

Environmental Air Monitoring Gas Standards

Our high-quality air monitoring gas calibration standards are provided by Spectra Gases and Scott Specialty Gases—meeting lab requirements for two separate sources of calibration standards. 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	
1ppm in nitrogen, 104 liters @ 1,800psi cat. # 34400 (ea.)	
1ppm in nitrogen, 110 liters @ 1,800psi (Pi-marked Cylinder) cat. # 34400-PI (ea.)	
100ppb in nitrogen, 104 liters @ 1,800psi cat. # 34421 (ea.)	
100ppb in nitrogen, 110 liters @ 1,800psi (Pi-marked Cylinder) 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	
1ppm in nitrogen, 104 liters @ 1,800psi cat. # 34430 (ea.)	
1ppm in nitrogen, 110 liters @ 1,800psi (Pi-marked Cylinder) cat. # 34430-PI (ea.)	
100ppb in nitrogen, 104 liters @ 1,800psi cat. # 34431 (ea.)	
100ppb in nitrogen, 110 liters @ 1,800psi (Pi-marked Cylinder) cat. # 34431-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	
1ppm in nitrogen, 104 liters @ 1,800psi cat. # 34432 (ea.)	
1ppm in nitrogen, 110 liters @ 1,800psi (Pi-marked Cylinder) cat. # 34432-PI (ea.)	
100ppb in nitrogen, 104 liters @ 1,800psi cat. # 34433 (ea.)	
100ppb in nitrogen, 110 liters @ 1,800psi (Pi-marked Cylinder) cat. # 34433-PI (ea.)	

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
US DOT Specs: 3AL2216



TP did you know?

Pi-marked Gas Cylinders for EU Countries

Our 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.

We can provide the same mix from two suppliers—meeting your need for second source gas standards.

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!



TO-14A GC/MS Tuning Mix

4-bromofluorobenzene	1ppm in nitrogen, 104 liters @ 1,800psi cat. # 34406 (ea.)
	1ppm in nitrogen, 110 liters @ 1,800psi (Pi-marked Cylinder) cat. # 34406-PI (ea.)
	100ppb in nitrogen, 104 liters @ 1,800psi cat. # 34424 (ea.)
	100ppb in nitrogen, 110 liters @ 1,800psi (Pi-marked Cylinder) cat. # 34424-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
1ppm in nitrogen, 104 liters @ 1,800psi cat. # 34404 (ea.)	
1ppm in nitrogen, 110 liters @ 1,800psi (Pi-marked Cylinder) cat. # 34404-PI (ea.)	
100ppb in nitrogen, 104 liters @ 1,800psi cat. # 34423 (ea.)	
100ppb in nitrogen, 110 liters @ 1,800psi (Pi-marked Cylinder) 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	
1ppm in nitrogen, 104 liters @ 1,800psi cat. # 34402 (ea.)	
1ppm in nitrogen, 110 liters @ 1,800psi (Pi-marked Cylinder) cat. # 34402-PI (ea.)	
100ppb in nitrogen, 104 liters @ 1,800psi cat. # 34422 (ea.)	
100ppb in nitrogen, 110 liters @ 1,800psi (Pi-marked Cylinder) cat. # 34422-PI (ea.)	

TO-14A Internal Standard Mix

bromochloromethane	1,4-difluorobenzene
chlorobenzene-d5	
1ppm in nitrogen, 104 liters @ 1,800psi cat. # 34412 (ea.)	
1ppm in nitrogen, 110 liters @ 1,800psi (Pi-marked Cylinder) cat. # 34412-PI (ea.)	
100ppb in nitrogen, 104 liters @ 1,800psi cat. # 34427 (ea.)	
100ppb in nitrogen, 110 liters @ 1,800psi (Pi-marked Cylinder) cat. # 34427-PI (ea.)	

TO-14A Internal Standard/Tuning Mix

bromochloromethane	chlorobenzene-d5
1-bromo-4-fluorobenzene (4-bromofluorobenzene)	1,4-difluorobenzene
1ppm in nitrogen, 104 liters @ 1,800psi cat. # 34408 (ea.)	
1ppm in nitrogen, 110 liters @ 1,800psi (Pi-marked Cylinder) cat. # 34408-PI (ea.)	
100ppb in nitrogen, 104 liters @ 1,800psi cat. # 34425 (ea.)	
100ppb in nitrogen, 110 liters @ 1,800psi (Pi-marked Cylinder) cat. # 34425-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 <i>tert</i> -butyl ether (MTBE)
2-butanone (MEK)	2-propanol
carbon disulfide*	propylene
cyclohexane	tetrahydrofuran
dibromochloromethane	2,2,4-trimethylpentane
<i>trans</i> -1,2-dichloroethene	vinyl acetate
1,4-dioxane	vinyl bromide
ethyl acetate	
1ppm in nitrogen, 104 liters @ 1,800psi cat. # 34434 (ea.)	
1ppm in nitrogen, 110 liters @ 1,800psi (Pi-marked Cylinder) cat. # 34434-PI (ea.)	
100ppb in nitrogen, 104 liters @ 1,800psi cat. # 34435 (ea.)	
100ppb in nitrogen, 110 liters @ 1,800psi (Pi-marked Cylinder) cat. # 34435-PI (ea.)	

