

Environmental Compliance Gases from GTS

GTS offers a complete line of Environmental Compliance blends, prepared and analyzed to the most exacting standards in the industry. We are constantly working to improve the blend accuracy, stability, and analytical accuracy of these products. These factors are paramount in achieving compliance with EPA regulations, insuring accurate calibration of Continuous Emission Monitors, qualifying for sale of Emission Reductions, and proving relative accuracies (RATAs).

In addition to EPA Protocol Standards, we offer a full line of daily calibration standards for use when Protocols are not required. We also provide standards of Volatile and Semi-Volatile Organics for ambient air monitoring.

The products in this section of our catalog have a number of applications:

- Ambient Air and Stack Monitor Calibrations
- CEM System Certification and Calibration
- Calibration of Mobile Emissions Monitors
- Calibration of Portable and Periodic Emissions Monitors
- Calibration of Toxic Gas Monitors in Industrial Hygiene applications.

Our goal is to insure that our customers receive the most accurate and stable calibration gases available, in the shortest possible lead times. Our laboratories utilize the latest state-of-the-art analytical equipment including:


- GC/FID, GC/PDID, GC/TCD, GC/ECD and GC/MS
- FTIR
- NDIR
- Chemiluminescence
- Various wet-chemistry techniques

We also have a proprietary passivation process for aluminum cylinders, which enhances the stability of highly reactive components such as NO₂, SO₂, HCl, Cl₂ and NH₃. Due to our proprietary passivation process, we were first in our industry to receive a DOT exemption to make mixtures of highly reactive halogen gases in aluminum cylinders.

Our record in the EPA Blind Audits of Protocol Standards is among the best in the industry.

(Contact us for more detailed information)

If you have a new application or a need for a calibration standard with specifications differing from those we publish, please call us. We are most interested in accommodating your specific requirements.

ONE STEEL ROAD EAST MORRISVILLE, PA 19067 (800) 638-6360		 Filling Your Gas & Welding Needs	
ANALYTICAL REPORT – PRODUCT CERTIFICATION			
TO: GTS - FAIRLESS HILLS ONE STEEL ROAD EAST MORRISVILLE, PA 19067 ATTN:		DATE: 03/24/2005 P.O. NO. ORDER NO.04072005-001	
EPA PROTOCOL MIXTURE			
<u>Cylinder No.</u> CC31923	<u>Constituents</u> NITRIC OXIDE SULFUR DIOXIDE CARBON DIOXIDE NOx NITROGEN	<u>Nominal</u> 305 ppm 180 ppm 18.0 % 305 ppm BALANCE	<u>Actual</u> 306 ppm 175 ppm 18.0 % 306 ppm BALANCE
ANALYSIS DATE	03/24/2005	EXPIRATION DATE	03/24/2007
SHELF LIFE	24 MONTHS		
ANALYZED ACCORDING TO EPA TRACEABILITY PROTOCOL FOR ASSAY AND CERTIFICATION OF GASEOUS CALIBRATION STANDARDS-SEPTEMBER 1997:G1*/DENOTES PROCEDURE G2 THIS STANDARD SHOULD NOT BE USED WHEN ITS GAS PRESSURE IS BELOW 1.0 MEGAPASCAL (150 psig).			
CHRIS ANDERSON	ANALYST	DATE	

GTS 23301/C 3/05

All GTS EPA Protocol Standards are shipped with a Certificate of Analysis which exceeds the minimum requirements of the Protocol.

- 1 Assay Laboratory Identification
- 2 Statement that the certification conforms to EPA protocol guidelines
- 3 Cylinder serial number
- 4 Cylinder pressure at time of certification
- 5 Date of final analysis
- 6 Expiration date

- 7 Total oxides of Nitrogen reported for NO Protocols
- 8 Certified concentrations in ppm or % - Mole basis
- 9 Analytical uncertainty calculated by Protocol guidelines
- 10 Identification of reference standards used in this analysis
- 11 Expiration dates of reference standards to validate analysis
- 12 Identification of instrumentation used in this analysis

TWO COMPONENT EPA PROTOCOL CALIBRATION GAS MIXTURES

Currently Available EPA Protocol Mixtures

CARBON DIOXIDE CO₂ IN AIR

50 ppm to 18.2%

Certification Period:
≥ 300 ppm – 36 months
< 300 ppm – 6 months

CYLINDER SIZE	CONTENTS (cf/m ³)	PRODUCT CODE	CGA CONN.
265 AL	248/7.02	1301-265A	590
150 AL	151/4.28	1301-150A	590
80 AL	80/2.27	1301-80A	590
33 AL	35/0.991	1301-33A	590

CARBON DIOXIDE CO₂ IN NITROGEN

50 ppm to 18.2%

Certification Period:
≥ 300 ppm – 36 months
< 300 ppm – 6 months

CYLINDER SIZE	CONTENTS (cf/m ³)	PRODUCT CODE	CGA CONN.
265 AL	243/6.88	1300-265A	580
150 AL	148/4.19	1300-150A	580
80 AL	78/2.21	1300-80A	580
33 AL	34/0.963	1300-33A	580

CARBON MONOXIDE CO IN AIR

3 ppm to 6.25%

Certification Period:
≥ 8 ppm – 36 months
< 8 ppm – 6 months

CYLINDER SIZE	CONTENTS (cf/m ³)	PRODUCT CODE	CGA CONN.
265 AL	238/6.74	1303 - 265A	590
150 AL	145/4.11	1303 - 150A	590
80 AL	77/2.18	1303 - 80A	590
33 AL	34/0.963	1303 - 33A	590

CARBON MONOXIDE CO IN NITROGEN

3 ppm to 10.4%

Certification Period:
≥ 8 ppm – 36 months
< 8 ppm – 6 months

CYLINDER SIZE	CONTENTS (cf/m ³)	PRODUCT CODE	CGA CONN.
265 AL	235/6.65	1302 - 265A	350
150 AL	143/4.05	1302 - 150A	350
80 AL	76/2.15	1302 - 80A	350
33 AL	33/0.934	1302 - 33A	350

***HYDROGEN CHLORIDE HCl IN NITROGEN**

10 ppm to 1000 ppm

1000 ppm - 3000 ppm

Certification Period:
6 months

CYLINDER SIZE	CONTENTS (cf/m ³)	PRODUCT CODE	CGA CONN.
265 AL	235/6.65	1313-265A	330
150 AL	143/4.05	1313-150A	330
80 AL	76/2.15	1313-80A	330
33 AL	33/0.934	1313-33A	330
300	240/6.80	1313-300	330
200	213/6.03	1313-200	330

TECHNICAL DATA

Cylinder Pressure	2000 PSIG
DOT Class	2.2
DOT Label	Nonflammable Gas
ID No.	UN 1956

RECOMMENDED EQUIPMENT	MODEL	PAGE
REGULATORS:		
Single Stage	S300 (HCl)	175
Single Stage	S315 (All Others)	177
Two Stage	S320 (HCl)	176
Two Stage	S325 (All Others)	178

* Only available as Pennsylvania D.E.R. protocol or certified standard. There are currently no NIST SRM's available for HCl.

TWO COMPONENT EPA PROTOCOL CALIBRATION GAS MIXTURES (cont.)

