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

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

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

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
chlorobenzene
m-dichlorobenzene
o-dichlorobenzene
p-dichlorobenzene
ethyl benzene
styrene
toluene
1,2,4-trichlorobenzene
1,2,4-trimethylbenzene
1,3,5-trimethylbenzene
m-xylene
o-xylene
p-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
chloroform
1,1-dichloroethane
1,2-dichloroethane
1,1-dichloroethene
cis-1,2-dichloroethylene
1,2-dichloropropane
cis-1,3-dichloropropene
trans-1,3-dichloropropene
ethyl chloride
hexachloro-1,3-butadiene
methyl chloride
methylene chloride
1,1,2,2-tetrachloroethane
tetrachloroethylene
1,1,1-trichloroethane
1,1,2-trichloroethane
trichloroethene
vinyl 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.

please note

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

ordering note

Other cylinder sizes available on request.

for reference books

Visit **www.restek.com**

TO-14A Internal Standard Mix

bromochloromethane
chlorobenzene-d5
1,4-difluorobenzene

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

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
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.)

BTEX and MTBE Gas Mix

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

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

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) updated!

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

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
benzene
1,3-butadiene
chloroform
1,2-dichloroethane
dichloromethane
tetrachloroethylene
trichloroethylene
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.)

Ozone Precursor Mixture/PAMS (57 components)

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

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.)

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

Scott Transportable Pure Gases and Mixtures in 14-, 48-, and 110-Liter Sizes

We offer a wide range of Scott Transportable Gases, from pure gases for purging or calibrating to multi-component mixes which are ideal for peak identification work.

The 14-liter container has a CGA 160 connection for more precise integration with analytical systems. The 48-liter cylinder has a CGA 165 connection, and can deliver large volumes of sample. The 110-liter cylinder has a CGA 180 connection.

Scotty® 14

Contents: 14 liters
Pressure: 240psig (17 bar)
Outlet Fitting: CGA 160

Weight: 1.5 lbs/0.7 kg
Dimensions: 3" diameter x 11" height (7.6 x 28cm)
D.O.T. Specifications: 4B240

Scotty® 48

Contents: 48 liters
Pressure: 300psig (21 bar)
Outlet Fitting: CGA 165

Weight: 1.75 lbs/0.8 kg
Dimensions: 4" diameter x 16 1/4" height (10.2 x 41cm)
D.O.T. Specifications: 39 NRC

Scotty® 110 (Pi-marked Cylinders for EU Regulations)

Contents: 110 liters
Pressure: 1800psig (124 bar)
Outlet Fitting: CGA 180

Weight: 2.2 lbs/1 kg
Dimensions: 3.25" diameter x 11.625" height (8.3 x 29.5cm)
D.O.T. Specifications: 3AL2216

Description	Shelf Life	Scotty® 14 (14 Liter) cat.#	Scotty® 48 (48 Liter) cat.#	Scotty® 110 (110 Liter) cat.#
Pure Gases				
Air, zero (THC < 1ppm)	2 yrs.	34448	34449	34449-PI
Argon, 99.995%	2 yrs.	34457	—	34457-PI
Carbon dioxide, 99.80%	2 yrs.	34451	34452	34452-PI
Hydrogen, 99.99%	2 yrs.	34453	—	34453-PI
Methane, 99.00%	2 yrs.	34454	—	34454-PI
Oxygen, 99.60%	2 yrs.	34455	—	34455-PI
Two-Component Mixtures				
Benzene in air (1ppm)	1 yr.	—	34458	34458-PI
Benzene in air (100ppm)	1 yr.	—	34459	34459-PI
1,3-Butadiene in nitrogen (10ppm)	2 yrs.	34460	34461	34461-PI
Carbon dioxide in helium (100ppm)	2 yrs.	34462	—	34462-PI
Carbon dioxide in nitrogen (100ppm)	2 yrs.	34463	34464	34464-PI
Carbon dioxide in nitrogen (1000ppm)	2 yrs.	34465	34466	34466-PI
Ethylene in air (8-10ppm)	2 yrs.	34467	34468	34468-PI
Ethylene in helium (100ppm)	2 yrs.	34489	—	34489-PI
Hydrogen in helium (100ppm)	2 yrs.	34469	—	34469-PI
Hydrogen in nitrogen (1%)	2 yrs.	34471	34472	34472-PI
Hydrogen in nitrogen (100ppm)	2 yrs.	34473	34474	34474-PI
Methane in helium (100ppm)	2 yrs.	34476	34477	34477-PI
Methane in nitrogen (100ppm)	2 yrs.	34478	—	34478-PI
Methane in nitrogen (1%)	2 yrs.	34482	34483	34483-PI
Nitrogen in helium (100ppm)	2 yrs.	34479	—	34479-PI
Nitrous oxide in nitrogen (1ppm)	2 yrs.	34484	34485	34485-PI
Oxygen in helium (100ppm)	2 yrs.	34480	—	34480-PI
Oxygen in nitrogen (2%)	2 yrs.	34487	34488	34488-PI
Oxygen in nitrogen (6%)	2 yrs.	34491	34492	34492-PI
1,1,1-Trichloroethane in nitrogen (10ppm)	2 yrs.	—	34493	34493-PI
Trichloroethylene in nitrogen (10ppm)	2 yrs.	34494	34495	34495-PI
Vinyl chloride in nitrogen (1ppm)	2 yrs.	34496	34497	34497-PI
Vinyl chloride in nitrogen (10ppm)	2 yrs.	34498	34499	34499-PI
Vinyl chloride in nitrogen (50ppm)	2 yrs.	34500	—	34500-PI
Vinyl chloride in nitrogen (100ppm)	2 yrs.	34501	—	34501-PI
Vinyl chloride in nitrogen (1000ppm)	2 yrs.	34502	—	34502-PI

