ea.	36251
0.05g/dL forensic ethanol solution		
1mL/ampul	5-pk.	36257
1mL/ampul	10-pk.	36259
5mL/ampul	ea.	36258
20mL/ampul	ea.	36260
0.08g/dL forensic ethanol solution		
1mL/ampul	5-pk.	36262
1mL/ampul	10-pk.	36264
5mL/ampul	ea.	36263
20mL/ampul	ea.	36265
0.1g/dL forensic ethanol solution		
1mL/ampul	5-pk.	36236
1mL/ampul	10-pk.	36336
5mL/ampul	ea.	36244
20mL/ampul	ea.	36252
0.15g/dL forensic ethanol solution		
1mL/ampul	5-pk.	36237
1mL/ampul	10-pk.	36337
5mL/ampul	ea.	36245
20mL/ampul	ea.	36253
0.2g/dL forensic ethanol solution		
1mL/ampul	5-pk.	36238
1mL/ampul	10-pk.	36338
5mL/ampul	ea.	36246
20mL/ampul	ea.	36254
0.3g/dL forensic ethanol solution		
1mL/ampul	5-pk.	36239
1mL/ampul	10-pk.	36339
5mL/ampul	ea.	36247
20mL/ampul	ea.	36255
0.4g/dL forensic ethanol solution		
1mL/ampul	5-pk.	36266
1mL/ampul	10-pk.	36268
5mL/ampul	ea.	36267
20mL/ampul	ea.	36269

Blood Alcohol Standards *cont'd*

Blood Alcohol Mix Resolution Control Standard

(8 components)

Use to verify the retention time for each compound normally included in a blood alcohol test, and to verify that the compounds are resolved from and do not interfere with one another. Concentration of ethanol is NIST-traceable.

acetaldehyde	ethyl acetate
acetone	isopropanol
acetonitrile	methanol
ethanol (NIST certified value)	methyl ethyl ketone

0.100g/dL each in water, 1mL/ampul
cat. # 36256 (ea.)

Bank Dye Standard (MAAQ)

Restek offers this qualitative standard to help investigators in municipal police stations and criminal laboratories fight crime.

1-N-(methylamino)anthraquinone (MAAQ)

100µg/mL in methylene chloride, 1mL/ampul
cat. # 31823 (ea.)

No data pack available.

Explosives Solutions

Single-Component Explosives Solutions

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

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

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

ACN=acetonitrile
M = methanol

did you know?

Our Rtx®-BAC1 and Rtx®-BAC2 columns can resolve a blood alcohol sample in less than 3 minutes. We continually improve analytical methods and develop innovative products for clinical/forensic applications. If you have any questions about methods or products, please contact our Technical Service Team at: **support@restek.com** or contact your Restek representative.

also available

Explosives Analysis

For other reference mixes for analyses of nitroaromatic and nitramine explosives residues, refer to **pages 461 and 471**.

References (Not available from Restek.)
[1]US 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.
[2]M. E. Walsh, T. Ranney, *J. Chromatogr. Sci.*, Vol. 36, pp. 406-416, August 1998.

free data

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

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

Exempted Drug of Abuse Reference Materials

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

Compound	CAS#	Solvent Code	Conc.	cat.# (ea.)
Benzodiazepines				
alprazolam	28981-97-7	PTM	1,000	34042
bromazepam	1812-30-2	PTM	1,000	34043
chlordiazepoxide	438-41-5	PTM	1,000	34044
clobazam	22316-47-8	PTM	1,000	34045
clonazepam	1622-61-3	PTM	1,000	34046
diazepam	439-14-5	PTM	1,000	34047
flunitrazepam	1622-62-4	PTM	1,000	34049
flurazepam	1172-18-5	PTM	1,000	34050
lorazepam	846-49-1	PTM	1,000	34051
nitrazepam	146-22-5	PTM	1,000	34053
oxazepam	604-75-1	PTM	1,000	34054
prazepam	2955-38-6	PTM	1,000	34055
temazepam	896-50-4	PTM	1,000	34056
triazolam	28911-01-5	PTM	1,000	34057
Cocaine & Metabolites				
cocaethylene	529-38-4	ACN	1,000	34066
cocaine	53-21-4	PTM	1,000	34015
benzoylecgonine	519-09-5	PTM	1,000	34016
ecgonine	5796-31-6	PTM	1,000	34017
ecgonine methyl ester	38969-40-3	PTM	1,000	34018
Methadone & Metabolites				
EDDP perchlorate	66729-78-0	M	1,000	34069
methadone	1095-90-5	PTM	1,000	34005
Amphetamines & Metabolites				
d-amphetamine	51-63-8	PTM	1,000	34020
(+)meth amphetamine	51-57-0	PTM	1,000	34021
3,4-MDA HCl	4764-17-4	M	1,000	34070
3,4-MDEA HCl	82801-81-8	M	1,000	34072
3,4-MDMA HCl	42542-10-9	M	1,000	34071
phenylpropanolamine HCl	154-41-6	M	1,000	34073
Opiates & Metabolites				
codeine	76-57-3	PTM	1,000	34000
dextromethorphan HBr monohydrate	125-69-9	M	1,000	34081
hydrocodone	34195-34-1	PTM	1,000	34002
hydromorphone	71-68-1	PTM	1,000	34063
morphine	6211-15-0	PTM	1,000	34006
oxycodone	124-90-3	PTM	1,000	34007
oxymorphone	76-41-5	PTM	1,000	34065
Cannabinoid & Metabolites				
cannabidiol	13956-24-1	PTM	1,000	34011
cannabinol	521-35-7	PTM	1,000	34010
Δ^9-THC	1972-08-3	M	1,000	34067
(±)11-nor-9-carboxy-Δ^9-THC	104874-50-2	M	100	34068
Barbiturates				
amobarbital	64-43-7	PTM	1,000	34028
aprobarbital	77-02-1	PTM	1,000	34029
barbital	57-44-3	PTM	1,000	34030
butabarbital	125-40-6	PTM	1,000	34031
butalbital	77-26-9	PTM	1,000	34032
DL-glutethimide	18389-24-7	PTM	1,000	34058
hexobarbital	56-29-1	PTM	1,000	34033
mephobarbital	115-38-8	PTM	1,000	34034
methohexital	151-83-7	PTM	1,000	34035
pentobarbital	76-74-4	PTM	1,000	34036
phenobarbital	50-06-6	PTM	1,000	34037
secobarbital	29071-21-4	PTM	1,000	34038
talbutal	115-44-6	PTM	1,000	34039
thiamylal	337-47-3	PTM	1,000	34040
thiopental	71-73-8	PTM	1,000	34041