HYDROGEN SULFIDE H₂S IN AIR

5 ppm to 200 ppm

Certification Period:
12 months

CYLINDER SIZE	CONTENTS (cf/m ³)	PRODUCT CODE	CGA CONN.
265 AL	238/6.74	1309-265A	330
150 AL	145/4.11	1309-150A	330
80 AL	77/2.18	1309-80A	330
33 AL	34/0.963	1309-33A	330

HYDROGEN SULFIDE H₂S IN NITROGEN

5 ppm to 200 ppm

Certification Period:
12 months

CYLINDER SIZE	CONTENTS (cf/m ³)	PRODUCT CODE	CGA CONN.
265 AL	235/6.65	1310-265A	330
150 AL	143/4.05	1310-150A	330
80 AL	76/2.15	1310-80A	330
33 AL	33/0.934	1310-33A	330

METHANE CH₄ IN AIR

1 ppm to 1,000 ppm

Certification Period:
36 months

CYLINDER SIZE	CONTENTS (cf/m ³)	PRODUCT CODE	CGA CONN.
265 AL	238/6.74	1322-265A	590
150 AL	145/4.11	1322-150A	590
80 AL	77/2.18	1322-80A	590
33 AL	34/0.963	1322-33A	590

METHANE CH₄ IN NITROGEN

1 ppm to 1,000 ppm

Certification Period:
36 months

CYLINDER SIZE	CONTENTS (cf/m ³)	PRODUCT CODE	CGA CONN.
265 AL	235/6.65	1323-265A	350
150 AL	143/4.05	1323-150A	350
80 AL	76/2.15	1323-80A	350
33 AL	33/0.934	1323-33A	350

NITRIC OXIDE NO IN NITROGEN

1 ppm to 3900 ppm

Certification Period:
≥ 4 ppm – 24 months
< 4 ppm – 6 months

CYLINDER SIZE	CONTENTS (cf/m ³)	PRODUCT CODE	CGA CONN.
265 AL	235/6.65	1304-265A	660
150 AL	143/4.05	1304-150A	660
80 AL	77/2.15	1304-80A	660
33 AL	34/0.934	1304-33A	660

NITROGEN DIOXIDE NO₂ IN AIR

10 ppm to 1000 ppm

Certification Period:
≥ 80 ppm – 24 months
< 80 ppm – 6 months

CYLINDER SIZE	CONTENTS (cf/m ³)	PRODUCT CODE	CGA CONN.
265 AL	239/6.77	1305-265A	660
150 AL	146/4.13	1305-150A	660
80 AL	77/2.18	1305-80A	660
33 AL	34/0.963	1305-33A	660

TECHNICAL DATA

Cylinder Pressure	2000 PSIG
DOT Class	2.2
DOT Label	Nonflammable Gas
ID No.	UN 1956

RECOMMENDED EQUIPMENT	MODEL	PAGE
REGULATORS:		
Single Stage	S300 (H ₂ S)	175
Single Stage	S315 (All Others)	177
Two Stage	S320 (H ₂ S)	176
Two Stage	S325 (All Others)	178

TWO COMPONENT EPA PROTOCOL CALIBRATION GAS MIXTURES (cont.)

OXYGEN O₂ IN NITROGEN

0.5% to 27.3%

Certification Period:
≥ 0.8% – 36 months
< 0.8% – 6 months

CYLINDER SIZE	CONTENTS (cf/m ³)	PRODUCT CODE	CGA CONN.
265 AL	237/6.71	1306-265A	O ₂ ≤ 23% – 590 O ₂ > 23% – 296
150 AL	146/4.13	1306-150A	
80 AL	77/2.18	1306-80A	
33 AL	34/0.963	1306-33A	

PROPANE C₃H₈ IN AIR

1 ppm to 1.05%

Certification Period:
36 months

CYLINDER SIZE	CONTENTS (cf/m ³)	PRODUCT CODE	CGA CONN.
265 AL	239/6.77	1311-265A	590
150 AL	146/4.13	1311-150A	590
80 AL	77/2.18	1311-80A	590
33 AL	34/0.963	1311-33A	590

PROPANE C₃H₈ IN NITROGEN

1 ppm to 2.6%

Certification Period:
36 months

CYLINDER SIZE	CONTENTS (cf/m ³)	PRODUCT CODE	CGA CONN.
265 AL	235/6.65	1312-265A	350
150 AL	143/4.05	1312-150A	350
80 AL	76/2.15	1312-80A	350
33 AL	33/0.934	1312-33A	350

SULFUR DIOXIDE SO₂ IN AIR

5 ppm to 4550 ppm

Certification Period:
5 - 39 ppm – 6 months
40 - 499 ppm – 24 months
> 499 ppm – 36 months

CYLINDER SIZE	CONTENTS (cf/m ³)	PRODUCT CODE	CGA CONN.
265 AL	239/6.77	1308-265A	660
150 AL	146/4.13	1308-150A	660
80 AL	77/2.18	1308-80A	660
33 AL	34/0.963	1308-33A	660

SULFUR DIOXIDE SO₂ IN NITROGEN

5 ppm to 4550 ppm

Certification Period:
5 - 39 ppm – 6 months
40 - 499 ppm – 24 months
> 499 ppm – 36 months

CYLINDER SIZE	CONTENTS (cf/m ³)	PRODUCT CODE	CGA CONN.
265 AL	235/6.65	1307-265A	660
150 AL	143/4.05	1307-150A	660
80 AL	76/2.15	1307-80A	660
33 AL	33/0.934	1307-33A	660

RECOMMENDED EQUIPMENT	MODEL	PAGE
REGULATORS:		
Single Stage	S315	177
Two Stage	S325	178

TECHNICAL DATA

Cylinder Pressure	2000 PSIG
DOT Class	2.2
DOT Label	Nonflammable Gas
ID No.	UN 1956

MULTI-COMPONENT EPA PROTOCOL MIXTURES

CARBON DIOXIDE CO₂ AND NITRIC OXIDE NO IN NITROGENCO₂: 50 ppm - 18.2%

NO: 1.5 ppm - 3900 ppm

Certification Period:
24 months

CYLINDER SIZE	CONTENTS (cf/m ³)	PRODUCT CODE	CGA CONN.
265 AL	243/6.88	1329-265A	660
150 AL	148/4.19	1329-150A	660
80 AL	78/2.21	1329-80A	660
33 AL	34/0.963	1329-33A	660

TECHNICAL DATA

Cylinder Pressure	2000 PSIG
DOT Class	2.2
DOT Label	Nonflammable Gas
ID No.	UN1956

RECOMMENDED EQUIPMENT	MODEL	PAGE
REGULATORS: Two Stage	320, 452	176, 183

CARBON MONOXIDE CO AND NITRIC OXIDE NO IN NITROGEN

CO: 3 ppm - 10.4%

NO: 1.5 ppm - 3900 ppm

Certification Period:
24 months

CYLINDER SIZE	CONTENTS (cf/m ³)	PRODUCT CODE	CGA CONN.
265 AL	235/6.65	1332-265A	660
150 AL	143/4.05	1332-150A	660
80 AL	76/2.15	1332-80A	660
33 AL	33/0.934	1332-33A	660

TECHNICAL DATA

Cylinder Pressure	2000 PSIG
DOT Class	2.2
DOT Label	Nonflammable Gas
ID No.	UN1956

RECOMMENDED EQUIPMENT	MODEL	PAGE
REGULATORS: Two Stage	S320	176

CARBON DIOXIDE CO₂ AND CARBON MONOXIDE CO IN AIRCO₂: 50 ppm - 18.2%

CO: 3 ppm - 3.0%

Certification Period:
36 months

CYLINDER SIZE	CONTENTS (cf/m ³)	PRODUCT CODE	CGA CONN.
265 AL	247/6.99	1331-265A	590
150 AL	150/4.25	1331-150A	590
80 AL	79/2.24	1331-80A	590
33 AL	34/0.963	1331-33A	590

TECHNICAL DATA

Cylinder Pressure	2000 PSIG
DOT Class	2.2
DOT Label	Nonflammable Gas
ID No.	UN1956

RECOMMENDED EQUIPMENT	MODEL	PAGE
REGULATORS: Single Stage Two Stage	S315 S325	177 178

MULTI-COMPONENT EPA PROTOCOL MIXTURES (cont.)

