Method TO-14A Certified Mixtures

Available in 1 ppm and 100 ppb concentrations. All mixtures have a balance gas of VOC-free nitrogen (CAS No. 7727-37-9).

39-Component

Components	CAS No.
Benzene	71-43-2
Bromomethane	74-83-9
Carbon Tetrachloride	56-23-5
Chlorobenzene	108-90-7
Chloroethane	75-00-3
Chloroform	67-66-3
Chloromethane	74-87-3
1,2 Dibromoethane	106-93-4
1,2-Dichlorobenzene	95-50-1
1,3-Dichlorobenzene	541-73-1
1,4-Dichlorobenzene	106-46-7
1,1-Dichloroethane	75-34-3
1,2-Dichloroethane	107-06-2
1,1-Dichloroethene	75-35-4
cis-1,2-Dichloroethene	156-59-2
1,2-Dichloropropane	78-87-5
cis-1,3-Dichloropropene	10061-01-5
trans-1,3-Dichloropropene	10061-02-6
Ethylbenzene	100-41-4
Halocarbon 11 (Trichlorofluoromethane)	75-69-4
Halocarbon 12 (Dichlorodifluoromethane)	75-71-8
Halocarbon 113 (1,1,2-Trichlorotrifluoroethane)	76-13-1
Halocarbon 114 (1,2-Dichlorotetrafluoroethane)	76-14-2
Hexachloro-1,3-butadiene	87-68-3
Methylene Chloride	75-09-2
Styrene	100-42-5
1,1,2,2-Tetrachloroethane	79-34-5
1,2,4-Trichlorobenzene	120-82-1
1,1,1-Trichloroethane	71-55-6
1,1,2-Trichloroethane	79-00-5
1,2,4-Trimethylbenzene	95-63-6
1,3,5-Trimethylbenzene	108-67-8
Tetrachloroethene	127-18-4
Toluene	108-88-3
Trichloroethylene	79-01-6
Vinyl Chloride	75-01-4
m-Xylene	108-38-3
o-Xylene	95-47-6
p-Xylene	106-42-3

41-Component

Includes 39-Component and the following

Components	CAS No.
Acrylonitrile	107-13-1
1,3-Butadiene	106-99-0

43-Component

Includes 41-Component and the following

Components	CAS No.
Allyl Chloride	107-05-1
4-Ethyltoluene	622-96-8

TO-14A Plus

Includes 41-Component and the following

Components	CAS No.
Acetaldehyde	75-07-0
Acrolein	107-02-8
Cumene	98-82-8
1,1,1,2-Tetrachloroethane	630-20-6

Aromatics Mix

Components	CAS No.
Benzene	71-43-2
Chlorobenzene	108-90-7
1,2-Dichlorobenzene	95-50-1
1,3-Dichlorobenzene	541-73-1
1,4-Dichlorobenzene	106-46-7
Ethylbenzene	100-41-4
Styrene	100-42-5
1,2,4-Trichlorobenzene	120-82-1
1,2,4-Trimethylbenzene	95-63-6
1,3,5-Trimethylbenzene	108-67-8
Toluene	108-88-3
m-Xylene	108-38-3
o-Xylene	95-47-6
p-Xylene	106-42-3

CFC/HFC Standard

Components	CAS No.
Halocarbon 11 (Trichlorofluoromethane)	75-69-4
Halocarbon 12 (Dichlorodifluoromethane)	75-71-8
Halocarbon 113 (1,1,2-Trichlorotrifluoroethane)	76-13-1
Halocarbon 114 (1,2-Dichlorotetrafluoroethane)	76-14-2

Chlorinated Hydrocarbon Mix

Components	CAS No.
Carbon Tetrachloride	56-23-5
Chloroform	67-66-3
Chloromethane	74-87-3
1,1-Dichloroethane	75-34-3
1,2-Dichloroethane	107-06-2
1,1-Dichloroethene	75-35-4
cis-1,2-Dichloroethene	156-59-2
1,2-Dichloropropane	78-87-5
cis-1,3-Dichloropropene	10061-01-5
trans-1,3-Dichloropropene	10061-02-6
Ethyl Chloride	75-00-3
Hexachloro-1,3-Butadiene	87-68-3
Methylene Chloride	75-09-2
1,1,2,2-Tetrachloroethane	79-34-5
1,1,1-Trichloroethane	71-55-6
1,1,2-Trichloroethane	79-00-5
Tetrachloroethene	127-18-4
Trichloroethylene	79-01-6
Vinyl Chloride	75-01-4

GC/MS Tuning Mix

Components	CAS No.
p-Bromofluorobenzene	460-00-4

Method TO-15/17 Certified Mixtures

Available in 1 ppm and 100 ppb concentrations. All mixtures have a balance gas of VOC-free nitrogen (CAS No. 7727-37-9).