Compound	CAS#	Solvent Code	Conc.	cat.# (ea.)
GHB				
1,4-butanediol	110-63-4	M	1,000	34078
γ-butyrolactone (GBL)	96-48-0	ACN	1,000	34077
γ-hydroxybutyrate (GHB)	502-85-2	M	1,000	34076
α-methylene-γ-butyrolactone (AMGBL)	547-65-9	ACN	1,000	34079
γ-valerolactone	108-29-2	ACN	1,000	34080
LSD				
LAMPA	40158-98-3	ACN	1,000	34075
LSD	50-37-3	ACN	25	34089
LSD	50-37-3	ACN	100	34088
Other				
benzphetamine	5411-22-3	PTM	1,000	34022
caffeine	58-08-2	M	1,000	34084
continine	486-56-6	M	1,000	34086
fenfluramine	16105-77-4	PTM	1,000	34023
fentanyl	437-38-7	M	1,000	34082
nor-fentanyl oxalate	1609-66-1	M	1,000	34083
levorphanol	5985-38-6	PTM	1,000	34003
meperidine	50-13-5	PTM	1,000	34004
meprobamate	57-53-4	PTM	1,000	34059
methaqualone	340-56-7	PTM	1,000	34064
methyprylon	125-64-4	PTM	1,000	34060
nicotine	54-11-5	M	1,000	34085
pentazocine	64024-15-3	PTM	1,000	34062
phencyclidine	956-90-1	PTM	1,000	34027
phendimetrazine	50-58-8	PTM	1,000	34025
phenmetrazine	1707-14-8	PTM	1,000	34026
phentermine	1197-21-3	PTM	1,000	34024
dextro-propoxyphene	1639-60-7	PTM	1,000	34008
thebaine	115-37-7	PTM	1,000	34009

ACN = acetonitrile
M = methanol
PTM = purge & trap grade methanol

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USP <467>

The United States Pharmacopeia (USP) general chapter <467> *Residual Solvents* is a widely used compendial method intended for identifying and quantifying residual solvents in drug substances, drug products, and excipients. In an attempt to better mirror the International Conference on Harmonization (ICH) guidelines, the USP is proposing a more comprehensive methodology in residual solvent testing—the current USP30/NF25. The ICH publishes a guideline (Q3C) listing the acceptable amounts of solvent residues that can be present. In the ICH guideline, residual solvents are summarized by class, according to their toxicity. Class 1 compounds are carcinogenic compounds that pose a risk to both the consumer and the environment. The use of these solvents is to be avoided, but if they are used, they must be tightly controlled. Class 2 compounds are nongenotoxic animal carcinogens, and concentrations of these compounds should be limited. Chromatographic analysis is needed for both the Class 1 and Class 2 residual solvents.

Initially set to become effective July 1, 2007, the implementation of the current version of USP <467>: *Residual Solvents* has been delayed until July 1, 2008. Until that time, the *Other Analytical Procedures* section of the previous version will be retained.

USP <467> Singles

new!

Volume is 1mL/ampul.

Compound	Solvent	Conc.	cat.# (ea.)
acetonitrile	DMSO	2.05mg/mL	36281
benzene	DMSO	10mg/mL	36282
carbon tetrachloride	DMSO	20mg/mL	36283
chlorobenzene	DMSO	1.8mg/mL	36284
chloroform	DMSO	0.3mg/mL	36285
cyclohexane	DMSO	19.4mg/mL	36286
1,1-dichloroethene	DMSO	40mg/mL	36287
1,2-dichloroethane	DMSO	25mg/mL	36288
cis-1,2-dichloroethylene	DMSO	4.67mg/mL	36289
trans-1,2-dichloroethylene	DMSO	4.67mg/mL	36290
1,2-dimethoxyethane	DMSO	0.5mg/mL	36291
N,N-dimethylacetamide	DMSO	5.45mg/mL	36292
N,N-dimethylformamide	DMSO	4.4mg/mL	36293
1,4-dioxane	DMSO	1.9mg/mL	36294
2-ethoxyethanol	DMSO	0.8mg/mL	36295
ethylbenzene	DMSO	1.84mg/mL	36296
ethylene glycol	DMSO	3.1mg/mL	36297
formamide	DMSO	1.1mg/mL	36298
hexane	DMSO	1.45mg/mL	36299
methanol	DMSO	15mg/mL	36401
2-methoxyethanol	DMSO	0.25mg/mL	36402
methylbutylketone	DMSO	0.25mg/mL	36400
methylcyclohexane	DMSO	5.9mg/mL	36403
methylene chloride	DMSO	3mg/mL	36404
N-methylpyrrolidone	DMSO	2.65mg/mL	36405
nitromethane	DMSO	0.25mg/mL	36406
pyridine	DMSO	1mg/mL	36407
sulfolane	DMSO	0.8mg/mL	36413
tetrahydrofuran	DMSO	3.6mg/mL	36408
tetralin	DMSO	0.5mg/mL	36409
toluene	DMSO	4.45mg/mL	36410
1,1,1-trichloroethane	DMSO	50mg/mL	36411
trichloroethene	DMSO	0.4mg/mL	36412
m-xylene	DMSO	6.51mg/mL	36414
o-xylene	DMSO	0.97mg/mL	36415
p-xylene	DMSO	1.52mg/mL	36416

DMSO=dimethyl sulfoxide

These mixtures represent the changes made in USP30/NF25 effective July 1, 2008.

Residual Solvents - Class 1

new!

benzene	10mg/mL	1,1-dichloroethene	40
carbon tetrachloride	20	1,1,1-trichloroethene	50
1,2-dichloroethane	25		

In dimethyl sulfoxide, 1mL/ampul

cat. # 36279 (ea.)