CARBON DIOXIDE CO₂ AND CARBON MONOXIDE CO IN NITROGEN

CO₂: 50 ppm - 18.2%
 CO: 3 ppm - 10.4%
 Certification Period:
 36 months

CYLINDER SIZE	CONTENTS (cf/m ³)	PRODUCT CODE	CGA CONN.
265 AL	243/6.88	1327-265A	350
150 AL	148/4.19	1327-150A	350
80 AL	78/2.21	1327-80A	350
33 AL	34/0.963	1327-33A	350

RECOMMENDED EQUIPMENT	MODEL	PAGE
REGULATORS: Two Stage	S325, S420	178, 180

TECHNICAL DATA

Cylinder Pressure	2000 PSIG
DOT Class	2.2
DOT Label	Nonflammable Gas
ID No.	UN1956

CARBON MONOXIDE CO AND SULFUR DIOXIDE SO₂ IN NITROGEN

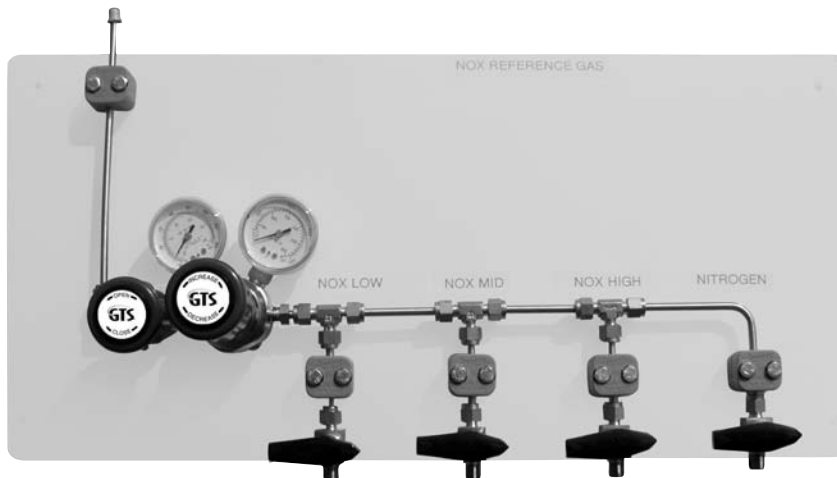
CO: 3 ppm - 10.4%
 SO₂: 5 ppm - 4550 ppm
 Certification Period:
 SO₂: < 40 ppm – 6 months
 SO₂: 40 - 499 ppm – 24 months
 SO₂: > 499 ppm – 36 months

CYLINDER SIZE	CONTENTS (cf/m ³)	PRODUCT CODE	CGA CONN.
265 AL	235/6.65	1330-265A	660
150 AL	143/4.05	1330-150A	660
80 AL	76/2.15	1330-80A	660
33 AL	33/0.934	1330-33A	660

RECOMMENDED EQUIPMENT	MODEL	PAGE
REGULATORS: Two Stage	S320	176

TECHNICAL DATA

Cylinder Pressure	2000 PSIG
DOT Class	2.2
DOT Label	Nonflammable Gas
ID No.	UN1956



S300-4EPA
 High Purity Stainless Steel
 Gas Distribution Panel
 (See page 206 for details)

MULTI-COMPONENT EPA PROTOCOL MIXTURES (cont.)

CARBON DIOXIDE CO₂ AND OXYGEN O₂ IN NITROGENCO₂: 50 ppm - 18.2%O₂: 0.6 - 27.3%Certification Period:
36 months

CYLINDER SIZE	CONTENTS (cf/m ³)	PRODUCT CODE	CGA CONN.
265 AL	246/6.97	1325-265A	O ₂ ≤ 23% - 590
150 AL	150/4.25	1325-150A	O ₂ > 23% - 296
80 AL	79/2.24	1325-80A	
33 AL	34/0.963	1325-33A	

RECOMMENDED EQUIPMENT	MODEL	PAGE
REGULATORS: Two Stage	S325, S420	178, 180

TECHNICAL DATA

Cylinder Pressure	2000 PSIG
DOT Class	2.2
DOT Label	Nonflammable Gas
ID No.	UN1956

CARBON DIOXIDE CO₂ AND SULFUR DIOXIDE SO₂ IN NITROGENCO₂: 50 ppm - 18.2%SO₂: 10 ppm - 4550 ppm

Certification Period:

SO₂: < 40 ppm - 6 monthsSO₂: 40 - 499 ppm - 24 monthsSO₂: > 499 ppm - 36 months

CYLINDER SIZE	CONTENTS (cf/m ³)	PRODUCT CODE	CGA CONN.
265 AL	243/6.88	1316-265A	660
150 AL	148/4.19	1316-150A	660
80 AL	78/2.21	1316-80A	660
33 AL	34/0.963	1316-33A	660

RECOMMENDED EQUIPMENT	MODEL	PAGE
REGULATORS: Two Stage	S320	176

TECHNICAL DATA

Cylinder Pressure	2000 PSIG
DOT Class	2.2
DOT Label	Nonflammable Gas
ID No.	UN1956



Series S320
High Purity Stainless Steel -
Two Stage Regulator

MULTI-COMPONENT EPA PROTOCOL MIXTURES (cont.)

CARBON MONOXIDE CO AND OXYGEN O₂ IN NITROGEN

CO: 3 ppm - 3.0%

O₂: 0.6 - 27.3%

Certification Period:
36 months

TECHNICAL DATA

Cylinder Pressure	2000 PSIG
DOT Class	
%CO > %O ₂	2.1
All Others	2.2
DOT Label	
%CO > %O ₂	Flammable Gas
All Others	Nonflammable Gas
ID No.	
%CO > %O ₂	UN1954
All Others	UN1956

CYLINDER SIZE	CONTENTS (cf/m ³)	PRODUCT CODE	CGA CONN.
265 AL	237/6.71	1328-265A	If: %CO > %O ₂ – 350
150 AL	144/4.13	1328-150A	Otherwise:
80 AL	76/2.18	1328-80A	O ₂ ≤ 23% – 590
33 AL	33/0.934	1328-33A	O ₂ > 23% – 296

RECOMMENDED EQUIPMENT	MODEL	PAGE
REGULATORS: Two Stage	S325, S420	178, 180

SULFUR DIOXIDE SO₂ AND OXYGEN O₂ IN NITROGEN

SO₂: 5 ppm - 4550 ppm

O₂: 0.6 - 27.3%

Certification Period:
SO₂: < 40 ppm – 6 months
SO₂: 40 - 499 ppm – 24 months
SO₂: > 499 ppm – 36 months

TECHNICAL DATA

Cylinder Pressure	2000 PSIG
DOT Class	2.2
DOT Label	Nonflammable Gas
ID No.	UN1956

CYLINDER SIZE	CONTENTS (cf/m ³)	PRODUCT CODE	CGA CONN.
265 AL	237/6.71	1314-265A	660
150 AL	141/4.13	1314-150A	660
80 AL	76/2.18	1314-80A	660
33 AL	33/0.934	1314-33A	660

RECOMMENDED EQUIPMENT	MODEL	PAGE
REGULATORS: Single Stage	S300	175
Two Stage	S320	176

NITRIC OXIDE NO AND SULFUR DIOXIDE SO₂ IN NITROGEN

NO: 1.5 ppm - 3900 ppm

SO₂: 5 ppm - 4550 ppm

Certification Period:
SO₂: < 40 ppm – 6 months
SO₂: ≥ 40 – 24 months

TECHNICAL DATA

Cylinder Pressure	2000 PSIG
DOT Class	2.2
DOT Label	Nonflammable Gas
ID No.	UN1956

CYLINDER SIZE	CONTENTS (cf/m ³)	PRODUCT CODE	CGA CONN.
265 AL	235/6.65	1315-265A	660
150 AL	143/4.05	1315-150A	660
80 AL	76/2.15	1315-80A	660
33 AL	33/0.934	1315-33A	660

RECOMMENDED EQUIPMENT	MODEL	PAGE
REGULATORS: Single Stage	S300	175
Two Stage	S320	176

MULTI-COMPONENT EPA PROTOCOL MIXTURES (cont.)

