

Environmental Air Monitoring Gas Standards

Our high-quality air monitoring gas calibration standards are provided by Spectra Gases and Scott Specialty Gases. Mixes are produced gravimetrically using NIST (National Institute of Science and Technology) traceable weights. Each comes with a Certificate of Analysis and unique serial number. All cylinders are disposable and do not require rental or demurrage fees. Recertification of cylinders is available directly with our suppliers. All cylinders are drop-shipped from our suppliers to provide fast delivery and the "freshest" standard possible. 12-month stability on all cylinders unless otherwise specified.

TO-14A Calibration Mix (39 components)

benzene	ethyl chloride
bromomethane	hexachloro-1,3-butadiene
carbon tetrachloride	methylene chloride
chlorobenzene	styrene
chloroform	1,1,2,2-tetrachloroethane
chloromethane	tetrachloroethylene
1,2-dibromoethane	toluene
<i>m</i> -dichlorobenzene	1,2,4-trichlorobenzene
<i>o</i> -dichlorobenzene	1,1,1-trichloroethane
<i>p</i> -dichlorobenzene	1,1,2-trichloroethane
dichlorodifluoromethane	trichloroethene
1,1-dichloroethane	trichlorofluoromethane
1,2-dichloroethane	1,1,2-trichlorotrifluoroethane
1,1-dichloroethene	1,2,4-trimethylbenzene
<i>cis</i> -1,2-dichloroethene	1,3,5-trimethylbenzene
1,2-dichloropropane	vinyl chloride
<i>cis</i> -1,3-dichloropropene	<i>m</i> -xylene
<i>trans</i> -1,3-dichloropropene	<i>o</i> -xylene
dichlorotetrafluoroethane	<i>p</i> -xylene
ethyl benzene	

In nitrogen, 104 liters @ 1,800psi

1ppm cat. # 34400 (ea.)

100ppb cat. # 34421 (ea.)

In nitrogen, 110 liters @ 1,800psi (Pi-marked Cylinder)

1ppm cat. # 34400-PI (ea.)

100ppb cat. # 34421-PI (ea.)

TO-14A 41 Component Mix (41 components)

acrylonitrile	ethyl benzene
benzene	ethyl chloride
bromomethane	hexachloro-1,3-butadiene
1,3-butadiene	methylene chloride
carbon tetrachloride	styrene
chlorobenzene	1,1,2,2-tetrachloroethane
chloroform	tetrachloroethylene
chloromethane	toluene
1,2-dibromoethane	1,2,4-trichlorobenzene
<i>m</i> -dichlorobenzene	1,1,1-trichloroethane
<i>o</i> -dichlorobenzene	1,1,2-trichloroethane
<i>p</i> -dichlorobenzene	trichloroethene
dichlorodifluoromethane	trichlorofluoromethane
1,1-dichloroethane	1,1,2-trichlorotrifluoroethane
1,2-dichloroethane	1,2,4-trimethylbenzene
1,1-dichloroethene	1,3,5-trimethylbenzene
<i>cis</i> -1,2-dichloroethene	vinyl chloride
1,2-dichloropropane	<i>m</i> -xylene
<i>cis</i> -1,3-dichloropropene	<i>o</i> -xylene
<i>trans</i> -1,3-dichloropropene	<i>p</i> -xylene
dichlorotetrafluoroethane	

In nitrogen, 104 liters @ 1,800psi

1ppm cat. # 34430 (ea.)

100ppb cat. # 34431 (ea.)

In nitrogen, 110 liters @ 1,800psi (Pi-marked Cylinder)

1ppm cat. # 34430-PI (ea.)

100ppb cat. # 34431-PI (ea.)

TO-14A GC/MS Tuning Mix

4-bromofluorobenzene

In nitrogen, 104 liters @ 1,800psi

1ppm cat. # 34406 (ea.)

100ppb cat. # 34424 (ea.)

In nitrogen, 110 liters @ 1,800psi (Pi-marked Cylinder)

1ppm cat. # 34406-PI (ea.)