These mixtures represent the changes made in USP30/NF25 effective July 1, 2008. *cont'd*

Residual Solvents Class 2 - Mix B

new!

(8 components)

chloroform	60µg/mL	nitromethane	50
1,2-dimethoxyethane	100	pyridine	200
n-hexane (C6)	290	tetralin	100
2-hexanone	50	trichloroethene	80

In dimethyl sulfoxide, 1mL/ampul

cat. # 36280 (ea.)

These mixtures represent the changes made in USP28/NF23 effective January 1, 2005.

Residual Solvents Class 2 - Mix A

(15 components)

acetonitrile	2.05mg/mL	methylcyclohexane	5.90
chlorobenzene	1.80	methylene chloride	3.00
cyclohexane	19.40	tetrahydrofuran	3.45
cis-1,2-dichloroethene	4.70	toluene	4.45
trans-1,2-dichloroethene	4.70	*m*-xylene	6.51
1,4-dioxane	1.90	*o*-xylene	0.98
ethylbenzene	1.84	*p*-xylene	1.52
methanol	15.00		

In dimethyl sulfoxide, 1mL/ampul

cat. # 36271 (ea.)

Residual Solvents Class 2 - Mix B

(8 components)

chloroform	300µg/mL	nitromethane	250
1,2-dimethoxyethane	500	pyridine	1,000
n-hexane (C6)	1,450	tetralin	500
2-hexanone	250	trichloroethene	400

In dimethyl sulfoxide, 1mL/ampul

cat. # 36272 (ea.)

Residual Solvents Class 2 - Mix C

(8 components)

2-ethoxyethanol	800µg/mL	2-methoxyethanol (methyl Cellosolve®)	250
ethylene glycol	3,100	N-methylpyrrolidone	2,650
formamide	1,100	sulfolane	800
N,N-dimethylacetamide	5,450		
N,N-dimethylformamide	4,400		

In dimethyl sulfoxide, 1mL/ampul

cat. # 36273 (ea.)

also available

For a list of OVI retention times, see page 721.

also available

For other reference mixes for USP <467> and European Pharmacopoeia, see page 510.

Class III solvents are available as custom mixes. See page 427 for our custom reference material request form.

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USP <467> Residual Solvents Method

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lit. cat.# 580166

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GC Analysis of Organic Volatile Impurities According to USP <467> Supplement Two of USP 25-NF 20, effective January, 2002

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Applications Note
lit. cat.# 59577C

USP <467> *cont'd*

These Class 1 mixtures represent the changes made in USP24/NF19 effective January 1, 2000, and USP23/NF18 effective January 1, 1995 to December 31, 1999. While these mixtures do not meet the current USP guidelines, many still use these mixtures to obtain a detectable benzene peak for the direct injection methods, Method I and Method V.

USP <467> Calibration Mix #7

chloroform	60µg/mL	methylene chloride	600
1,4-dioxane	380	trichloroethene	80

In dimethylsulfoxide, 1mL/ampul
cat. # 36009 (ea.)

USP <467> Calibration Mix #6

chloroform	60µg/mL	methylene chloride	600
1,4-dioxane	380	trichloroethene	80

In methanol, 1mL/ampul
cat. # 36008 (ea.)

USP <467> Calibration Mixture #5

benzene	2µg/mL	methylene chloride	600
chloroform	60	trichloroethene	80
1,4-dioxane	380		

In dimethylsulfoxide, 1mL/ampul
cat. # 36007 (ea.)

USP <467> Calibration Mixture #4

benzene	2µg/mL	methylene chloride	600
chloroform	60	trichloroethene	80
1,4-dioxane	380		

In methanol, 1mL/ampul
cat. # 36006 (ea.)

USP <467> Calibration Mixture #2

benzene	100µg/mL	methylene chloride	500
chloroform	50	trichloroethene	100
1,4-dioxane	100		

In methanol, 1mL/ampul
cat. # 36002 (ea.)

USP <467> Calibration Mixture #3

benzene	100µg/mL	methylene chloride	500
chloroform	50	trichloroethene	100
1,4-dioxane	100		

In dimethylsulfoxide, 1mL/ampul
cat. # 36004 (ea.)

Ethylene Oxide

500µg/mL in dimethylsulfoxide, 1mL/ampul
cat. # 36005 (ea.)

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European Pharmacopoeia Method

The analysis of residual solvents in pharmaceutical products has changed, particularly for products being sold into Europe. The International Conference on Harmonization (ICH) Guidelines for Residual Solvents is becoming the international standard and is being adopted by more pharmacopoeias, including the United States Pharmacopoeia, every year. The ICH method and compound list is more extensive than any method previously used and poses new challenges. Compounds in Class 1 are solvents considered to be of highest risk and to be avoided in pharmaceutical manufacturing. Use of Class 2 compounds is to be limited, as they pose a lower, but present, threat to health. Compounds in Class 3 pose the lowest toxic potential and may be used routinely in manufacturing.

European Pharmocopoeia/ICH Class 1 Mix

benzene	2µg/mL	1,1-dichloroethene	8
carbon tetrachloride	4	1,1,1-trichloroethane	1500
1,2-dichloroethane	5		

Prepared in water:dimethylsulfoxide (90:10), 1mL/ampul
cat. # 36228 (ea.)

European Pharmacopoeia/ICH Class 1 Mix (revised)

benzene	2µg/mL	1,1-dichloroethene	8
carbon tetrachloride	4	1,1,1-trichloroethane	10
1,2-dichloroethane	5		

In water:dimethylsulfoxide (90:10), 1mL/ampul
cat. # 36261 (ea.)

European Pharmacopoeia/ICH Q3C(M) Class 2 Mix A

2-ethoxyethanol	160µg/mL	N-methylpyrrolidone	530
ethylene glycol	620	sulfolane	160
formamide	220		
2-methoxyethanol (methyl Cellosolve®)	50		

In dimethyl sulfoxide, 1mL/ampul
cat. # 36275 (ea.)