PROPANE C₃H₈, CARBON MONOXIDE CO AND CARBON DIOXIDE CO₂ IN NITROGENC₃H₈: 1 ppm - 2.6%

CO: 3 ppm - 10.4%

CO₂: 50 ppm - 18.2%Certification Period:
36 months

CYLINDER SIZE	CONTENTS (cf/m ³)	PRODUCT CODE	CGA CONN.
265 AL	245/6.94	1334-265A	350
150 AL	149/4.22	1334-150A	350
80 AL	79/2.24	1334-80A	350
33 AL	34/0.963	1334-33A	350

TECHNICAL DATA

Cylinder Pressure	2000 PSIG
DOT Class	2.2
DOT Label	Nonflammable Gas
ID No.	UN1956

RECOMMENDED EQUIPMENT	MODEL	PAGE
REGULATORS:		
Single Stage	S315	177
Two Stage	S325	178

CARBON MONOXIDE CO, OXYGEN O₂ AND PROPANE C₃H₈ IN NITROGEN

CO: 3 ppm - 3.0%

O₂: 0.6 - 27.3%C₃H₈: 1 ppm - 0.6%Certification Period:
36 months

CYLINDER SIZE	CONTENTS (cf/m ³)	PRODUCT CODE	CGA CONN.
265 AL	237/6.71	1321-265A	If: %CO + %C ₃ H ₈ > %O ₂ - 350
150 AL	146/4.13	1321-150A	Otherwise: O ₂ ≤ 23% - 590
80 AL	77/2.18	1321-80A	O ₂ > 23% - 296
33 AL	34/0.963	1321-33A	

TECHNICAL DATA

Cylinder Pressure	2000 PSIG
DOT Class	
%CO + %C ₃ H ₈ > %O ₂	2.1
All Others	2.2
DOT Label	
%CO + %C ₃ H ₈ > %O ₂	Flammable Gas
All Others	Nonflammable Gas
ID No.	
%CO + %C ₃ H ₈ > %O ₂	UN1954
All Others	UN1956

RECOMMENDED EQUIPMENT	MODEL	PAGE
REGULATORS:		
Single Stage	S315	177
Two Stage	S325, S420	178, 180

OXYGEN O₂ AND PROPANE C₃H₈ IN NITROGENO₂: 0.6 - 27.3%C₃H₈: 1 ppm - 0.6%Certification Period:
36 months

CYLINDER SIZE	CONTENTS (cf/m ³)	PRODUCT CODE	CGA CONN.
265 AL	237/6.71	1326-265A	O ₂ ≤ 23% - 590
150 AL	146/4.13	1326-150A	O ₂ > 23% - 296
80 AL	77/2.18	1326-80A	
33 AL	34/0.963	1326-33A	

TECHNICAL DATA

Cylinder Pressure	2000 PSIG
DOT Class	2.2
DOT Label	Nonflammable Gas
ID No.	UN1956

RECOMMENDED EQUIPMENT	MODEL	PAGE
REGULATORS:		
Two Stage	S325, S420	178, 180

MULTI-COMPONENT EPA PROTOCOL MIXTURES (cont.)

CARBON DIOXIDE CO₂, CARBON MONOXIDE CO, OXYGEN O₂ AND PROPANE C₃H₈ IN NITROGEN

CO₂: 50 ppm - 18.2%

CO: 3 ppm - 3.0%

O₂: 0.6 - 27.3%

C₃H₈: 1 ppm - 0.6%

Certification Period:
36 months

TECHNICAL DATA

Cylinder Pressure	2000 PSIG
DOT Class	
%CO + %C ₃ H ₈ > %O ₂	2.1
All Others	2.2
DOT Label	
%CO + %C ₃ H ₈ > %O ₂	Flammable Gas
All Others	Nonflammable Gas
ID No.	
%CO + %C ₃ H ₈ > %O ₂	UN1954
All Others	UN1956

CYLINDER SIZE	CONTENTS (cf/m ³)	PRODUCT CODE	CGA CONN.
265 AL	246/6.97	1333-265A	If: %CO + %C ₃ H ₈ > %O ₂ - 350
150 AL	150/4.25	1333-150A	Otherwise: O ₂ ≤ 23% - 590
80 AL	79/2.24	1333-80A	O ₂ > 23% - 296
33 AL	34/0.963	1333-33A	

RECOMMENDED EQUIPMENT	MODEL	PAGE
REGULATORS: Two Stage	S325, S420	178, 180

CARBON DIOXIDE CO₂, NITRIC OXIDE NO AND SULFUR DIOXIDE SO₂ IN NITROGEN

CO₂: 50 ppm - 18.2%

NO: 1.5 ppm - 3900 ppm

SO₂: 5 ppm - 4550 ppm

Certification Period:
SO₂: < 40 ppm - 6 months
SO₂: ≥ 40 ppm - 24 months

TECHNICAL DATA

Cylinder Pressure	2000 PSIG
DOT Class	2.2
DOT Label	Nonflammable Gas
ID No.	UN1956

CYLINDER SIZE	CONTENTS (cf/m ³)	PRODUCT CODE	CGA CONN.
265 AL	243/6.88	1324-265A	660
150 AL	148/4.19	1324-150A	660
80 AL	78/2.21	1324-80A	660
33 AL	34/0.963	1324-33A	660

RECOMMENDED EQUIPMENT	MODEL	PAGE
REGULATORS: Two Stage	S320	176

MULTI-COMPONENT EPA PROTOCOL MIXTURES (cont.)

CARBON DIOXIDE CO₂, CARBON MONOXIDE CO, NITRIC OXIDE NO AND SULFUR DIOXIDE SO₂ IN NITROGENCO₂: 50 ppm - 18.2%

CO: 3 ppm - 10.4%

NO: 1.5 ppm - 3900 ppm

SO₂: 5 ppm - 4550 ppm

Certification Period:

SO₂: < 40 ppm – 6 monthsSO₂: ≥ 40 ppm – 24 months

CYLINDER SIZE	CONTENTS (cf/m ³)	PRODUCT CODE	CGA CONN.
265 AL	243/6.88	1318-265A	660
150 AL	148/4.19	1318-130A	660
80 AL	78/2.21	1318-80A	660
33 AL	34/0.963	1318-33A	660

RECOMMENDED EQUIPMENT	MODEL	PAGE
REGULATORS: Two Stage	S320	176

TECHNICAL DATA

Cylinder Pressure	2000 PSIG
DOT Class	2.2
DOT Label	Nonflammable Gas
ID No.	UN1956

CARBON DIOXIDE CO₂, CARBON MONOXIDE CO AND SULFUR DIOXIDE SO₂ IN NITROGENCO₂: 50 ppm - 18.2%

CO: 3 ppm - 10.4%

SO₂: 5 ppm - 4550 ppm

Certification Period:

SO₂: < 40 ppm – 6 monthsSO₂: ≥ 40 ppm – 24 months

CYLINDER SIZE	CONTENTS (cf/m ³)	PRODUCT CODE	CGA CONN.
265 AL	243/6.88	1320-265A	660
150 AL	148/4.19	1320-150A	660
80 AL	78/2.21	1320-80A	660
33 AL	34/0.963	1320-33A	660

RECOMMENDED EQUIPMENT	MODEL	PAGE
REGULATORS: Two Stage	S320	176

TECHNICAL DATA

Cylinder Pressure	2000 PSIG
DOT Class	2.2
DOT Label	Nonflammable Gas
ID No.	UN1956

MULTI-COMPONENT EPA PROTOCOL MIXTURES (cont.)