100ppb cat. # 34424-PI (ea.)

TO-14A 43 Component Mix (43 components)

acrylonitrile	ethyl benzene
benzene	ethyl chloride
bromomethane	4-ethyltoluene
1,3-butadiene	hexachloro-1,3-butadiene
carbon tetrachloride	methylene chloride
chlorobenzene	styrene
chloroform	1,1,2,2-tetrachloroethane
chloromethane	tetrachloroethylene
3-chloropropene	toluene
1,2-dibromoethane	1,2,4-trichlorobenzene
<i>m</i> -dichlorobenzene	1,1,1-trichloroethane
<i>o</i> -dichlorobenzene	1,1,2-trichloroethane
<i>p</i> -dichlorobenzene	trichloroethene
dichlorodifluoromethane	trichlorofluoromethane
1,1-dichloroethane	1,1,2-trichlorotrifluoroethane
1,2-dichloroethane	1,2,4-trimethylbenzene
1,1-dichloroethene	1,3,5-trimethylbenzene
<i>cis</i> -1,2-dichloroethene	vinyl chloride
1,2-dichloropropane	<i>m</i> -xylene
<i>cis</i> -1,3-dichloropropene	<i>o</i> -xylene
<i>trans</i> -1,3-dichloropropene	<i>p</i> -xylene
dichlorotetrafluoroethane	

In nitrogen, 104 liters @ 1,800psi

1ppm cat. # 34432 (ea.)

100ppb cat. # 34433 (ea.)

In nitrogen, 110 liters @ 1,800psi (Pi-marked Cylinder)

1ppm cat. # 34432-PI (ea.)

100ppb cat. # 34433-PI (ea.)

TO-14A Aromatics Mix (14 components)

benzene	toluene
chlorobenzene	1,2,4-trichlorobenzene
<i>m</i> -dichlorobenzene	1,2,4-trimethylbenzene
<i>o</i> -dichlorobenzene	1,3,5-trimethylbenzene
<i>p</i> -dichlorobenzene	<i>m</i> -xylene
ethyl benzene	<i>o</i> -xylene
styrene	<i>p</i> -xylene

In nitrogen, 104 liters @ 1,800psi

1ppm cat. # 34404 (ea.)

100ppb cat. # 34423 (ea.)

In nitrogen, 110 liters @ 1,800psi (Pi-marked Cylinder)

1ppm cat. # 34404-PI (ea.)

100ppb cat. # 34423-PI (ea.)

TO-14A Chlorinated Hydrocarbon Mix

(19 components)

carbon tetrachloride	hexachloro-1,3-butadiene
chloroform	methyl chloride
1,1-dichloroethane	methylene chloride
1,2-dichloroethane	1,1,2,2-tetrachloroethane
1,1-dichloroethene	tetrachloroethylene
<i>cis</i> -1,2-dichloroethylene	1,1,1-trichloroethane
1,2-dichloropropane	1,1,2-trichloroethane
<i>cis</i> -1,3-dichloropropene	trichloroethene
<i>trans</i> -1,3-dichloropropene	vinyl chloride
ethyl chloride	

In nitrogen, 104 liters @ 1,800psi

1ppm cat. # 34402 (ea.)

100ppb cat. # 34422 (ea.)

In nitrogen, 110 liters @ 1,800psi (Pi-marked Cylinder)

1ppm cat. # 34402-PI (ea.)

100ppb cat. # 34422-PI (ea.)

please note

Gas standards are subject to hazardous materials shipping fees by most freight carriers.

it's a fact

Higher concentration =
MORE STANDARD
for your money!

cylinder design

Spectra 104L Cylinders:

Aluminum construction.

Size: 8 x 24 cm.

Volume/Pressure:

104 liters of gas

@ 1,800psi

CGA-180

outlet fitting.

Weight:

1.5 lbs./0.7 kg



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

Aluminum construction.

Size: 8.3 x 29.5 cm.

Volume/Pressure:

110 liters of gas

@ 1,800psi

CGA-180

outlet fitting.

