

## Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Date of issue: 08/27/2015 Supersedes: 03/17/2015 Version: 2.1

#### **SECTION 1: Identification**

#### 1.1. Identification

Product form : Mixture

Product name : Carbon Monoxide (0.10% - 0.9999%), Oxygen (19.50% - 23.50%), Sulfur Dioxide (0.00001% -

0.9999%) in Nitrogen

Product code : SG-2004-03340

## 1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture : Test gas/Calibration gas.

## 1.3. Details of the supplier of the safety data sheet

Air Liquide 9811 Katy Freeway, Suite 100 Houston, TX 77024 - USA T 1-800-819-1704

## 1.4. Emergency telephone number

Emergency number : CHEMTREC: 1-800-424-9300

## SECTION 2: Hazard(s) identification

## 2.1. Classification of the substance or mixture

#### **GHS-US** classification

www.us.airliquide.com

Compressed gas H280 - Contains gas under pressure; may explode if heated

Repr. 1A H360 - May damage fertility or the unborn child

Full text of H-phrases: see section 16

#### 2.2. Label elements

## **GHS-US** labeling

Hazard pictograms (GHS-US)





GHS04

GHS

Signal word (GHS-US) : Danger

Hazard statements (GHS-US) : H280 - Contains gas under pressure; may explode if heated

H360 - May damage fertility or the unborn child

CGA-HG10 - Asphyxiating even with adequate oxygen

CGA-HG24 - Supports combustion.

Precautionary statements (GHS-US) : P202 - Do not handle until all safety precautions have been read and understood

P260 - Do not breathe gas

P271 - Use only outdoors or in a well-ventilated area

P280 - Wear eye protection, face protection, protective gloves, protective clothing P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing

P308+P313 - If exposed or concerned: Get medical advice/attention

P403 - Store in a well-ventilated place

P405 - Store locked up

P501 - Dispose of contents/container in accordance with local/regional/national/international

regulations

CGA-PG02 - Protect from sunlight when ambient temperature exceeds 52°C (125°F)

CGA-PG05 - Use a back flow preventive device in the piping CGA-PG06 - Close valve after each use and when empty CGA-PG10 - Use only with equipment rated for cylinder pressure

CGA-PG14 - Approach suspected leak area with caution

CGA-PG21 - Open valve slowly

08/27/2015 EN (English US) Page 1

## Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

#### 2.3. Other hazards

Other hazards not contributing to the

: This product contains a chemical asphyxiant.

classification

#### 2.4. Unknown acute toxicity (GHS US)

Not applicable

## SECTION 3: Composition/Information on ingredients

#### 3.1. Substance

Not applicable

#### 3.2. Mixture

Name	Product identifier	%	GHS-US classification
Nitrogen	(CAS No) 7727-37-9	74.5002 - 80.39999	Compressed gas, H280
Oxygen	(CAS No) 7782-44-7	19.5 - 23.5	Ox. Gas 1, H270 Compressed gas, H280
Carbon monoxide	(CAS No) 630-08-0	0.1 - 0.9999	Flam. Gas 1, H220 Compressed gas, H280 Acute Tox. 3 (Inhalation:gas), H331 Repr. 1A, H360 STOT RE 1, H372
Sulfur Dioxide	(CAS No) 7446-09-5	0.00001 - 0.9999	Liquefied gas, H280 Acute Tox. 3 (Inhalation:gas), H331 Skin Corr. 1B, H314 Eye Dam. 1, H318

Full text of H-phrases: see section 16

## **SECTION 4: First aid measures**

#### 4.1. Description of first aid measures

First-aid measures after inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If you feel

unwell, seek medical advice.

First-aid measures after skin contact : Adverse effects not expected from this product.

First-aid measures after eye contact : Adverse effects not expected from this product.

First-aid measures after ingestion : Ingestion is not considered a potential route of exposure.

#### 4.2. Most important symptoms and effects, both acute and delayed

Symptoms/injuries after inhalation : Asphyxiating even with adequate oxygen.

Symptoms/injuries after skin contact : Adverse effects not expected from this product.

Symptoms/injuries after eye contact : Adverse effects not expected from this product.

Symptoms/injuries after ingestion : Ingestion is not considered a potential route of exposure.

Symptoms/injuries upon intravenous

administration

: Not known.

Chronic symptoms : May damage fertility. May damage the unborn child.