CARBON DIOXIDE CO₂, CARBON MONOXIDE CO, AND OXYGEN O₂ IN NITROGEN

CO₂: 50 ppm - 18.2%
 CO: 3 ppm - 3.0%
 O₂: 0.6 - 27.3%
 Certification Period:
 36 Months

TECHNICAL DATA

Cylinder Pressure	2000 PSIG
DOT Class	
%CO > O ₂	2.1
All Others	2.2
DOT Label	
%CO > O ₂	Flammable Gas
All Others	Nonflammable Gas
ID No.	
%CO > O ₂	UN1954
All Others	UN1956

CYLINDER SIZE	CONTENTS (cf/m ³)	PRODUCT CODE	CGA CONN.
265 AL	246/6.97	1319-265A	If: %CO > %O ₂ - 350
150 AL	150/4.25	1319-150A	Otherwise:
80 AL	79/2.24	1319-80A	O ₂ ≤ 23% - 590
33 AL	34/0.963	1319-33A	O ₂ > 23% - 296

RECOMMENDED EQUIPMENT	MODEL	PAGE
REGULATORS: Two Stage	S325, S420	178, 180

CARBON MONOXIDE CO, NITRIC OXIDE NO AND SULFUR DIOXIDE SO₂ IN NITROGEN

CO: 3 ppm - 10.4%
 NO: 1.5 - 3900 ppm
 SO₂: 5 ppm - 4550 ppm
 Certification Period:
 SO₂: < 40 ppm - 6 months
 SO₂: ≥ 40 ppm - 24 months

TECHNICAL DATA

Cylinder Pressure	2000 PSIG
DOT Class	2.2
DOT Label	Nonflammable Gas
ID No.	UN1956

CYLINDER SIZE	CONTENTS (cf/m ³)	PRODUCT CODE	CGA CONN.
265 AL	243/6.88	1317-265A	660
150 AL	148/4.19	1317-150A	660
80 AL	78/2.21	1317-80A	660
33 AL	34/0.963	1317-33A	660

RECOMMENDED EQUIPMENT	MODEL	PAGE
REGULATORS: Two Stage	S320	176

The above listing represents the most commonly requested mixtures. Other Multi-Component EPA Protocol standards are also available. Please contact our Technical Service Group at 800-638-6360 or our Specialty Gas Customer Service Department at 800-942-1148 for more information.

GTS has developed two new Zero Gases to support Environmental Testing, specifically Continuous Emissions Monitoring (CEM's) of smoke stacks. These products are used in conjunction with EPA Protocols and other calibration gas standards. The product descriptions and specifications are listed below:

AIR/CEM MONITORING ZERO GAS

SPECIFICATIONS

SO₂: < 0.1 ppm
 NO_x: < 0.1 ppm
 CO: < 0.5 ppm
 CO₂: < 1 ppm
 THC: < 0.1 ppm
 H₂O: < 5 ppm
 O₂: = 20 - 21%

CYLINDER SIZE	CONTENTS (cf/m ³)	PRODUCT CODE	CGA CONN.
200	232/6.57	2223-200	590
150A	157/4.30	2223-150A	590
80	88/2.49	2223-80	590

RECOMMENDED EQUIPMENT	MODEL	PAGE
REGULATORS: Two Stage	S325	178

T E C H N I C A L D A T A

Cylinder Pressure	2000 PSIG
DOT Class	2.2
DOT Label	Nonflammable Gas
ID No.	UN1956

NITROGEN/CEM MONITORING ZERO GAS

SPECIFICATIONS

SO₂: < 0.1 ppm
 NO_x: < 0.1 ppm
 CO: < 0.5 ppm
 CO₂: < 1 ppm
 THC: < 0.1 ppm
 H₂O: < 3 ppm
 O₂: < 0.5 ppm

CYLINDER SIZE	CONTENTS (cf/m ³)	PRODUCT CODE	CGA CONN.
200	257/7.28	2225-200	580
150A	149/4.22	2225-150A	580
80	77/2.18	2225-80	580

RECOMMENDED EQUIPMENT	MODEL	PAGE
REGULATORS: Two Stage	S325, S420	178, 180

T E C H N I C A L D A T A

Cylinder Pressure	2000 PSIG
DOT Class	2.2
DOT Label	Nonflammable Gas
ID No.	UN1956

CEM DAILY CAL STANDARDS

GTS' CEM Daily-Cal Master Standards are for use in daily calibration of Continuous Emissions Monitors and Periodic Monitors where the use of an EPA Protocol Standard is not required, or where EPA Protocol Standards are not available as in the case of NH₃. They are blended using the same high accuracy techniques as EPA Protocol Standards, and are certified by matching the gravimetric results to the final analytical results, with an analytical accuracy of ±2% (with the exception of Cl₂, H₂S and NH₃, which are ±5%). Where higher accuracy is desired, these same blends are available, in many cases, as Primary Standards with tighter blend tolerance, and analytical accuracy of ±1% or better.

CEM Daily-Cal Standards typically contain one to four minor components, and are guaranteed stable for a minimum of 6 months.

AMMONIA NH₃

In Air, Zero Grade	CYLINDER SIZE	CONTENTS (cf/m ³)	PRODUCT CODE	CGA CONN.
Master Standard	265 AL	240/6.80	1981-265A	705/660
5 - 4999 ppm	150 AL	146/4.13	1981-150A	705/660
	80 AL	77/2.18	1981-80A	705/660
	265 AL	240/6.80	1982-265A	705/660
0.5 - 8.0%***	150 AL	146/4.13	1982-150A	705/660
	80 AL	77/2.18	1982-80A	705/660

In Nitrogen	CYLINDER SIZE	CONTENTS (cf/m ³)	PRODUCT CODE	CGA CONN.
Master Standard	265 AL	235/6.65	1987-265A	705/660
5 - 9999 ppm	150 AL	143/4.05	1987-150A	705/660
	80 AL	76/2.15	1987-80A	705/660
	265 AL	235/6.65	1988-265A	705/660
1 - 10%***	150 AL	143/4.05	1988-150A	705/660
	80 AL	76/2.15	1988-80A	705/660

*** Cylinder pressure and contents reduced at concentrations over 4%

CARBON DIOXIDE CO₂

In Air	CYLINDER SIZE	CONTENTS (cf/m ³)	PRODUCT CODE	CGA CONN.
Master Standard	265 AL	254/7.19	1462-265A	590
1 - 99 ppm	150 AL	154/4.36	1462-150A	590
	80 AL	82/2.32	1462-80A	590
	265 AL	254/7.19	1465-265A	590
100 ppm - 49%***	150 AL	154/4.36	1465-150A	590
	80 AL	82/2.32	1465-80A	590

In Nitrogen	CYLINDER SIZE	CONTENTS (cf/m ³)	PRODUCT CODE	CGA CONN.
Master Standard	265 AL	249/7.05	1469-265A	580
1 - 99 ppm	150 AL	152/4.30	1469-150A	580
	80 AL	80/2.27	1469-80A	580
	265 AL	249/7.05	1465-265A	580
100 ppm - 49%***	150 AL	152/4.30	1465-150A	580
	80 AL	80/2.27	1465-80A	580

*** Cylinder pressure and contents reduced at concentrations over 30%

TECHNICAL DATA

Cylinder Pressure	2000 PSIG
DOT Class	2.2
DOT Label	Nonflammable Gas
ID No.	UN1956

CARBON MONOXIDE CO

	CYLINDER SIZE	CONTENTS (cf/m ³)	PRODUCT CODE	CGA CONN.
In Air				
Master Standard				
1 - 49 ppm	265 AL	238/6.74	1499-265A	590
	150 AL	145/4.10	1499-150A	590
	80 AL	77/2.18	1499-80A	590
50 - 9999 ppm	265 AL	238/6.74	1501-265A	590
	150 AL	145/4.10	1501-150A	590
	80 AL	77/2.18	1501-80A	590
1 - 6.25% (Cannot exceed 6.25% in Air)	265 AL	238/6.74	1504-265A	590
	150 AL	145/4.10	1504-150A	590
	80 AL	77/2.18	1504-80A	590
In Nitrogen				
Master Standard				
1 - 49 ppm	265 AL	233/6.60	1539-265A	350
	150 AL	142/4.02	1539-150A	350
	80 AL	75/2.12	1539-80A	350
50 - 9999 ppm	265 AL	233/6.60	1542-265A	350
	150 AL	142/4.02	1542-150A	350
	80 AL	75/2.12	1542-80A	350
	RECOMMENDED EQUIPMENT	MODEL	PAGE	
	REGULATORS: Two Stage	S325, S420	178, 180	