Weight:

2.2 lbs./1 kg

U.S. D.O.T. Specs:

3AL2216



ordering note

Other cylinder sizes available on request.

also available

See page 415 for high-purity regulator.

new!

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.

TO-14A Internal Standard Mix

bromochloromethane 1,4-difluorobenzene
chlorobenzene-d5

In nitrogen, 104 liters @ 1,800psi

1ppm cat. # 34412 (ea.)

100ppb cat. # 34427 (ea.)

In nitrogen, 110 liters @ 1,800psi (Pi-marked Cylinder)

1ppm cat. # 34412-PI (ea.)

100ppb cat. # 34427-PI (ea.)

TO-14A Internal Standard/Tuning Mix

bromochloromethane chlorobenzene-d5
1-bromo-4-fluorobenzene 1,4-difluorobenzene
(4-bromofluorobenzene)

In nitrogen, 104 liters @ 1,800psi

1ppm cat. # 34408 (ea.)

100ppb cat. # 34425 (ea.)

In nitrogen, 110 liters @ 1,800psi (Pi-marked Cylinder)

1ppm cat. # 34408-PI (ea.)

100ppb cat. # 34425-PI (ea.)

BTEX Gas Mix

benzene *m*-xylene
ethylbenzene *o*-xylene
toluene *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.)

BTEX and MTBE Gas Mix

benzene *m*-xylene
ethylbenzene *o*-xylene
methyl *tert*-butyl ether (MTBE) *p*-xylene
toluene

In nitrogen, 104 liters @ 1,800psi

1ppm cat. # 34541 (ea.)

100ppb cat. # 34542 (ea.)

In nitrogen, 110 liters @ 1,800psi (Pi-marked Cylinder)

1ppm cat. # 34541-PI (ea.)

100ppb cat. # 34542-PI (ea.)

TO-15 Subset 25 Component Mix (25 components)

acetone 4-ethyltoluene
allyl chloride heptane
benzyl chloride* hexane
bromodichloromethane 2-hexanone (MBK)
bromoform 4-methyl-2-pentanone
1,3-butadiene methyl *tert*-butyl ether (MTBE)
2-butanone (MEK) 2-propanol
carbon disulfide* propylene
cyclohexane tetrahydrofuran
dibromochloromethane 2,2,4-trimethylpentane
trans-1,2-dichloroethene vinyl acetate
1,4-dioxane vinyl bromide
ethyl acetate

In nitrogen, 104 liters @ 1,800psi

1ppm cat. # 34434 (ea.)

100ppb cat. # 34435 (ea.)

In nitrogen, 110 liters @ 1,800psi (Pi-marked Cylinder)

1ppm cat. # 34434-PI (ea.)

100ppb cat. # 34435-PI (ea.)

*Stability of this compound cannot be guaranteed.

TO-15 64 Component Mix

(64 components)

acetone
acrolein
benzene
benzyl chloride*
bromodichloromethane
bromoform
bromomethane
1,3-butadiene
2-butanone (MEK)
carbon disulfide*
carbon tetrachloride
chlorobenzene
chloroethane
chloroform
chloromethane
cyclohexane
dibromochloromethane
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
1,4-dioxane
ethanol*
ethyl acetate
ethyl benzene
ethylene dibromide
(1,2-dibromoethane)
4-ethyltoluene

trichlorofluoromethane
(Freon® 11)
dichlorodifluoromethane
(Freon® 12)
1,1,2-trichloro-1,2,2-trifluoroethane (Freon® 113)
1,2-dichlorotetrafluoroethane (Freon® 114)
heptane
hexachloro-1,3-butadiene
hexane
2-hexanone (MBK)
methyl methacrylate
4-methyl-2-pentanone (MIBK)
methylene chloride
methyl *tert*-butyl ether (MTBE)
2-propanol
propylene
styrene
1,1,2,2-tetrachloroethane
tetrachloroethene
tetrahydrofuran
toluene
1,2,4-trichlorobenzene
1,1,1-trichloroethane
1,1,2-trichloroethane
trichloroethene
1,2,4-trimethylbenzene
1,3,5-trimethylbenzene
vinyl acetate
vinyl chloride
m-xylene
o-xylene
p-xylene

In nitrogen, 104 liters @ 1,800psi

1ppm cat. # 34436 (ea.)