European Pharmocopoeia/ICH Class 2 Mix B (10 components)

acetonitrile	410µg/mL	methanol	3,000
chloroform	60	nitromethane	50
1,2-dimethoxyethane	100	pyridine	200
N,N-dimethylacetamide	1,090	1,2,3,4-tetrahydronaphthalene (tetraline)	100
1,4-dioxane	380		
2-hexanone	50		

Prepared in water:dimethylsulfoxide (90:10), 1mL/ampul
cat. # 36230 (ea.)

European Pharmacopoeia/ICH Q3C(M) Class 2 Mix C (14 components)

chlorobenzene	360µg/mL	methylene chloride	600
cyclohexane	3,880	tetrahydrofuran	720
cis-1,2-dichloroethene	1,870	toluene	890
N,N-dimethylformamide	880	trichloroethene	80
ethylbenzene	369	*m*-xylene	1,302
n-hexane (C6)	290	*o*-xylene	195
methylcyclohexane	1,180	*p*-xylene	304

In dimethyl sulfoxide, 1mL/ampul
cat. # 36274 (ea.)

Index	Page #

Organic Acids

Fruit Juice Organic Acid Standard

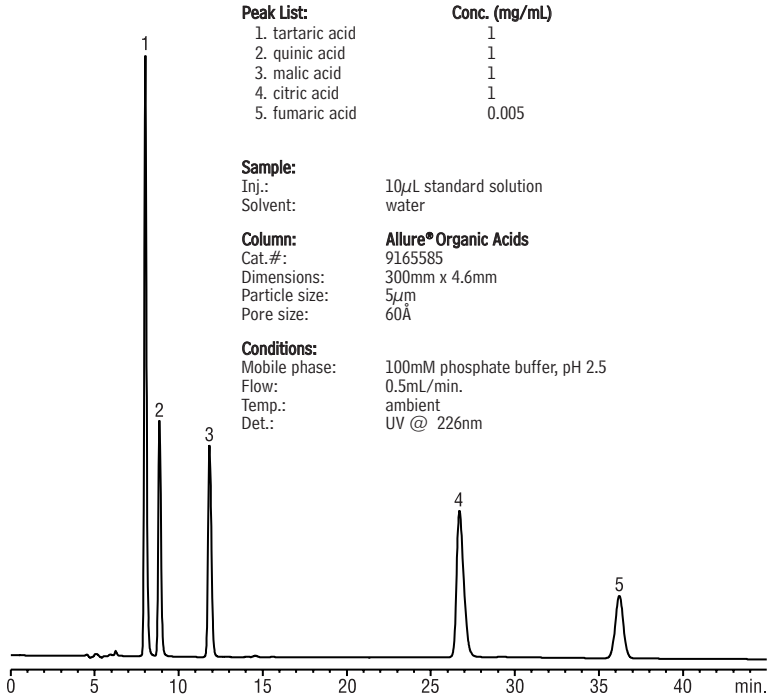
citric acid	2000µg/ml	quinic acid	2000
fumaric acid	10*	tartaric acid	2000
malic acid	2000		

In water, 1mL/ampul
cat. # 35080 (ea.)

In water, 5mL/ampul
cat. # 35081 (ea.)

*Fumaric acid is a trace impurity in malic acid, as well as an added component of the mix. The amount of fumaric acid in malic acid will not affect the stated concentration of malic acid, but can represent a significant and variable deviation from the low concentration of fumaric acid stated to be in the mix. All other components of the mix are at the specified concentration.

Organic acids on an Allure® Organic Acids HPLC column.



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Single-Column Method for HPLC Analysis of Organic Acids in Fruit Juices, Using an Allure® Organics Acids Column

A highly aqueous mobile phase is needed to force interaction between polar organic acids and the stationary phase in an HPLC column, but conventional C18 phases collapse in 100% aqueous mobile phases. A 300mm Allure® Organic Acids column resolves key organic acids, such as tartaric and quinic acids, using the conditions specified for a two-column analysis in AOAC Method 986.13. Example chromatograms are included in this 2-page note.

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Applications Note
lit. cat.# 59530

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Fatty Acid Methyl Esters

Marine Oil FAME Mix (20 components)

Chain	Description	% by Weight
C14:0	methyl myristate	6.0
C14:1	methyl myristoleate	1.0
C16:0	methyl palmitate	16.0
C16:1	methyl palmitoleate	5.0
C18:0	methyl stearate	8.0
C18:1	methyl oleate	13.0
C18:1	methyl vaccenate	4.0
C18:2	methyl linoleate	2.0
C18:3	methyl linolenate	2.0
C20:0	methyl arachidate	1.0
C20:1	methyl 11-eicosenoate	9.0
C20:2	methyl 11-14-eicosadienoate	1.0
C20:4	methyl arachidonate	3.0
C20:3	methyl 11-14-17-eicosatrienoate	1.0
C20:5	methyl eicosapentaenoate	10.0
C22:0	methyl behenate	1.0
C22:1	methyl erucate	3.0
C22:6	methyl docosahexaenoate	12.0
C24:0	methyl lingnocerate	1.0
C24:1	methyl nervonate	1.0

cat. # 35066 (100mg)

cis/trans FAME Mix (8 components)

Description	% by Weight
methyl elaidate (C18:1 *trans*-9)	10.0
methyl linoleate (C18:2 *cis*-9,12)	20.0
methyl oleate (C18:1 *cis*-9)	10.0
methyl petroselinate (C18:1*cis*-6)	8.0
methyl petroselaidate (C18:1*trans*-6)	8.0
methyl stearate (C18:0)	20.0
methyl transvaccenate (C18:1 *trans*-11)	12.0
methyl vaccenate (C18:1 *cis*-11)	12.0

10mg/mL total in methylene chloride, 1mL/ampul
cat. # 35079 (ea.)