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.

Description	Shelf Life	Scotty® 14 (14 Liter) cat.#	Scotty® 48 (48 Liter) cat.#	Scotty® 110 (110 Liter) cat.#
Multi-Component Mixtures				
Carbon monoxide, carbon dioxide, hydrogen and oxygen in nitrogen (0.5% each)	2 yrs.	34504	34505	34505-PI
Carbon monoxide, carbon dioxide, hydrogen and oxygen in nitrogen (1% each)	2 yrs.	34507	34508	34508-PI
Carbon monoxide, carbon dioxide, methane, ethane, ethylene and acetylene in nitrogen (1% each)	1 yr.	—	34511	34511-PI
Carbon monoxide, carbon dioxide, nitrogen, and oxygen, (5% each) and methane and hydrogen (4% each) in helium	2 yrs.	34512	—	34512-PI
Carbon monoxide (7%), carbon dioxide (15%) and oxygen (5%) in nitrogen	2 yrs.	34514	—	34514-PI
Carbon monoxide (7%), oxygen (4%), carbon dioxide (15%) and methane (4.5%) in nitrogen	2 yrs.	34515	34516	34516-PI
C1-C6 *n*-Paraffins: methane, ethane, propane, butane, pentane, hexane in nitrogen (15ppm each)	2 yrs.	34518	34519	34519-PI
C1-C6 *n*-Paraffins: methane, ethane, propane, butane, pentane, hexane in helium (100ppm each)	2 yrs.	34521	34522	34522-PI
C1-C6 *n*-Paraffins: methane, ethane, propane, butane, pentane, hexane in helium (1000ppm each)	2 yrs.	34524	34525	34525-PI
C1-C6 *n*-Paraffins: methane, ethane, propane, butane, pentane, hexane in nitrogen (100ppm each)	2 yrs.	34527	34528	34528-PI
C2-C6 Olefins: ethylene, propylene, 1-butene, 1-pentene, 1-hexene in helium (100ppm each)	2 yrs.	34529	34530	34530-PI
C2-C6 Olefins: ethylene, propylene, 1-butene, 1-pentene, 1-hexene in nitrogen (100ppm each)	2 yrs.	34531	34532	34532-PI
Branched Paraffins: 2,2-dimethylbutane, 2,2-dimethylpropane, isobutane, 2-methylbutane, 2-methylpentane, 3-methylpentane in nitrogen (15ppm each)	2 yrs.	34534	—	34534-PI
Methane, ethane, ethylene, acetylene, propane, propylene, *n*-butane, propyne in nitrogen (15ppm each)	1 yr.	—	34537	34537-PI
n-butane, isobutane, *cis*-2-butene, *trans*-2-butene, 1-butene, isobutylene, 1,3-butadiene, ethyl acetylene in nitrogen (15ppm each)	1 yr.	—	34539	34539-PI

Brenda Spicer
Returns Coordinator
10+ years of service!

also **available**

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

Regulators for use with 14-liter and 48-liter Scott Transportable Gases

Specifications:
Maximum Inlet Pressure: 300psig
Outlet Pressure Range: 2–10psig
Maximum Delivery Pressure: 25psig
Operating Temperature Range: 35°F to 150°F (2°C to 65°C)
Outlet Connection: ¼" female NPT

Materials of Construction:
Body: Brass
Diaphragm: Viton®
Seat: Acetal
Seal: Viton®

Use the CGA 160 inlet connection with 14-liter Scott Transportable Gases. Use the CGA 165 inlet connection with 48-liter Scott Transportable Gases.