## 4.3. Indication of any immediate medical attention and special treatment needed

If you feel unwell, seek medical advice. If breathing is difficult, give oxygen. Obtain medical attention if breathing difficulty persists.

## **SECTION 5: Firefighting measures**

## 5.1. Extinguishing media

Suitable extinguishing media : Use extinguishing media appropriate for surrounding fire.

Unsuitable extinguishing media : Do not use water jet to extinguish.

## 5.2. Special hazards arising from the substance or mixture

Fire hazard : The product is not flammable.

Explosion hazard : Product is not explosive. Heat may build pressure, rupturing closed containers, spreading fire

and increasing risk of burns and injuries.

Reactivity : None known.

## 5.3. Advice for firefighters

Firefighting instructions : In case of fire: Evacuate area. Fight fire remotely due to the risk of explosion. Use water spray

or fog for cooling exposed containers. Exercise caution when fighting any chemical fire.

08/27/2015 EN (English US) 2/10

## Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Protection during firefighting

: Standard protective clothing and equipment (e.g., Self Contained Breathing Apparatus) for fire fighters. Do not enter fire area without proper protective equipment, including respiratory protection.

## **SECTION 6: Accidental release measures**

#### 6.1. Personal precautions, protective equipment and emergency procedures

General measures : Ensure adequate ventilation.

#### 6.1.1. For non-emergency personnel

Protective equipment : Wear protective equipment consistent with the site emergency plan.

Emergency procedures : Escape the danger area by the closest safe route. Close doors and windows of adjacent

premises. Keep containers closed. Mark the danger area. Seal off low-lying areas. Keep

upwind.

#### 6.1.2. For emergency responders

Protective equipment : Standard protective clothing and equipment (e.g., Self Contained Breathing Apparatus) for fire

fighters. Equip cleanup crew with proper protection.

Emergency procedures : Evacuate and limit access. Ventilate area.

#### 6.2. Environmental precautions

Try to stop release if safe to do so.

#### 6.3. Methods and material for containment and cleaning up

For containment : Try to stop release if safe to do so.

Methods for cleaning up : Dispose of this material and its container in accordance with local regulations.

#### 6.4. Reference to other sections

See also Sections 8 and 13.

#### SECTION 7: Handling and storage

## 7.1. Precautions for safe handling

Additional hazards when processed : Pressurized container: Do not pierce or burn, even after use. Use equipment rated for cylinder

pressure. Close valve after each use and when empty.

Precautions for safe handling : Do not handle until all safety precautions have been read and understood. Use only outdoors or

in a well-ventilated area.

Hygiene measures : Do not eat, drink or smoke when using this product.

#### 7.2. Conditions for safe storage, including any incompatibilities

Technical measures : Comply with applicable regulations.

Storage conditions : Do not expose to temperatures exceeding 52°C (125°F). Keep container closed when not in

use. Protect cylinder from physical damage. Store in well ventilated area. Store locked up.

Incompatible products : None known.

Incompatible materials : Flammable materials.

## SECTION 8: Exposure controls/personal protection

#### 8.1. Control parameters

Carbon monoxide (630-08-0)			
ACGIH	ACGIH TWA (ppm)	25 ppm	
OSHA	OSHA PEL (TWA) (mg/m³)	55 mg/m³	
OSHA	OSHA PEL (TWA) (ppm)	50 ppm	

Sulfur Dioxide (7446-09-5)			
ACGIH	ACGIH STEL (ppm)	0.25 ppm	
OSHA	OSHA PEL (TWA) (mg/m³)	13 mg/m³	
OSHA	OSHA PEL (TWA) (ppm)	5 ppm	

08/27/2015 EN (English US) 3/10

## Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

#### **Exposure controls**

Appropriate engineering controls : Ensure exposure is below occupational exposure limits. Provide adequate general and local

exhaust ventilation. Systems under pressure should be regularly checked for leakages. Consider work permit system e.g. for maintenance activities. Alarm detectors should be used

when toxic gases may be released.

Hand protection Wear working gloves when handling gas containers. 29 CFR 1910.138: Hand Protection.

Eye protection Wear safety glasses with side shields. 29 CFR 1910.133: Eye and Face Protection. Wear suitable protective clothing, e.g. - lab coats, coveralls or flame resistant clothing. Skin and body protection

Respiratory protection None necessary during normal and routine operations. See Sections 5 & 6.