Fatty Acid Methyl Esters *cont'd*

NLEA FAME Mix (28 components)

Chain	% by Weight	Chain	% by Weight
C4:0	1.5	C18:1(*cis*-9)	15.0
C6:0	1.5	C18:2(all-*trans*-9,12)	2.5
C8:0	2.0	C18:2(all-*cis*-9,12)	10.0
C10:0	2.5	C18:3(all-*cis*-9,12,15)	5.0
C11:0	2.5	C20:0	2.5
C12:0	5.0	C20:1(*cis*-11)	1.5
C13:	2.5	C20:5	
C14:0	2.5	(all-*cis*-5,8,11,14,17)	2.5
C14:1(*cis*-9)	1.5	C22:0	2.5
C15:0	1.5	C22:1(*cis*-13)	1.5
C16:0	10.0	C22:6	
C16:1(*cis*-9)	5.0	(all-*cis*-4,7,10,13,16,19)	2.5
C17:0	2.5	C23:0	1.5
C18:0	5.0	C24:0	2.5
C18:1(*trans*-9)	2.5	C24:1(*cis*-15)	2.5

30mg/mL total in methylene chloride, 1mL/ampul
cat. # 35078 (ea.)

No data pack available.

Food Industry FAME Mix (37 components)

Chain	% by Weight	Chain	% by Weight
C4:0	4.0	C18:3(all-*cis*-6,9,12)	2.0
C6:0	4.0	C18:3(all-*cis*-9,12,15)	2.0
C8:0	4.0	C20:0	4.0
C10:0	4.0	C20:1(*cis*-11)	2.0
C11:0	2.0	C20:2(all-*cis*-11,14,)	2.0
C12:0	4.0	C20:3(all-*cis*-8,11,14)	2.0
C13:	2.0	C20:3(all-*cis*-11,14,17)	2.0
C14:0	4.0	C20:4(all-*cis*-5,8,11,14)	2.0
C14:1(*cis*-9)	2.0	C20:5	
C15:0	2.0	(all-*cis*-5,8,11,14,17)	2.0
C15:1(*cis*-10)	2.0	C21:0	2.0
C16:0	6.0	C22:0	4.0
C16;1(*cis*-9)	2.0	C22:1(*cis*-13)	2.0
C17:0	2.0	C22:2(all-*cis*-13,16)	2.0
C17:1(*cis*-10)	2.0	22:6	
C18:0	4.0	(all-*cis*-4,7,10,13,16,19)	2.0
C18:1(*trans*-9)	2.0	C23:0	2.0
C18:1(*cis*-9)	4.0	C24:0	4.0
C18:2(all-*trans*-9,12)	2.0	C24:1(*cis*-15)	2.0
C18:2(all-*cis*-9,12)	2.0		

30mg/mL total in methylene chloride, 1mL/ampul
cat. # 35077 (ea.)

No data pack available.

Neat Fatty Acid Methyl Esters

Chain	Description	CAS #	qty.	cat.#
C6:0	methyl caproate	106-70-7	100mg	35037
C7:0	methyl heptanoate	106-73-0	100mg	35038
C8:0	methyl caprylate	111-11-5	100mg	35039
C9:0	methyl nonanoate	1731-84-6	100mg	35040
C10:0	methyl caprate	110-42-9	100mg	35041
C11:0	methyl undecanoate	1731-86-8	100mg	35042
C12:0	methyl laurate	111-82-0	100mg	35043
C13:0	methyl tridecanoate	1731-88-0	100mg	35044
C14:0	methyl myristate	124-10-7	100mg	35045
C14:1 Δ 9 cis	methyl myristoleate	56219-06-8	100mg	35046
C15:0	methyl pentadecanoate	7162-64-1	100mg	35047
C16:0	methyl palmitate	112-39-0	100mg	35048
C16:1 Δ 9 cis	methyl palmitoleate	1120-25-8	100mg	35049
C17:0	methyl heptadecanoate	1731-92-6	100mg	35050
C18:0	methyl stearate	112-61-8	100mg	35051
C18:1 Δ 9 cis	methyl oleate	112-62-9	100mg	35052
C18:2 Δ 9,12 cis	methyl linoleate	112-63-0	100mg	35053
C18:3 Δ 9,12,15 cis	methyl linolenate	301-00-8	100mg	35054
C19:0	methyl nonadecanoate	1731-94-8	100mg	35055
C20:0	methyl arachidate	1120-28-1	100mg	35056
C20:1 Δ 11 cis	methyl eicosenoate	2390-09-2	100mg	35057
C20:2 Δ 11,14 cis	methyl eicosadienoate	2463-02-7	100mg	35058
C20:3 Δ 11,14,17 cis	methyl eicosatrienoate	55682-88-7	100mg	35059
C20:4 Δ 5,8,11,14 cis	methyl arachidonate	2566-89-4	100mg	35060
C21:0	methyl heneicosanoate	6064-90-0	100mg	35061
C22:0	methyl behenate	929-77-1	100mg	35062
C22:1 Δ 13 cis	methyl erucate	1120-34-9	100mg	35063
C24:0	methyl lignocerate	2442-49-1	100mg	35064
C24:1 Δ 15 cis	methyl nervonate	2733-88-2	100mg	35065

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Applications Note
lit. cat.# 59348

Quantitative Fatty Acid Methyl Ester (FAME) Mixtures

These mixtures can be used for quantification (AOCS Method CE 1-62) and approximate the compositions of the following types of oils:

AOCS #1: corn, poppy seed, cotton seed, soybean, walnut, safflower, sunflower, rice, bran, and sesame oil
AOCS #2: linseed, perilla, hempseed, and rubberseed oil
AOCS #3: peanut, rapeseed, and mustard seed oil
AOCS #4: olive, teaseed, and neatsfoot oil
AOCS #5: coconut, palm kernel, babassu, and ouri-curi oil
AOCS #6: lard, beef or mutton tallow, and palm oil
FAME #1: oils of mid-range chain lengths (C16 - C18)
FAME #2: oils of short to mid-range chain lengths (C6 - C14)
FAME #3: oils of short to mid-range chain lengths (C8 - C16)
FAME #4: oils of mid-range to long chain lengths (C16 - C24)
FAME #5: oils of mid-range to long chain lengths (C16 - C24)
FAME #6: oils of long chain lengths (C20 - C21)
FAME #7: oils of short chain lengths (C6 - C10)
FAME #8: oils of short to mid-range chain lengths (C11 - C15)
FAME #9: oils of mid-range to long chain lengths (C16 - C20)
FAME #12: oils of mid-range to long chain lengths (C13 - C21)
FAME #13: mustard seed oil
FAME #14: cocoa butter
FAME #15: peanut oil

ordering **note**

Custom fatty acid methyl ester mixtures also are available.