100ppb cat. # 34437 (ea.)

In nitrogen, 110 liters @ 1,800psi (Pi-marked Cylinder)

1ppm cat. # 34436-PI (ea.)

100ppb cat. # 34437-PI (ea.)

*Stability of this compound cannot be guaranteed.

Massachusetts APH Mix (26 components)

benzene *p*-isopropyltoluene
1,3-butadiene methyl *tert*-butyl ether
butylcyclohexane 1-methyl-3-ethylbenzene
cyclohexane *n*-nonane
n-decane *n*-octane
2,3-dimethylheptane toluene
2,3-dimethylpentane toluene-d8 (IS)
n-dodecane 1,2,3-trimethylbenzene
ethylbenzene 1,3,5-trimethylbenzene
n-heptane *n*-undecane
n-hexane *o*-xylene
isopentane *m/p*-xylene (combined)
isopropylbenzene

In nitrogen, 104 liters @ 1,800psi

1ppm cat. # 34540 (ea.)

In nitrogen, 110 liters @ 1,800psi (Pi-marked Cylinder)

1ppm cat. # 34540-PI (ea.)

Japan Calibration Mix (9 components)

acrylonitrile dichloromethane
benzene tetrachloroethylene
1,3-butadiene trichloroethylene
chloroform vinyl chloride
1,2-dichloroethane

In nitrogen, 104 liters @ 1,800psi

1ppm cat. # 34418 (ea.)

In nitrogen, 110 liters @ 1,800psi (Pi-marked Cylinder)

1ppm cat. # 34418-PI (ea.)

please note

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ordering note

Other cylinder sizes available on request.

for reference books

Visit www.restek.com

Ozone Precursor Mixture/PAMS (57 components)

acetylene	isopropylbenzene
benzene	methylcyclohexane
<i>n</i> -butane	methylcyclopentane
1-butene	2-methylheptane
<i>cis</i> -2-butene	3-methylheptane
<i>trans</i> -2-butene	2-methylhexane
cyclohexane	3-methylhexane
cyclopentane	2-methylpentane
<i>n</i> -decane	3-methylpentane
<i>m</i> -diethylbenzene	<i>n</i> -nonane
<i>p</i> -diethylbenzene	<i>n</i> -octane
2,2-dimethylbutane	<i>n</i> -pentane
2,3-dimethylbutane	1-pentene
2,3-dimethylpentane	<i>cis</i> -2-pentene
2,4-dimethylpentane	<i>trans</i> -2-pentene
<i>n</i> -dodecane	propane
ethane	<i>n</i> -propylbenzene
ethylbenzene	propylene
ethylene	styrene
<i>m</i> -ethyltoluene	toluene
<i>o</i> -ethyltoluene	1,2,3-trimethylbenzene
<i>p</i> -ethyltoluene	1,2,4-trimethylbenzene
<i>n</i> -heptane	1,3,5-trimethylbenzene
<i>n</i> -hexane	2,2,4-trimethylpentane
1-hexene	2,3,4-trimethylpentane
isobutane	<i>n</i> -undecane
isopentane	<i>o</i> -xylene
isoprene	<i>m/p</i> -xylene (combined)

In nitrogen, 104 liters @ 1,800psi
1ppm cat. # 34420 (ea.)
100ppb cat. # 34429 (ea.)
 In nitrogen, 110 liters @ 1,800psi (PI-marked Cylinder)
1ppm cat. # 34420-PI (ea.)
100ppb cat. # 34429-PI (ea.)