Thermal hazard protection None necessary during normal and routine operations.

Environmental exposure controls Refer to local regulations for restriction of emissions to the atmosphere. See section 13 for

specific methods for waste gas treatment.

Other information : Wear safety shoes while handling containers. 29 CFR 1910.136: Foot Protection.

## **SECTION 9: Physical and chemical properties**

#### Information on basic physical and chemical properties

Physical state : Gas

Appearance Clear, colorless gas.

Color : Colorless

Odor : Irritating/pungent odour No Data Available Odor threshold No data available pΗ No Data Available Melting point Freezing point No data available Boiling point No Data Available Flash point : No Data Available Relative evaporation rate (butyl acetate=1) No data available

Relative evaporation rate (ether=1) Not applicable for gas-mixtures. Flammability (solid, gas) See Section 2.1 and 2.2

**Explosion limits** Not applicable - not flammable Explosive properties : Not applicable - not flammable.

Oxidizing properties Supports combustion. No data available Vapor pressure Relative density No data available Relative vapor density at 20 °C No data available

Not applicable for gas-mixtures. Molecular mass

Relative gas density Similar to air Solubility No data available Log Pow No data available Auto-ignition temperature No data available Decomposition temperature No data available Viscosity No data available No data available Viscosity, kinematic No data available Viscosity, dynamic

#### Other information

No additional information available

## **SECTION 10: Stability and reactivity**

#### 10.1. Reactivity

None known.

## **Chemical stability**

Stable under normal conditions.

08/27/2015 EN (English US) 4/10

## Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

#### 10.3. Possibility of hazardous reactions

Can form explosive mixtures with flammable materials.

#### 10.4. Conditions to avoid

None under recommended storage and handling conditions (see section 7).

#### 10.5. Incompatible materials

Flammable materials.

## 10.6. Hazardous decomposition products

Under normal conditions of storage and use hazardous decomposition products should not be produced.

## **SECTION 11: Toxicological information**

#### 11.1. Information on toxicological effects

Likely routes of exposure : Inhalation

Acute toxicity : Not classified

Carbon monoxide (630-08-0)			
LC50 inhalation rat (ppm)	1880 ppm/4h		
ATE US (gases)	1880.000 ppmV/4h		
Nitrogen (7727-37-9)			
LC50 inhalation rat (ppm)	820000 ppm/4h		
Oxygen (7782-44-7)			
LC50 inhalation rat (ppm)	alation rat (ppm) 800000 ppm/4h		
Sulfur Dioxide (7446-09-5)			
LC50 inhalation rat (ppm)	1260 ppm/4h		
ATE US (gases)	1260.000 ppmV/4h		
Skin corrosion/irritation	: Not classified		
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Skin corrosion/irritation	: Not classified
Serious eye damage/irritation	: Not classified
Respiratory or skin sensitization	: Not classified
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified

IARC group 3 - Not classifiable

Reproductive toxicity : May damage fertility or the unborn child.

Specific target organ toxicity (single exposure) : Not classified

Specific target organ toxicity (repeated

exposure)

: Not classified

Aspiration hazard : Not classified

Symptoms/injuries after inhalation : Asphyxiating even with adequate oxygen.

Symptoms/injuries after skin contact : Adverse effects not expected from this product.

Symptoms/injuries after eye contact : Adverse effects not expected from this product.

Symptoms/injuries after ingestion : Ingestion is not considered a potential route of exposure.

Symptoms/injuries upon intravenous

administration

: Not known.

Chronic symptoms : May damage fertility. May damage the unborn child.

## **SECTION 12: Ecological information**

#### 12.1. Toxicity

No additional information available

08/27/2015 EN (English US) 5/10

## Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

12.2.	Persistence and degradability	

Carbon monoxide (630-08-0)			
Persistence and degradability	Will not undergo hydrolysis. Not readily biodegradable. Not applicable for inorganic gases.		
Nitrogen (7727-37-9)			
Persistence and degradability  No ecological damage caused by this product.			
Oxygen (7782-44-7)			
Persistence and degradability	No ecological damage caused by this product.		