62-Component

Components	CAS No.
Acetone	67-64-1
Benzene	71-43-2
Benzyl Chloride	100-44-7
Bromoform	75-25-2
Bromomethane	74-83-9
Bromodichloromethane	75-27-4
1,3-Butadiene	106-99-0
2-Butanone (MEK)	78-93-3
Carbon Disulfide	75-15-0
Carbon Tetrachloride	56-23-5
Chlorobenzene	108-90-7
Chloroethane	75-00-3
Chloroform	67-66-3
Chloromethane	74-87-3
Cyclohexane	110-82-7
Dibromochloromethane	124-48-1
1,2-Dibromoethane	106-93-4
1,2-Dichlorobenzene	95-50-1
1,3-Dichlorobenzene	541-73-1
1,4-Dichlorobenzene	106-46-7
1,1-Dichloroethane	75-34-3
1,2-Dichloroethane	107-06-2
1,1-Dichloroethene	75-35-4
cis-1,2-Dichloroethene	156-59-2
trans-1,2-Dichloroethene	156-60-5
1,2-Dichloropropane	78-87-5
cis-1,3-Dichloropropene	10061-01-5
trans-1,3-Dichloropropene	10061-02-6
1,4-Dioxane	123-91-1
Ethanol	64-17-5
Ethyl Acetate	141-78-6
Ethylbenzene	100-41-4
4-Ethyltoluene	622-96-8
Halocarbon 11 (Trichlorofluoromethane)	75-69-4
Halocarbon 12 (Dichlorodifluoromethane)	75-71-8
Halocarbon 113 (1,1,2-Trichlorotrifluoroethane)	76-13-1
Halocarbon 114 (1,2-Dichlorotetrafluoroethane)	76-14-2
Heptane	142-82-5
Hexachloro-1,3-butadiene	87-68-3
Hexane	110-54-3
2-Hexanone (MBK)	591-78-6
4-Methyl-2-Pentanone (MIBK)	108-10-1

62-Component (continued)

Components	CAS No.
Methylene Chloride	75-09-2
Methyl-tert-butyl ether (MTBE)	1634-04-4
2-Propanol	67-63-0
Propylene	115-07-1
Styrene	100-42-5
1,1,2,2-Tetrachloroethane	79-34-5
1,1,1-Trichloroethane	71-55-6
1,1,2-Trichloroethane	79-00-5
1,2,4-Trichlorobenzene	120-82-1
1,2,4-Trimethylbenzene	95-63-6
1,3,5-Trimethylbenzene	108-67-8
Tetrachloroethene	127-18-4
Tetrahydrofuran	109-99-9
Toluene	108-88-3
Trichloroethylene	79-01-6
Vinyl Acetate	108-05-4
Vinyl Chloride	75-01-4
m-Xylene	108-38-3
o-Xylene	95-47-6
p-Xylene	106-42-3

64-Component

Includes 62-Component and the following

Components	CAS No.
Acrolein	107-028
Methyl Methacrylate	80-62-6

Modified New Jersey Standard

Includes 64-Component and the following

Components	CAS No.
n-Butane	106-97-8
tert-Butyl Alcohol	53001-22-2
3-Chloropropene	107-05-1
2-Chlorotoluene	95-49-8
Cumene	98-82-8
n-Nonane	111-84-2
n-Pentane	109-66-0
n-Propylbenzene	103-65-1
2,2,4-Trimethylpentane	540-84-1
Vinyl Bromide	593-60-2

Subset 25

Consists of 25 components not in our standard Method TO-14A calibration mixes.

Components	CAS No.
Acetone	67-64-1
Allyl Chloride	107-05-1
Benzyl Chloride	100-44-7
Bromodichloromethane	75-27-4
Bromoform	75-25-2
1,3-Butadiene	106-99-0
2-Butanone (MEK)	78-93-3
Carbon Disulfide	75-15-0
Cyclohexane	110-82-7
Dibromochloromethane	124-48-1
trans-1,2-Dichloroethene	156-60-5
1,4-Dioxane	123-91-1
Ethyl Acetate	141-78-6
4-Ethyltoluene	622-96-8
n-Heptane	142-82-5
n-Hexane	110-54-3
2-Hexanone (MBK)	591-78-6
4-Methyl-2-Pentanone (MIBK)	108-10-1
Methyl-tert-butyl ether (MTBE)	1634-04-4
2-Propanol	67-63-0
Propylene	115-07-1
2,2,4-Trimethylpentane	540-84-1
Tetrahydrofuran	109-99-9
Vinyl Acetate	108-05-4
Vinyl Bromide	593-60-2

Additional TO Mixtures

Available in 1 ppm and 100 ppb concentrations. All mixtures have a balance gas of VOC-free nitrogen (CAS No. 7727-37-9).

EPA PAMS

Includes EPA-specified ppbC concentrations.*
1 ppm is pressure-restricted to 500 psig.