Ozone Precursor/PAMS Mix

(57 components at EPA concentrations: ppbC)

acetylene	40	isopropylbenzene	40
benzene	30	methylcyclohexane	30
<i>n</i> -butane	40	methylcyclopentane	25
1-butene	30	2-methylheptane	25
<i>cis</i> -2-butene	35	3-methylheptane	25
<i>trans</i> -2-butene	25	2-methylhexane	25
cyclohexane	40	3-methylhexane	25
cyclopentane	20	2-methylpentane	20
<i>n</i> -decane	30	3-methylpentane	40
<i>m</i> -diethylbenzene	40	<i>n</i> -nonane	25
<i>p</i> -diethylbenzene	25	<i>n</i> -octane	30
2,2-dimethylbutane	40	<i>n</i> -pentane	25
2,3-dimethylbutane	50	1-pentene	25
2,3-dimethylpentane	50	<i>cis</i> -2-pentene	35
2,4-dimethylpentane	40	<i>trans</i> -2-pentene	25
<i>n</i> -dodecane	40	propane	40
ethane	25	<i>n</i> -propylbenzene	30
ethylbenzene	25	propylene	25
ethylene	20	styrene	40
<i>m</i> -ethyltoluene	25	toluene	40
<i>o</i> -ethyltoluene	30	1,2,3-trimethylbenzene	25
<i>p</i> -ethyltoluene	40	1,2,4-trimethylbenzene	40
<i>n</i> -heptane	25	1,3,5-trimethylbenzene	25
<i>n</i> -hexane	30	2,2,4-trimethylpentane	30
1-hexene	60	2,3,4-trimethylpentane	25
isobutane	25	<i>n</i> -undecane	30
isopentane	40	<i>o</i> -xylene	25
isoprene	40	<i>m/p</i> -xylene (combined)	40

In nitrogen, 104 liters @ 1,800psi
20-60ppb C cat. # 34445 (ea.)
 In nitrogen, 110 liters @ 1,800psi (PI-marked Cylinder)
20-60ppb C cat. # 34445-PI (ea.)

also available

Custom air standards!
 Visit www.restek.com for our custom air standards ordering form.

TO-14/TO-15/TO-17 Performance Test Standard **new!**

Restek is pleased to offer the Performance Testing/VOC Audit Sample Program in cooperation with Spectra Gases. This is an on-going testing program in which laboratories, and/or other users of VOC standards, are able to evaluate their own capabilities, as well as compare their results and accuracy against other laboratories. As a participant in the program, you will receive a disposable cylinder, directly from Spectra Gases, containing multiple unknown TO-14A/TO-15/TO-17 components at varying concentrations that are to be identified, quantified, and reported via the Spectra Gases P-T Audit Program forms. The results will be published and distributed for peer review. To ensure confidentiality, all participating laboratories will be anonymous, and only the individual laboratory will know their own results. To provide statistical analysis, the audit sample will be shipped to all laboratories at the same time, once a year during the fourth quarter.

170 liters @ 2,015psi
 cat. # 34560 (ea.)

cylinder design

TO-14/TO-15/TO-17 Performance Test Standard:

Size: 5A disposable (3.2" x 12")
Volume/Pressure: 170L @ 2,015psi
CGA 180 outlet fitting
Weight: 2.2lbs.

Sulfur 5-Component Mix

12-month stability. +/- 10% accuracy.
 carbonyl sulfide hydrogen sulfide
 dimethyl sulfide methyl mercaptan
 ethyl mercaptan

In nitrogen, 110 liters @ 1,800psi
1ppm cat. # 34561 (ea.)
 In nitrogen, 110 liters @ 1,800psi (PI-marked Cylinder)
1ppm cat. # 34561-PI (ea.)

new!

Spectra Gas 7621 High-Purity VOC Regulator

- Single-stage, stainless steel.
- Two pressure gauges and CGA-180 fitting.
- 3000psig maximum inlet pressure.
- Stainless steel diaphragm and Kel-F® seat.
- 1/8-inch tube compression outlet.
- Low internal volume: 3.03cc.
- Accurate pressure control even at low flow rates.
- Individually tested for leaks and impurities.



Description	qty.	cat.#
0-30psig outlet pressure gauge	ea.	21572
0-100psig outlet pressure gauge	ea.	21572-R100