Call **800-356-1688** or **814-353-1300**, or contact your Restek representative for details.

Mix	Cat. #	methyl caproate (6:0)	methyl heptanoate (7:0)	methyl caprylate (8:0)	methyl nonanoate (9:0)	methyl caprate (10:0)	methyl undecanoate (11:0)	methyl laurate (12:0)	methyl tridecanoate (13:0)	methyl myristate (14:0)	methyl pentadecanoate (15:0)	methyl palmitate (16:0)	methyl palmitoleate (16:1)	methyl heptadecanoate (17:0)	methyl stearate (18:0)	methyl oleate (18:1)	methyl linoleate (18:2)	methyl linolenate (18:3)	methyl nonadecanoate (19:0)	methyl arachidate (20:0)	methyl eicosenoate (20:1)	methyl eicosadienoate (20:2)	methyl homo γ linolenate (20:3)	methyl arachidonate (20:4)	methyl heneicosanoate (21:0)	methyl behenate (22:0)	methyl erucate (22:1)	methyl docosadienoate (22:2)	methyl lignocerate (24:0)	methyl nervonate (24:1)
		Composition of each mixture listed as a weight/weight % basis (minimum 50mg/ampul)																												
AOCS #1	35022											6.0			3.0	35.0	50.0	3.0		3.0										
AOCS #2	35023											7.0			5.0	18.0	36.0	34.0												
AOCS #3	35024									1.0		4.0			3.0	45.0	15.0	3.0		3.0						3.0	20.0		3.0	
AOCS #4	35025											11.0			3.0	80.0	6.0													
AOCS #5	35026			7.0		5.0		48.0		15.0		7.0			3.0	12.0	3.0													
AOCS #6	35027									2.0		30.0	3.0		14.0	41.0	7.0	3.0												
FAME #1	35010											20.0			20.0	20.0	20.0	20.0												
FAME #2	35011	20.0		20.0		20.0		20.0		20.0																				
FAME #3	35012			20.0		20.0		20.0		20.0		20.0																		
FAME #4	35013											20.0			20.0					20.0						20.0			20.0	
FAME #5	35014												20.0			20.0					20.0						20.0			20.0
FAME #6	35015																			20.0	20.0	20.0	20.0	20.0						
FAME #7	35016	20.0	20.0	20.0	20.0	20.0																								
FAME #8	35017						20.0	20.0	20.0	20.0	20.0																			
FAME #9	35018											20.0		20.0	20.0				20.0	20.0										
FAME #12	35021								20.0		20.0			20.0					20.0						20.0					
FAME #13	35034											3.0	1.0		2.0	20.0	15.0	10.0		1.0	10.0	2.0				1.0	30.0	2.0	1.0	2.0
FAME #14	35035									0.1		26.3	0.4	0.3	33.7	34.3	3.1	0.2		1.3	0.1					0.2				
FAME #15	35036											10.0			3.0	50.0	30.0			1.5	1.5					3.0			1.0	

Important Information About FAME Mixtures:
We certify that all raw materials used in these mixes have a minimum purity of 99%. The exact composition of each mixture is determined by precise gravimetric techniques, based on a weight/weight % basis, and is confirmed using high resolution capillary gas chromatography. A Certificate of Analysis, supplied with each product, lists mixture composition and analysis conditions and includes a sample chromatogram. Products are packaged by volume and are guaranteed to contain a minimum amount of 50mg/ampul. The FAMEs in these are *trans* isomer.

Improper storage or handling after opening may result in accelerated degradation of the unsaturated compounds. All materials must be stored under nitrogen at -18°C to prevent degradation.

new!

Restek now offers a full line of derivatization reagents!

Silylation Derivatization Reagents

- Replaces active hydrogen, reducing polarity and making the compounds more volatile.
- Increases stability of derivatives.

Silylation is the most widely used derivatization procedure for sample analysis by GC. In silylation, an active hydrogen is replaced by an alkylsilyl group such as trimethylsilyl (TMS) or *tert*-butyldimethylsilyl (*tert*-BDMS). Silyl derivatives are more volatile, less polar, and more thermally stable. As a result, GC separation is improved and detection is enhanced.

Both TMS and *tert*-BDMS reagents are suitable for a wide variety of compounds and can be used for many GC applications. Note that silylation reagents are generally moisture sensitive and must be sealed to prevent deactivation.

Compound	CAS#	cat.#
MSTFA (N-methyl-N-trimethylsilytrifluoroacetamide)		
10-pk. (10x1g)	24589-78-4	35600
25g Flex Tube	24589-78-4	35601
MSTFA w/1% TMCS (N-methyl-N-trimethylsilytrifluoroacetamide w/1% trimethylchlorosilane)		
10-pk. (10x1g)	24589-78-4	35602
25g Flex Tube	24589-78-4	35603
BSTFA (N,O-bis[trimethylsilyl]trifluoroacetamide)		
10-pk. (10x1g)	25561-30-2	35604
25g Flex Tube	25561-30-2	35605
BSTFA w/1% TMCS (N,O-bis[trimethylsilyltrifluoroacetamide] w/1% trimethylchlorosilane)		
10-pk. (10x1g)	25561-30-2	35606
25g Flex Tube	25561-30-2	35607
MTBSTFA w/1% TBDMCS (N-methyl-N[*tert*-butyldimethylsilyl trifluoroacetamide] w/1% *tert*-butyldimethylchlorosilane)		
10-pk. (10x1g)	77377-52-7	35608
25g Flex Tube	77377-52-7	35610
TMCS (trimethylchlorosilane)		
10-pk. (10x1g)	75-77-4	35611
25g Flex Tube	75-77-4	35612

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Acylation Derivatization Reagents

- Most commonly used for Electron Capture Detection.
- React with alcohols, amines and phenols.
- Frequently used for drugs of abuse confirmation.