Components	ppbC	CAS No.
Acetylene	40	74-86-2
Benzene	30	71-43-2
n-Butane	40	106-97-8
1-Butene	30	106-98-9
cis-2-Butene	35	107-01-7
trans-2-Butene	25	107-01-7
Cumene	40	98-82-8
Cyclohexane	40	110-82-7
Cyclopentane	20	287-92-3
n-Decane	30	124-18-5
m-Diethylbenzene	40	141-93-5
p-Diethylbenzene	25	105-05-5
2,2-Dimethylbutane	40	75-83-2
2,3-Dimethylbutane	50	79-29-8
2,3-Dimethylpentane	50	565-59-3
2,4-Dimethylpentane	40	108-08-7
n-Dodecane	40	112-40-3
Ethane	25	74-84-0
Ethylbenzene	25	100-41-4
Ethylene	20	74-85-1
m-Ethyltoluene	25	620-14-4
o-Ethyltoluene	30	611-14-3
p-Ethyltoluene	40	622-96-8
n-Heptane	25	142-82-5
n-Hexane	30	110-54-3
1-Hexene	60	592-41-6
Isobutane	25	75-28-5
Isopentane	40	78-78-4
Isoprene	40	78-79-5
2-Methylheptane	25	592-27-8
3-Methylheptane	25	589-81-1
2-Methylhexane	25	591-76-4
3-Methylhexane	25	589-34-4
2-Methylpentane	20	107-83-5
3-Methylpentane	40	96-14-0
Methylcyclohexane	30	108-87-2
Methylcyclopentane	25	96-37-7
n-Nonane	25	111-84-2
n-Octane	30	111-65-9
n-Pentane	25	109-66-0
1-Pentene	25	109-67-1
cis-2-Pentene	35	627-20-3
trans-2-Pentene	25	646-04-8
Propane	40	74-98-6
n-Propylbenzene	30	103-65-1
Propylene	25	115-07-1
Styrene	40	100-42-5

EPA PAMS (continued)

Includes EPA-specified ppbC concentrations.*

Component	s ppbC	CAS No.
1,2,3-Trimethylbenzene	25	526-73-8
1,2,4-Trimethylbenzene	40	95-63-6
1,3,5-Trimethylbenzene	25	108-67-8
2,2,4-Trimethylpentane	30	540-84-1
2,3,4-Trimethylpentane	25	565-75-3
Toluene	40	108-88-3
n-Undecane	30	1120-21-4
m-Xylene–(combined w/p)	40	108-38-3
o-Xylene	25	95-47-6
p-Xylene–(combined w/m)	40	106-42-3

* Parts per billion expressed as Carbon.

Internal Tuning Standards

Components	CAS No.
Bromochloromethane	74-97-5
p-Bromofluorobenzene	460-00-4
Chlorobenzene-d5	3114-55-4
1,4-Difluorobenzene	540-36-3

Japanese Hazardous Air

Pollutants Calibration Mix (JHAP-9)

Components	CAS No.
Acrylonitrile	107-13-1
Benzene	71-43-2
1,3-Butadiene	106-99-0
Chloroform	67-66-3
1,2-Dichloroethane	107-06-2
Dichloromethane	75-09-2
Tetrachloroethene	127-18-4
Trichloroethylene	79-01-6
Vinyl Chloride	75-01-4

Massachusetts APH

Manufactured to measure gaseous-phase concentrations of volatile aliphatic and aromatic petroleum hydrocarbons in air and soil gas, as outlined by Method for the Determination of Air-Phase Petroleum Hydrocarbons (APH), published by the Massachusetts Department of Environmental Protection.

Concentration for all compounds below are according to MA DEP method (in ppb).
This mixture is pressure-restricted to 1500 psig.

Components	ppb	CAS No.
Benzene	310	71-43-2
1,3-Butadiene	450	106-99-0
Butylcyclohexane	170	1678-93-9
Cumene	200	98-82-8
Cyclohexane	290	110-82-7
n-Decane	170	124-18-5
2,3-Dimethylheptane	190	3074-71-3
2,3-Dimethylpentane	240	565-59-3
n-Dodecane	140	112-40-3
Ethyl Benzene	230	100-41-4
n-Heptane	240	142-82-5
n-Hexane	280	110-54-3
Isopentane	330	78-78-4
p-Isopropyltoluene	180	99-87-6
1-Methyl-3-Ethylbenzene	200	620-14-4
Methyl-tert-butyl ether (MTBE)	270	1634-04-4
Napthalene	190	91-20-3
n-Nonane	190	111-84-2
n-Octane	210	111-65-9
Toluene	260	108-88-3
1,2,3-Trimethylbenzene	200	526-73-8
1,3,5-Trimethylbenzene	200	108-67-8
n-Undecane	150	1120-21-4
m-Xylene	230	108-38-3
o-Xylene	230	95-47-6
p-Xylene	230	106-42-3

Other Available Analyte Components

Components	CAS No.
Acrylonitrile	107-13-1
Benzene	71-43-2
1,3-Butadiene	106-99-0
Chloroform	67-66-3
1,2-Dibromoethane	106-93-4
Methylene Chloride	75-09-2
Tetrachloroethene	127-18-4
Trichloroethylene	79-01-6
Vinyl Chloride	75-01-4