CHLORINE Cl₂

	CYLINDER SIZE	CONTENTS (cf/m ³)	PRODUCT CODE	CGA CONN.
In Nitrogen				
Master Standard				
10 - 999 ppm	265 AL	235/6.65	4239-265A	330
	150 AL	143/4.05	4239-150A	330
	80 AL	76/2.15	4239-80A	330
	RECOMMENDED EQUIPMENT	MODEL	PAGE	
	REGULATORS: Two Stage	S210	186	

T E C H N I C A L D A T A

Cylinder Pressure	2000 PSIG
DOT Class	2.2
DOT Label	Nonflammable Gas
ID No.	UN1956

HYDROGEN CHLORIDE HCl

In Nitrogen
Master Standard
10 - 999 ppm

CYLINDER SIZE	CONTENTS (cf/m ³)	PRODUCT CODE	CGA CONN.
265 AL	235/6.65	4241-265A	330
150 AL	143/4.05	4241-150A	330
80 AL	76/2.15	4241-80A	330

RECOMMENDED EQUIPMENT	MODEL	PAGE
REGULATORS: Two Stage	S320, S452	176, 183

HYDROGEN SULFIDE H₂S

In Nitrogen
Master Standard
1 - 9 ppm

10 - 999 ppm

CYLINDER SIZE	CONTENTS (cf/m ³)	PRODUCT CODE	CGA CONN.
150 AL	143/4.05	3026-150A	330
80 AL	75/2.12	3026-80A	330
33 AL	34/0.962	3026-33A	330
150 AL	143/4.05	3028-150A	330
80 AL	75/2.12	3028-80A	330
33 AL	34/0.962	3028-33A	330

RECOMMENDED EQUIPMENT	MODEL	PAGE
REGULATORS: Two Stage	S320	176

NITRIC OXIDE NO

In Nitrogen
Master Standard
1 - 49 ppm

50 - 999 ppm

0.1 - 1%

CYLINDER SIZE	CONTENTS (cf/m ³)	PRODUCT CODE	CGA CONN.
265 AL	235/6.65	3054-265A	660
150 AL	143/4.05	3054-150A	660
80 AL	75/2.12	3054-80A	660
265 AL	235/6.65	3055-265A	660
150 AL	143/4.05	3055-150A	660
80 AL	75/2.12	3055-80A	660
265 AL	235/6.65	3056-265A	660
150 AL	143/4.05	3056-150A	660
80 AL	75/2.12	3056-80A	660

RECOMMENDED EQUIPMENT	MODEL	PAGE
REGULATORS: Two Stage	S320	176

TECHNICAL DATA

Cylinder Pressure	2000 PSIG
DOT Class	2.2
DOT Label	Nonflammable Gas
ID No.	UN1956

OXYGEN O₂

In Nitrogen	CYLINDER SIZE	CONTENTS (cf/m³)	PRODUCT CODE	CGA CONN.
Master Standard	265 AL	237/6.71	1868-265A	O ₂ ≤ 23% – 590 O ₂ > 23% – 296
0.1% - 49%	150 AL	144/4.08	1868-150A	
	80 AL	76/2.15	1868-80A	
	RECOMMENDED EQUIPMENT	MODEL	PAGE	
	REGULATORS: Two Stage	S325, S420	178, 180	

SULFUR DIOXIDE SO₂

In Air, Zero Grade	CYLINDER SIZE	CONTENTS (cf/m³)	PRODUCT CODE	CGA CONN.
Master Standard	265 AL	239/6.77	1919-265A	660
1 - 9 ppm	150 AL	145/4.10	1919-150A	660
	80 AL	77/2.18	1919-80A	660
10 - 999 ppm	265 AL	239/6.77	1921-265A	660
	150 AL	145/4.10	1921-150A	660
	80 AL	77/2.18	1921-80A	660
0.1 - 1.5%	265 AL	239/6.77	1924-265A	660
	150 AL	145/4.10	1924-150A	660
	80 AL	77/2.18	1924-80A	660

In Nitrogen	CYLINDER SIZE	CONTENTS (cf/m³)	PRODUCT CODE	CGA CONN.
Master Standard	265 AL	235/6.65	1933-265A	660
1 - 9 ppm	150 AL	143/4.11	1933-150A	660
	80 AL	76/2.18	1933-80A	660
10 - 999 ppm	265 AL	235/6.65	1935-265A	660
	150 AL	143/4.11	1935-150A	660
	80 AL	76/2.18	1935-80A	660
0.1 - 1.5%	265 AL	235/6.65	4188-265A	660
	150 AL	143/4.11	4188-150A	660
	80 AL	76/2.18	4188-80A	660
	RECOMMENDED EQUIPMENT	MODEL	PAGE	
	REGULATORS: Two Stage	S320	176	

SULFUR DIOXIDE SO₂ AND OXYGEN O₂

In Nitrogen	CYLINDER SIZE	CONTENTS (cf/m³)	PRODUCT CODE	CGA CONN.
Master Standard	265 AL	237/6.71	2162-265A	660
50 ppm - 1% SO ₂	150 AL	144/4.13	2162-150A	660
0.1 - 21% O ₂	80 AL	76/2.18	2162-80A	660
	33 AL	33/0.963	2162-33A	660

TECHNICAL DATA

Cylinder Pressure	2000 PSIG
DOT Class	2.2
DOT Label	Nonflammable Gas
ID No.	UN1956

Some concentrations available as EPA Protocol Gases. See page 150.

RECOMMENDED EQUIPMENT	MODEL	PAGE
REGULATORS: Two Stage	S320	176

SULFUR DIOXIDE SO₂ AND CARBON DIOXIDE CO₂

In Nitrogen	CYLINDER SIZE	CONTENTS (cf/m³)	PRODUCT CODE	CGA CONN.
Master Standard	265 AL	246/6.97	2161-265A	660
50 ppm - 1% SO ₂	150 AL	150/4.25	2161-150A	660
0.1 - 21% CO ₂	80 AL	79/2.24	2161-80A	660
	33 AL	34/0.963	2161-33A	660
	RECOMMENDED EQUIPMENT	MODEL	PAGE	
	REGULATORS:			
	Two Stage	S320	176	

SULFUR DIOXIDE SO₂ AND NITRIC OXIDE NO

In Nitrogen	CYLINDER SIZE	CONTENTS (cf/m³)	PRODUCT CODE	CGA CONN.
Master Standard	265 AL	235/6.65	2163-265A	660
50 ppm - 1% SO ₂	150 AL	143/4.05	2163-150A	660
50 ppm - 1% NO	80 AL	76/2.15	2163-80A	660
	33 AL	33/0.934	2163-33A	660
	RECOMMENDED EQUIPMENT	MODEL	PAGE	
	REGULATORS:			
	Two Stage	S320	176	

SULFUR DIOXIDE SO₂, NITRIC OXIDE NO AND CARBON MONOXIDE CO

In Nitrogen	CYLINDER SIZE	CONTENTS (cf/m³)	PRODUCT CODE	CGA CONN.
Master Standard	265 AL	235/6.65	2172-265A	660
50 ppm - 1% SO ₂	150 AL	143/4.05	2172-150A	660
50 ppm - 1% NO	80 AL	76/2.15	2172-80A	660
50 ppm - 1% CO	33 AL	33/0.934	2172-33A	660
	RECOMMENDED EQUIPMENT	MODEL	PAGE	
	REGULATORS:			
	Two Stage	S320	176	