Acylation reagents offer the same types of advantages available from silylation reagents: creating less polar, more volatile derivatives. In comparison to silylating reagents, the acylating reagents can more readily target highly polar multi-functional compounds, such as carbohydrates and amino acids. In addition, acylating reagents offer the distinct advantage of introducing electron-capturing groups, thus enhancing detectability during analysis.

Compound	CAS#	cat.#
MBTFA (N-methyl-bis-trifluoroacetamide)		
10-pk. (10x1g)	685-27-8	35616
25g Flex Tube	685-27-8	35617
TFAA (trifluoroacetic acid anydride)		
10-pk. (10x1g)	407-25-0	35618
25g Flex Tube	407-25-0	35619
PFAA (pentafluoropropionic acid anhydride)		
10-pk. (10x1g)	356-42-3	35620
25g Flex Tube	356-42-3	35621
HFAA (heptafluorobutyric acid anydride)		
10-pk. (10x1g)	336-59-4	35622
25g Flex Tube	336-59-4	35623
PFPOH (pentafluoropropanol)		
10-pk. (10x1g)	422-05-9	35624
25g Flex Tube	422-05-9	35625

Alkylation Derivatization Reagents

- Adds alkyl groups to functional hydrogens (H).
- Decreases polarity on compounds containing acidic hydrogens, i.e., phenols, carboxylic acids.
- Forms an ester.

Alkylation reagents reduce molecular polarity by replacing active hydrogens, such as carboxylic acids and phenols. Alkylation reagents can be used alone to form esters and amides or they can be used in conjunction with acylation or silylation reagents. A two-step approach is commonly used in the derivatization of amino acids, where multiple functional groups of these compounds may necessitate protection during derivatization.

Esterification is the reaction of an acid with an alcohol in the presence of a catalyst. It is the most popular method of alkylation due to the availability of reagents and ease of use. Alkyl esters are stable, and can be formed quickly and quantitatively. Retention of the derivative can be varied by altering the length of the substituted alkyl group. In addition to the formation of simple esters, alkylation reagents can be used in extraction procedures where biological matrices are present.

Compound	CAS#	cat.#
TMPAH		
10-pk. (10x1g)	1899-02-1	35614
25g Flex Tube	1899-02-1	35615

FAPAS® Food Testing Program*

- External check of quality for laboratories performing food testing.
- Ensures accurate proficiency testing.

Laboratories testing food quality and safety are encouraged to routinely perform proficiency tests. Proficiency testing is an external check of quality. It provides an independent and unbiased assessment of the performance of all aspects of the laboratory, both human and hardware. Each participating laboratory is encouraged to use its normal analytical method, thereby simulating the testing of a routine laboratory sample as closely as possible. While the outcome of the analysis may depend on the choice of method, it also could be affected by the performance of the laboratory equipment or the competence of the analyst. Using proficiency testing, those laboratories performing well can ensure high standards are maintained and those performing unsatisfactorily can implement corrective action rapidly. In an environment in which analytical laboratories compete intensively for work, proficiency testing provides the means by which external customers can compare competence in carrying out specific tests. Together with laboratory accreditation and the use of validated methods, proficiency tests are an important requirement of the EU Additional Measures Directive 93/99/EEC applying to laboratories entrusted with the official control of food.

*Use of Restek calibration mixtures by laboratories participating in the FAPAS® program is voluntary and no endorsement of any Restek product has been made by the Central Science Laboratory. To obtain further information regarding the FAPAS® program, or to participate, contact fapas@csl.gov.uk.

also available

Plastic Container Testing Reference Materials.
See page 501.

Equal concentration of all compounds. Suitable for GC/MS analysis.

FAPAS® Series 5 OC Pesticide Mix 1
(19 components)

aldrin	dieldrin
α-BHC	α-endosulfan (I)
β-BHC	β-endosulfan (II)
γ-BHC (lindane)	endosulfan sulfate
α-chlordane (*cis*)	endrin
γ-chlordane (*trans*)	heptachlor
4,4'-DDD	heptachlor epoxide (isomer B)
4,4'-DDE	hexachlorobenzene
2,4'-DDT	oxychlordane
4,4'-DDT	

100μg/mL each in acetone, 1mL/ampul
cat. # 32412 (ea.)

Equal concentration of all compounds. Suitable for GC/FPD, GC/NPD, & GC/MS analysis.

FAPAS® Series 9 OP Pesticide Mix 1
(10 components)

chlorpyriphos	fenitrothion
chlorpyriphos-methyl	malathion
diazinon	methacriphos
dichlorvos	phosphamidon
etrimphos	pirimiphos-methyl

100μg/mL each in acetone, 1mL/ampul
cat. # 32413 (ea.)

Varied concentrations. Suitable for GC/ECD analysis.

FAPAS® Series 5 OC Pesticide Mix 2
(19 components)

aldrin	10μg/mL	dieldrin	20
α-BHC	10	α-endosulfan (I)	10
β-BHC	10	β-endosulfan (II)	20
γ-BHC (lindane)	10	endosulfan sulfate	20
α-chlordane (*cis*)	10	endrin	20
γ-chlordane (*trans*)	10	heptachlor	10
4,4'-DDD	20	heptachlor epoxide (isomer B)	10
4,4'-DDE	20	hexachlorobenzene	10
2,4'-DDT	20	oxychlordane	10
4,4'-DDT	20		

In acetone, 1mL/ampul
cat. # 32414 (ea.)

FAPAS-registered trademark of Central Science Laboratory, Sand Hutton, York, YO41, UK.

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Fragrance Materials Test Mix

The Fragrance Materials Association (FMA) has proposed a method for analyzing essential oils on polar and non-polar capillary GC columns. A performance evaluation mixture should be used to aid in detecting inlet problems, stationary phase degradation, loss of resolution, changes in sensitivity, and the presence of reactive sites in the sample pathway. Our test mix is consistent with the mixture proposed by the FMA. The required 5% test solution is made by diluting the 0.5mL of neat mixture to 10mL with acetone. The working solution will be stable for up to one week if transferred to a dark container and stored refrigerated.

benzoic acid	1.0%	geraniol	0.6%
benzyl salicylate	36.2%	hydroxycitronellal (3,7-dimethyl-7-hydroxyoctanal)	5.0%
1,8-cineole (eucalyptol)	0.5%	d-limonene	20.0%
trans cinnamaldehyde	0.5%	thymol	0.3%
cinnamyl acetate	0.3%	vanillin	0.1%
cinnamyl alcohol	0.3%		
ethyl butyrate	36.2%		

Neat, 0.5mL in an amber ampul

cat. # 31807 (ea.)