Description	qty.	cat.#
Regulator with CGA 160 Inlet Connection	ea.	22690
Regulator with CGA 165 Inlet Connection	ea.	22691

also **available**

Regulators with CGA-180 connections for the 110L cylinders are listed on **page 415**.

Syringe Adapter Kit for Single-Stage VOC Regulator

Use to withdraw sample from a high-pressure cylinder after pressure reduction through the high-purity VOC single-stage regulator.

Kit contains one stainless steel ¼" NPT to female luer fitting, which can be used with an A-2 Luer syringe (cat.# 20162 or 20163, page 292), and one stainless steel ¼" NPT x ⅛" compression fitting with septum (can be used with any syringe needle).

Description	qty.	cat.#
Syringe Adapter Kit	kit	21118

Natural Gas and Refinery Gas Standards

Silvia Martinez
Innovations Chemist
5+ years of service!

cylinder
design

DCG Partnership Cylinders:

Size: 7.6 x 24 cm.
CGA-170/110 connection.
U.S. D.O.T. Specs:
DOT-4B-240ET

Please note: This cylinder is not approved for use in Canada.

Natural Gas and Refinery Gas Standards

- Each available in three varying concentrations.
- Mini-regulator designed specially for these standards.

Natural Gas Standards

Available in three mixes, from lean to rich. Each has an extended list of C6+ components.

	Natural Gas Standard #1 cat.# 34438, ea. % each compound**	Natural Gas Standard #2 cat.# 34439, ea. % each compound**	Natural Gas Standard #3 cat.# 34440, ea. % each compound**
nitrogen	1.000	2.500	5.000
carbon dioxide	0.500	1.000	1.500
methane UHP	94.750	85.250	70.000
ethane UHP	2.000	5.000	9.000
propane	0.750	3.000	6.000
isobutane	0.300	1.000	3.000
n-butane	0.300	1.000	3.000
isopentane	0.150	0.500	1.000
n-pentane	0.150	0.500	1.000
hexanes plus EX2*	0.100	0.250	0.500
Concentration	mole	mole	mole
Volume	13.16L @ 200psig	13.16L @ 200psig	5.5L @ 75psig
Ideal Heating Value (Dry BTU/SCF)	1048 gross	1142 gross	1317 gross

*Contact Restek or your Restek representative for a complete list of hexanes plus EX2.
**Precise concentrations are provided on the data sheet included with each cylinder and may vary slightly from those listed here.

Refinery Gas Standards

Available in three mixes with varying C5 unsaturates or extended C6+ components.

	Refinery Gas Standard #1 cat.# 34441, ea. % each compound**	Refinery Gas Standard #2 cat.# 34442, ea. % each compound**	Refinery Gas Standard #5 cat.# 34443, ea. % each compound**
hydrogen	40.750	12.500	12.500
argon	0.500	1.000	1.000
nitrogen	4.000	37.200	37.200
carbon monoxide	1.000	1.000	1.000
carbon dioxide	3.000	3.000	3.000
methane	8.500	5.000	5.000
ethane	6.000	4.000	4.000
ethylene	2.000	2.000	2.000
acetylene	—	1.000	1.000
propane	7.000	6.000	6.000
propylene	3.000	3.000	3.000
propadiene	0.850	1.000	1.000
cyclopropane	—	0.040	—
isobutane	6.000	5.000	5.000
n-butane	4.000	4.000	4.000
isobutylene	2.000	1.000	1.000
1,3 butadiene	3.000	3.000	3.000
cis-2-butene	2.000	2.000	2.000
trans-2-butene	2.000	3.000	3.000
butene-1	2.000	2.000	2.000
2-methyl-2-butene	—	0.200	0.200
isopentane	1.000	1.000	1.000
n-pentane	1.000	1.000	1.000
cis-2-pentene	—	0.400	0.400
trans-2-pentene	—	0.160	0.200
pentene-1	—	0.400	0.400
n-hexane	0.500	0.100	—
hexanes plus EX	—	—	0.100
Concentration	mole	mole	mole
Volume	5.2L @ 70psig	4.9L @ 60psig	4.6L @ 60psig

**Precise concentrations are provided on the data sheet included with each cylinder and may vary slightly from those listed here.

Mini-Regulator for natural gas and refinery gas standards

- 0–300psig inlet pressure range.
- 0–15psig outlet pressure range.
- Supplied with 0–15psig outlet pressure gauge, brass CGA 170 nut and nipple.

Description	qty.	cat.#
Mini-Regulator	ea.	22032