*Stability of this compound cannot be guaranteed.

TO-15 64 Component Mix (64 components)

acetone	4-ethyltoluene
acrolein	trichlorofluoromethane (Freon 11)
benzene	dichlorodifluoromethane (Freon 12)
benzyl chloride*	1,1,2-trichloro-1,2,2-trifluoroethane (Freon 113)
bromodichloromethane	1,2-dichlorotetrafluoroethane (Freon 114)
bromoform	heptane
bromomethane	hexachloro-1,3-butadiene
1,3-butadiene	hexane
2-butanone (MEK)	2-hexanone (MBK)
carbon disulfide*	4-methyl-2-pentanone (MIBK)
carbon tetrachloride	methylene chloride
chlorobenzene	methyl <i>tert</i> -butyl ether (MTBE)
chloroethane	methyl methacrylate
chloroform	2-propanol
chloromethane	propylene
cyclohexane	styrene
dibromochloromethane	1,1,2,2-tetrachloroethane
1,2-dichlorobenzene	tetrachloroethene
1,3-dichlorobenzene	tetrahydrofuran
1,4-dichlorobenzene	toluene
1,1-dichloroethane	1,2,4-trichlorobenzene
1,2-dichloroethane	1,1,1-trichloroethane
1,1-dichloroethene	1,1,2-trichloroethane
<i>cis</i> -1,2-dichloroethene	trichloroethene
<i>trans</i> -1,2-dichloroethene	1,2,4-trimethylbenzene
1,2-dichloropropane	1,3,5-trimethylbenzene
<i>cis</i> -1,3-dichloropropene	vinyl acetate
<i>trans</i> -1,3-dichloropropene	vinyl chloride
1,4-dioxane	<i>m</i> -xylene
ethanol*	<i>o</i> -xylene
ethyl acetate	<i>p</i> -xylene
ethyl benzene	
ethylene dibromide (1,2-dibromoethane)	
1ppm in nitrogen, 104 liters @ 1,800psi cat. # 34436 (ea.)	
1ppm in nitrogen, 110 liters @ 1,800psi (Pi-marked Cylinder) cat. # 34436-PI (ea.)	
100ppb in nitrogen, 104 liters @ 1,800psi cat. # 34437 (ea.)	
100ppb in nitrogen, 110 liters @ 1,800psi (Pi-marked Cylinder) cat. # 34437-PI (ea.)	

*Stability of this compound cannot be guaranteed.

also **available**

See **page 386** for high-purity regulator.

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

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 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.

150 liters @ 1,800psig

cat. # 34560 (ea.)

cylinder design

Performance Test Standard

Size: 5A disposable (3.2" x 12")

Volume/Pressure: 150L @ 1,800psig
CGA 180 outlet fitting
Weight: 2.2 lbs

BTEX Gas Mix

benzene	<i>m</i> -xylene
ethylbenzene	<i>o</i> -xylene
toluene	<i>p</i> -xylene

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

cat. # 34414 (ea.)

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

cat. # 34414-PI (ea.)

100ppb in nitrogen, 104 liters @ 1,800psi

cat. # 34428 (ea.)

100ppb in nitrogen, 110 liters @ 1,800psi (Pi-marked Cylinder)

cat. # 34428-PI (ea.)

BTEX and MTBE Gas Mix

benzene	<i>m</i> -xylene
ethylbenzene	<i>o</i> -xylene
methyl <i>tert</i> -butyl ether (MTBE)	<i>p</i> -xylene
toluene	

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

cat. # 34541 (ea.)

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

cat. # 34541-PI (ea.)

100ppb in nitrogen, 104 liters @ 1,800psi

cat. # 34542 (ea.)

100ppb in nitrogen, 110 liters @ 1,800psi (Pi-marked Cylinder)

cat. # 34542-PI (ea.)

Sulfur 5-Component Mix

12-month stability, +/- 10% accuracy.

carbonyl sulfide	hydrogen sulfide
dimethyl sulfide	methyl mercaptan
ethyl mercaptan	

1ppm in nitrogen, 110 liters @ 1,800psi

cat. # 34561 (ea.)

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

cat. # 34561-PI (ea.)

Massachusetts APH Mix (26 components)

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

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

cat. # 34540 (ea.)

1ppm in nitrogen, 21 liters @ 350psig (Pi-marked Cylinder)

cat. # 34540-PI (ea.)

Japan Calibration Mix (9 components)

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

1,2-dichloroethane

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

cat. # 34418 (ea.)

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

cat. # 34418-PI (ea.)

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

US DOT Specs: 3AL2216



did you know?

Pi-marked Gas Cylinders for EU Countries

Our 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.

also available

Custom air standards!

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

please **note**

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

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)

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

cat. # 34420 (ea.)

1ppm in nitrogen, 30 liters @ 500psi (Pi-marked Cylinder)

cat. # 34420-PI (ea.)

100ppb in nitrogen, 104 liters @ 1,800psi

cat. # 34429 (ea.)