No data pack available.

Dimethyldichlorosilane (DMDCS)

Restek offers dimethyldichlorosilane (DMDCS), for deactivating liners and other glassware. Simply dilute the neat material to a 5% solution in toluene, soak the glass item(s) in the solution for 15 minutes, and rinse with toluene and methanol. DMDCS reacts with active hydroxyl groups on the glass surface to produce a deactivated surface. A detailed procedure is included with the product.

dimethyldichlorosilane (DMDCS)

Neat, 20mL/ampul

cat. # 31840 (ea.)

Grob Test Mix (Capillary GC)

For use with temperature programmed conditions.

*n*C10-FAME	0.42mg/mL	2,6-dimethylphenol	0.32
*n*C11-FAME	0.42	2-ethylhexanoic acid	0.38
*n*C12-FAME	0.41	nonanal	0.40
2,3-butanediol	0.53	1-octanol	0.36
dicyclohexylamine	0.31	undecane (C11)	0.29
2,6-dimethylaniline	0.32	decane (C10)	0.28

In methylene chloride, 1mL/ampul

cat. # 35000 (ea.)

No data pack available.

Amine Column Test Mix (GC)

For Stabilwax®-DB, Rtx®-5Amine, and Rtx®-35Amine columns.

1,2-butanediol	0.60mg/mL	diethanolamine	1.20
pyridine	0.60	2-nonanol	0.60
decane (C10)	0.60	2,6-dimethylaniline	0.60
diethylenetriamine	1.20	dodecane (C12)	0.60

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

cat. # 35002 (ea.)

No data pack available.

Isothermal Column Test Mix (GC)

1,2-hexanediol	0.46mg/mL	1-octanol	0.36
decane (C10)	0.29	nonanal	0.40
undecane (C11)	0.29	2,6-dimethylaniline	0.32
dodecane (C12)	0.29	2,6-dichlorophenol	0.57
tridecane	0.29	naphthalene	0.32

In methylene chloride, 1mL/ampul

cat. # 35003 (ea.)

No data pack available.

HPLC Normal Phase Test Mix #1

benzene	1.00mg/mL	benzyl alcohol	3.00
benzaldehyde	0.04	4-methoxybenzyl alcohol	2.00

In hexane, 1mL/ampul

cat. # 35004 (ea.)

No data pack available.

HPLC Reversed Phase Test Mix #1

benzene	3.00mg/mL	naphthalene	0.50
uracil	0.02	biphenyl	0.06

In methanol:water (75:25), 1mL/ampul

cat. # 35005 (ea.)

No data pack available.

HPLC OQ Linearity Test Mix Kit

Linear detector responses to concentration variations are an important part of operation qualification (OQ) for HPLC instruments. Our kit of five aqueous solutions of caffeine can be used to generate simple plots of UV response versus concentration. Certificate of Analysis includes caffeine concentration, calculated variance in preparing each mixture, a linearity plot, and coefficient of determination (r^2) for the linear plot.

Caffeine at 5.0, 25.0, 125.0, 250.0, 500.0 µg/mL in water in a five ampul kit.

1mL each of these mixtures.

cat. # 31805 (kit)

No data pack available.

also available

Individual ampuls of caffeine are available on page 430.

Carbohydrate HPLC Performance Check Mix

Performance qualification (PQ) determines the precision of the HPLC system. Our performance check mix for HPLC/RI consists of five simple sugars in varied concentrations. We prepare the reference material in water, lyophilize it, and pack it dry for enhanced stability.

glucose	2.0mg	maltose	4.5
fructose	2.1	sucrose	4.0
lactose	4.4		

Dry components in 4mL screw-cap vial.
Reconstitute in 1mL acetonitrile:water (75:25) to 2.0, 2.1, 4.4, 4.5, 4.0 mg/mL, respectively.

cat. # 31809 (ea.)

No data pack available.

HPLC Performance Test Mix

The National Institute of Standards and Technology (NIST) has formulated a mixture that is highly effective for characterizing HPLC columns for efficiency, void volume, methylene selectivity, retentiveness, and activity toward chelators and organic bases. Results can be used for column classification, for column selection, for monitoring column performance over time, or for quality control. We test our material against the NIST 870 standard.

amitriptyline hydrochloride	2800µg/mL	quinizarin	94
ethylbenzene	1700	toluene	1400
		uracil	28

In methanol, 1mL/ampul

cat. # 31699 (ea.)

OQ Response Linearity Test Standard

n-heptadecane (C17)	1,000µg/mL	*n*-eicosane (C20)	100
n-octadecane (C18)	10	*n*-docosane (C22)	1.5
n-nonadecane (C19)	2	*n*-tetracosane (C24)	10,000

In isooctane, 1mL/ampul

cat. # 33906 (ea.)

NPD Performance Evaluation Standard

azobenzene	6.5µg/mL	*n*-octadecane	100
malathion	10		

In isooctane, 1mL/ampul

cat. # 33907 (ea.)

FID Performance Evaluation Standard

n-tetradecane (C14) *n*-hexadecane (C16)
n-pentadecane (C15)

0.03 w/w% each in hexane, 1mL/ampul

cat. # 33908 (ea.)

OQ/PV Headspace Standard

1,2-dichlorobenzene *tert*-butyl disulfide
nitrobenzene

2,000µg/mL each in ethanol, 1mL/ampul

cat. # 33909 (ea.)

ECD Performance Evaluation Standard

aldrin γ-BHC (lindane)

0.33 pg/mL each in isooctane, 1mL/ampul

cat. # 32455 (ea.)

For Restek's complete line of column test mixes, visit our website at:
www.restek.com/testmixes

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