TECHNICAL DATA

Cylinder Pressure	2000 PSIG
DOT Class	2.2
DOT Label	Nonflammable Gas
ID No.	UN1956

SULFUR DIOXIDE SO₂, NITRIC OXIDE NO AND CARBON DIOXIDE CO₂

In Nitrogen
Master Standard
50 ppm - 1% SO₂
50 ppm - 1% NO
0.1 - 21% CO₂

CYLINDER SIZE	CONTENTS (cf/m ³)	PRODUCT CODE	CGA CONN.
265 AL	243/6.88	2171-265A	660
150 AL	148/4.19	2171-150A	660
80 AL	78/2.21	2171-80A	660
33 AL	34/0.963	2171-33A	660

RECOMMENDED EQUIPMENT	MODEL	PAGE
REGULATORS: Two Stage	S320	176

TECHNICAL DATA

Cylinder Pressure	2000 PSIG
DOT Class	2.2
DOT Label	Nonflammable Gas
ID No.	UN1956

CARBON MONOXIDE CO AND SULFUR DIOXIDE SO₂

In Nitrogen
Master Standard
50 ppm - 1% CO
50 ppm - 1% SO₂

CYLINDER SIZE	CONTENTS (cf/m ³)	PRODUCT CODE	CGA CONN.
265 AL	235/6.65	2167-265A	660
150 AL	143/4.05	2167-150A	660
80 AL	76/2.15	2167-80A	660
33 AL	33/0.934	2167-33A	660

RECOMMENDED EQUIPMENT	MODEL	PAGE
REGULATORS: Two Stage	S320	176

TECHNICAL DATA

Cylinder Pressure	2000 PSIG
DOT Class	2.2
DOT Label	Nonflammable Gas
ID No.	UN1956

CARBON MONOXIDE CO AND OXYGEN O₂

In Nitrogen
Master Standard
50 ppm - 1% CO
0.1 - 21% O₂

CYLINDER SIZE	CONTENTS (cf/m ³)	PRODUCT CODE	CGA CONN.
265 AL	237/6.71	2166-265A	If: %CO > %O ₂ - 350
150 AL	144/4.13	2166-150A	Otherwise: 590
80 AL	76/2.18	2166-80A	
33 AL	33/0.963	2166-33A	

RECOMMENDED EQUIPMENT	MODEL	PAGE
REGULATORS: Two Stage	S325	178

TECHNICAL DATA

Cylinder Pressure	2000 PSIG
DOT Class	
If: %CO > %O ₂	2.1
All Others	2.2
DOT Label	
If: %CO > %O ₂	Flammable Gas
All Others	Nonflammable Gas
ID No.	
If: %CO > %O ₂	UN1954
All Others	UN1956

CARBON DIOXIDE CO₂ AND OXYGEN O₂

Master Standard
In Nitrogen
0.1 - 21% CO₂
0.1 - 21% O₂

CYLINDER SIZE	CONTENTS (cf/m ³)	PRODUCT CODE	CGA CONN.
265 AL	246/6.97	2164-265A	590
150 AL	150/4.25	2164-150A	590
80 AL	79/2.24	2164-80A	590
33 AL	34/0.963	2164-33A	590

RECOMMENDED EQUIPMENT	MODEL	PAGE
REGULATORS: Two Stage	S325, S420	178, 180

CARBON MONOXIDE CO AND CARBON DIOXIDE CO₂

In Nitrogen
Master Standard
50 ppm - 1% CO
0.1 - 21% CO₂

CYLINDER SIZE	CONTENTS (cf/m ³)	PRODUCT CODE	CGA CONN.
265 AL	245/6.94	2168-265A	660
150 AL	149/4.22	2168-150A	660
80 AL	79/2.24	2168-80A	660
33 AL	34/0.963	2168-33A	660

RECOMMENDED EQUIPMENT	MODEL	PAGE
REGULATORS: Two Stage	S320	176

CARBON DIOXIDE CO₂ AND NITRIC OXIDE NO

In Nitrogen
Master Standard
0.1 - 21% CO₂
50 ppm - 1.0% NO

CYLINDER SIZE	CONTENTS (cf/m ³)	PRODUCT CODE	CGA CONN.
265 AL	245/6.94	2177-265A	660
150 AL	149/4.22	2177-150A	660
80 AL	79/2.24	2177-80A	660
33 AL	34/0.963	2177-33A	660

RECOMMENDED EQUIPMENT	MODEL	PAGE
REGULATORS: Two Stage	S320	176

TECHNICAL DATA

Cylinder Pressure	2000 PSIG
DOT Class	2.2
DOT Label	Nonflammable Gas
ID No.	UN1956

CARBON MONOXIDE CO AND NITRIC OXIDE NO

In Nitrogen
Master Standard
50 ppm - 1% CO
50 ppm - 1.0% NO

CYLINDER SIZE	CONTENTS (cf/m ³)	PRODUCT CODE	CGA CONN.
265 AL	235/6.65	2165-265A	660
150 AL	143/4.11	2165-150A	660
80 AL	76/2.18	2165-80A	660
33 AL	33/0.963	2165-33A	660

TECHNICAL DATA

Cylinder Pressure	2000 PSIG
DOT Class	2.2
DOT Label	Nonflammable Gas
ID No.	UN1956

RECOMMENDED EQUIPMENT	MODEL	PAGE
REGULATORS: Two Stage	S320	176

CARBON MONOXIDE CO, CARBON DIOXIDE CO₂ AND OXYGEN O₂

In Nitrogen
Master Standard
50 ppm - 3% CO
0.1 - 21% CO₂
0.1 - 21% O₂

CYLINDER SIZE	CONTENTS (cf/m ³)	PRODUCT CODE	CGA CONN.
265 AL	246/6.97	2170-265A	If %CO > %O ₂ - 350
150 AL	150/4.25	2170-150A	Otherwise: 590
80 AL	79/2.24	2170-80A	
33 AL	34/0.963	2170-33A	

TECHNICAL DATA

Cylinder Pressure	2000 PSIG
DOT Class	
If: %CO > %O ₂	2.1
All Others	2.2
DOT Label	
If: %CO > %O ₂	Flammable Gas
All Others	Nonflammable Gas
ID No.	
If: %CO > %O ₂	UN1954
All Others	UN1956

RECOMMENDED EQUIPMENT	MODEL	PAGE
REGULATORS: Two Stage	S320	176

CARBON MONOXIDE CO, CARBON DIOXIDE CO₂ AND SULFUR DIOXIDE SO₂

In Nitrogen
Master Standard
50 ppm - 1% CO
0.1 - 21% CO₂
50 ppm - 1% SO₂

CYLINDER SIZE	CONTENTS (cf/m ³)	PRODUCT CODE	CGA CONN.
265 AL	243/6.88	2173-265A	660
150 AL	148/4.19	2173-150A	660
80 AL	78/2.21	2173-80A	660
33 AL	34/0.963	2173-33A	660

TECHNICAL DATA

Cylinder Pressure	2000 PSIG
DOT Class	2.2
DOT Label	Nonflammable Gas
ID No.	UN1956

RECOMMENDED EQUIPMENT	MODEL	PAGE
REGULATORS: Two Stage	S320	176

CARBON MONOXIDE CO, PROPANE C₃H₈ AND OXYGEN O₂

In Nitrogen
Master Standard
50 ppm - 3% CO
50 ppm - 0.6% C₃H₈
0.1 - 21% O₂

CYLINDER SIZE	CONTENTS (cf/m ³)	PRODUCT CODE	CGA CONN.
265 AL	237/6.71	2169-265A	If %CO + %C ₃ H ₈ > %O ₂ - 350
150 AL	146/4.13	2169-150A	Otherwise: 590
80 AL	77/2.18	2169-80A	
33 AL	34/0.963	2169-33A	