100ppb in nitrogen, 110 liters @ 1,800psi (Pi-marked Cylinder)

cat. # 34429-PI (ea.)



24129

Small Cylinder Stand

- Supports and stabilizes disposable gas cylinders.
- Fits cylinders up to 3³/₈" (8cm) in diameter.
- Adjustable screw secures cylinder in place.

This cylinder stand is designed to support small diameter cylinders, such as 104L and 110L disposable cylinders. It is a simple, safe, and economical way to stabilize the position of small cylinders, while keeping them within close proximity. The stand is constructed of heavyweight painted steel and includes an adjustable screw for safely securing cylinders.

Description	qty.	cat.#	price
Small Cylinder Stand	ea.	24129	

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

20-60ppb C in nitrogen, 104 liters @ 1,800psi

cat. # 34445 (ea.)

20-60ppb C in nitrogen, 110 liters @ 1,800psi (Pi-marked Cylinder)

cat. # 34445-PI (ea.)



21572

Spectra Gas 7621 High-Purity VOC Regulator

- Single-stage, stainless steel.
- Two pressure gauges and CGA-180 fitting.
- 3,000psig 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.#	price
0-30psig outlet pressure gauge	ea.	21572	
0-100psig outlet pressure gauge	ea.	21572-R100	

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. 663.70 % each compound**	Natural Gas Standard #2 cat.# 34439, ea. 663.70 % each compound**	Natural Gas Standard #3 cat.# 34440, ea. 663.70 % 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
<i>n</i> -butane	0.300	1.000	3.000
isopentane	0.150	0.500	1.000
<i>n</i> -pentane	0.150	0.500	1.000
hexanes plus*	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

Refinery Gas Standards

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

	Refinery Gas Standard #1 cat.# 34441, ea. 942.30 % each compound**	Refinery Gas Standard #2 cat.# 34442, ea. 942.30 % each compound**	Refinery Gas Standard #5 cat.# 34443, ea. 942.30 % 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
<i>n</i> -butane	4.000	4.000	4.000
isobutylene	2.000	1.000	1.000
1,3 butadiene	3.000	3.000	3.000
<i>cis</i> -2-butene	2.000	2.000	2.000
<i>trans</i> -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
<i>n</i> -pentane	1.000	1.000	1.000
<i>cis</i> -2-pentene	—	0.400	0.400
<i>trans</i> -2-pentene	—	0.160	0.200
pentene-1	—	0.400	0.400
<i>n</i> -hexane	0.500	0.100	—
hexanes plus	—	—	0.100
Concentration	mole	mole	mole
Volume	5.2L @ 70psig	4.9L @ 60psig	4.6L @ 60psig

*Contact Restek or your Restek representative for a complete list of hexanes plus.

**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.#	price
Mini-Regulator	ea.	22032	

please note

Gas standards on this page are not available in Pi-marked cylinders for EU countries.



cylinder design

DCG Partnership Cylinders:

Size: 7.6 x 24 cm

CGA-170/110 connection.

US DOT Specs: DOT-4B-240ET

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



22032



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)
DOT 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)
DOT 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)
DOT Specifications: 3AL2216



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

Description	Shelf Life	Scotty 14 (14 Liter)		Scotty 48 (48 Liter)		Scotty 110 (110 Liter)	
		cat.#	price	cat.#	price	cat.#	price
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	

Description	Shelf Life	Scotty 14 (14 Liter)		Scotty 48 (48 Liter)		Scotty 110 (110 Liter)	
		cat.#	price	cat.#	price	cat.#	price
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 <i>n</i> -Paraffins: methane, ethane, propane, butane, pentane, hexane in nitrogen (15ppm each)	2 yrs.	34518		34519		34519-PI	
C1-C6 <i>n</i> -Paraffins: methane, ethane, propane, butane, pentane, hexane in helium (100ppm each)	2 yrs.	34521		34522		34522-PI	
C1-C6 <i>n</i> -Paraffins: methane, ethane, propane, butane, pentane, hexane in helium (1000ppm each)	2 yrs.	34524		34525		34525-PI	
C1-C6 <i>n</i> -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, <i>n</i> -butane, propyne in nitrogen (15ppm each)	1 yr.	—	—	34537		34537-PI	
<i>n</i> -butane, isobutane, <i>cis</i> -2-butene, <i>trans</i> -2-butene, 1-butene, iso-butylene, 1,3-butadiene, ethyl acetylene in nitrogen (15ppm each)	1 yr.	—	—	34539		34539-PI	

TY did you know?

Pi-marked Gas Cylinders for EU Countries

Our 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.

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: 1/4" 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.#	price
Regulator with CGA 160 Inlet Connection	ea.	22690	
Regulator with CGA 165 Inlet Connection	ea.	22691	



22690

also available

Regulators with CGA-180 connections for the 110L cylinders are listed on [page 386](#).

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 nickel-plated brass 1/4" NPT to female luer fitting, which can be used with an A-2 Luer syringe (cat.# 20162 or 20163), and one stainless steel 1/4" NPT x 1/8" compression fitting with septum (can be used with any syringe needle).

Description	qty.	cat.#	price
Syringe Adapter Kit	kit	21118	



21118