RECOMMENDED EQUIPMENT	MODEL	PAGE
REGULATORS: Two Stage	S325, S420	178, 180

TECHNICAL DATA

Cylinder Pressure	2000 PSIG
DOT Class	
%CO + %C ₃ H ₈ > %O ₂	2.1
All Others	2.2
DOT Label	
%CO + %C ₃ H ₈ > %O ₂	Flammable Gas
All Others	Nonflammable Gas
ID No.	
%CO + %C ₃ H ₈ > %O ₂	UN1954
All Others	UN1956

**CARBON MONOXIDE CO, CARBON DIOXIDE CO₂,
NITRIC OXIDE NO AND SULFUR DIOXIDE SO₂**

In Nitrogen
Master Standard
50 ppm - 3% CO
0.1 - 21% CO₂
50 ppm - 1% NO
50 ppm - 1% SO₂

CYLINDER SIZE	CONTENTS (cf/m ³)	PRODUCT CODE	CGA CONN.
265 AL	243/6.88	2174-265A	660
150 AL	148/4.19	2174-150A	660
80 AL	78/2.21	2174-80A	660
33 AL	34/0.963	2174-33A	660

RECOMMENDED EQUIPMENT	MODEL	PAGE
REGULATORS: Two Stage	S320	176

TECHNICAL DATA

Cylinder Pressure	2000 PSIG
DOT Class	2.2
DOT Label	Nonflammable Gas
ID No.	UN1956

Automotive Emissions Standards

There have been many changes in Inspection and Maintenance (I/M) programs nationwide. It can be very confusing... How do you know what gas is required for which program? How do you know if your gas blender has had any experience making the new mixes? How do you know if you're buying from the "right" gas company? In other words, how do you make sure that you're giving your customers exactly what they need - the right product, delivered on time, for a fair price? *Customers are invaluable - you can't afford to make a mistake and choose the wrong gas company.*

Let GTS help make your life a little easier.

- We are committed to the automotive industry - and have been for the past 20 years.
- We are leaders in I/M gas blending techniques.
- We are ISO 9001 certified.
- We know exactly what you need, regardless of what state program you're interested in.
- We are certified by the State of California, Bureau of Automotive Repair (BAR).
(A copy of this certificate is available on request.)

Why take a chance on any other brand of gas?

You have a choice - insist on GTS!



BAR84	(Order Code #13)
BAR90 Low	(Order Code #11)
BAR90 Mid	(Order Code #12)
BAR97 Low	(Order Code #31)
BAR97 High	(Order Code #34)
BAR97 Quad Low	(Order Code #32)
BAR97 Quad High	(Order Code #35)
BAR97 Zero Air*	(Order Code #37)

**Now available in a refillable cylinder.
Ask for product code #1001-150AL*

Other mixtures and cylinder types are available upon request.

CaliBlend™

The CaliBlend™ line of calibration gases are supplied in high quality, light weight, refillable aluminum cylinders. These cylinders are passivated with the same Alucyl® process used in the larger aluminum cylinders, and are ideal for very low concentration and highly reactive calibration standards. For many applications, the CaliBlend™ cylinders offer distinct advantages over the use of non-returnable cylinders.

GTS CaliBlend™ products are used in a wide range of critical applications including:

- Calibration of Ambient Air Monitors
- Calibration of Toxic Gas Monitors and Detectors
- Calibration of Confined Space and Industrial Hygiene monitors
- Calibration of Medical Gas Analyzers
- Calibration of Portable GCs and Mass Spectrometers

Advantages of CaliBlend™

- Portable and light weight.
- Enhanced stability. Aluminum cylinder and 316SS valves can be passivated for highly reactive and low concentration standards.
- Economical. Contains 50-100% more product than similar size non-returnable cylinders, and can be returned for refill at reduced pricing.

Available with either CGA-180 or CC-10 valve to conform to most applications.

- No cylinder rental or deposit required. Returnable and refillable. Eliminates problems and costs associated with disposal of non-returnable cylinders.
- Individual cylinder analysis is provided, vs. batch analysis for most non-returnable cylinders.

Cylinder Specifications

Dimensions: 3" X 15" (CGA-180 valve)
3" X 12.5" (C-10 valve)

Weight: 3.5lb. with valve (approx.)

Contents: 170 liters

Pressure: 2,000 psig

DOT Spec.: 3AL2216



Shown with CGA C-10 connection and DR4 fixed flow regulator (Page 191)



Shown with CGA-180 connection and S-ECl regulator (Page 191)

CaliBlend™ Calibration Kits

The CaliBlend™ Calibration Kit consists of the following components:

- High impact Model S-CC2 polystyrene carrying case for two cylinders. This case has a split door to permit access to the valve and regulator while the cylinders remain in the case.
- Two cylinders containing calibration gas standards of your choice, or one calibration standard and a zero gas.
- Contact our customer service department for pricing on the kit of your choice.
- See page 244 for single cylinder carrying case.



S-CC2
Carrying Case
(Page 244)



S-500-3
(Page 245)

OPTIONS

		PAGE
Carry case	S-CC2	244
Stand	S500-3	245

RECOMMENDED EQUIPMENT	MODEL	PAGE
REGULATORS:		
Stainless Steel	S960	189
	DR4S	191
	S190S	192
Brass	S900	190
	DR4	191
	S-EC1	191
	S190B	192

ENVIRONMENTAL

Standard Mixtures in CaliBlend™ Cylinders

Balance Minor Component	CGA 180			CGA C-10		
	Air	He	N ₂	Air	He	N ₂
Ammonia	2511-2000		2512-2000	2511-1200		2512-1200
Benzene	2513-2000		2514-2000	2513-1200		2514-1200
n-Butane	2515-2000	2516-2000	2517-2000	2515-1200	2516-1200	2517-1200
1-Butene	2518-2000		2519-2000	2518-1200		2519-1200
Carbon Dioxide	2522-2000	2523-2000	2524-2000	2522-1200	2523-1200	2524-1200
Carbon Monoxide	2525-2000	2526-2000	2527-2000	2525-1200	2526-1200	2527-1200
Chlorine			2528-2000			2528-1200
Ethane	2529-2000	2530-2000	2531-2000	2529-1200	2530-1200	2531-1200
Ethylene	2532-2000	2533-2000	2534-2000	2532-1200	2533-1200	2534-1200
ETO	2535-2000			2535-1200		
Hexane	2536-2000	2537-2000	2538-2000	2536-1200	2537-1200	2538-1200
Hydrogen	2539-2000		2540-2000	2539-1200		2540-1200
Hydrogen Chloride			2541-2000			2541-1200
Hydrogen Sulfide	2542-2000		2543-2000	2542-1200		2543-1200
iso-Butane	2544-2000	2545-2000	2546-2000	2544-1200	2545-1200	2546-1200
iso-Butylene	2547-2000	2548-2000	2549-2000	2547-1200	2548-1200	2549-1200
Methane	2550-2000	2551-2000	2552-2000	2550-1200	2551-1200	2552-1200
Nitrogen Dioxide	2553-2000		2554-2000	2553-1200		2554-1200
Nitric Oxide			2555-2000			2555-1200
Nitrous Oxide		2556-2000	2557-2000		2556-1200	2557-1200
Oxygen		2558-2000	2559-2000		2558-1200	2559-1200
Propane	2560-2000	2561-2000	2562-2000	2560-1200	2561-1200	2562-1200
SulfurDioxide	2563-2000		2564-2000	2563-1200		2564-1200
B-Tex	2565-2000			2565-1200		

TECHNICAL DATA

Cylinder Pressure

CGA 180	2000 PSIG
CGA C-10	1200 PSIG

Cylinder Volume

CGA 180	≈ 170 Liters
CGA C-10	≈ 105 Liters

DOT Class	2.1
DOT Label	Nonflammable Gas
ID No.	UN1956