#### 12.3. Bioaccumulative potential

Carbon monoxide (630-08-0)			
Log Pow	1.78		
Bioaccumulative potential	Not expected to bioaccumulate due to the low log Kow (log Kow < 4). Refer to section 9.		
Nitrogen (7727-37-9)			
Log Pow	Not applicable for inorganic gases.		
Bioaccumulative potential	No ecological damage caused by this product.		
Oxygen (7782-44-7)			
Log Pow	Not applicable for inorganic gases.		
Bioaccumulative potential	No ecological damage caused by this product.		
Sulfur Dioxide (7446-09-5)			
BCF fish 1	(no bioaccumulation expected)		
Log Pow	Not applicable for inorganic gases.		
Bioaccumulative potential	No data available.		

#### 12.4. Mobility in soil

Carbon monoxide (630-08-0)			
Ecology - soil Because of its high volatility, the product is unlikely to cause ground or water pollution.			
Nitrogen (7727-37-9)			
Ecology - soil No ecological damage caused by this product.			
Oxygen (7782-44-7)			
Ecology - soil	No ecological damage caused by this product.		

## 12.5. Other adverse effects

Effect on ozone layer : No known effects from this product.

## **SECTION 13: Disposal considerations**

## 13.1. Waste treatment methods

Waste treatment methods : Contact supplier if guidance is required. Do not discharge into any place where its

accumulation could be dangerous. Ensure that the emission levels from local regulations or

operating permits are not exceeded.

Waste disposal recommendations : Refer to the CGA Pamphlet P-63 "Disposal of Gases" available at www.cganet.com for more

guidance on suitable disposal methods.

## **SECTION 14: Transport information**

## **Department of Transportation (DOT)**

In accordance with DOT

Transport document description : UN1956 Compressed gas, n.o.s. (Oxygen, Nitrogen), 2.2

UN-No.(DOT) : UN1956

Proper Shipping Name (DOT) : Compressed gas, n.o.s.

Transport hazard class(es) (DOT) : 2.2 - Class 2.2 - Non-flammable compressed gas 49 CFR 173.115

08/27/2015 EN (English US) 6/10

## Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Hazard labels (DOT) : 2.2 - Non-flammable gas



DOT Packaging Non Bulk (49 CFR 173.xxx) : 302;305 DOT Packaging Bulk (49 CFR 173.xxx) : 314;315

DOT Symbols : G - Identifies PSN requiring a technical name

DOT Packaging Exceptions (49 CFR 173.xxx) : 306;307
DOT Quantity Limitations Passenger aircraft/rail : 75 kg
(49 CFR 173.27)

DOT Quantity Limitations Cargo aircraft only (49 : 150 kg

CFR 175.75)

DOT Vessel Stowage Location : A - The material may be stowed "on deck" or "under deck" on a cargo vessel and on a

passenger vessel.

Other information : No supplementary information available.

**TDG** 

Transport document description : UN1956 COMPRESSED GAS, N.O.S., 2.2

UN-No. (TDG) : UN1956

TDG Proper Shipping Name : COMPRESSED GAS, N.O.S.

TDG Primary Hazard Classes : 2.2 - Class 2.2 - Non-Flammable, Non-Toxic Gas.

Transport by sea

UN-No. (IMDG) : 1956

Proper Shipping Name (IMDG) : COMPRESSED GAS, N.O.S.

Class (IMDG) : 2 - Gases

Air transport

UN-No. (IATA) : 1956

Proper Shipping Name (IATA) : COMPRESSED GAS, N.O.S.

Class (IATA) : 2

## **SECTION 15: Regulatory information**

## 15.1. US Federal regulations

## Carbon monoxide (630-08-0)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

## Nitrogen (7727-37-9)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

## Oxygen (7782-44-7)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

#### Sulfur Dioxide (7446-09-5)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

Listed on the United States SARA Section 302

SARA Section 302 Threshold Planning 500

Quantity (TPQ)

## 15.2. International regulations

## CANADA

08/27/2015 EN (English US) 7/10

## Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Carbon monoxide (630-08-0)			
Listed on the Canadian DSL (Domestic Sustance	s List)		
WHMIS Classification	Class A - Compressed Gas Class B Division 1 - Flammable Gas Class D Division 1 Subdivision A - Very toxic material causing immediate and serious toxic effects Class D Division 2 Subdivision A - Very toxic material causing other toxic effects		
Nitrogen (7727-37-9)			
Listed on the Canadian DSL (Domestic Sustance	s List)		
WHMIS Classification	Class A - Compressed Gas		
Oxygen (7782-44-7)			
Listed on the Canadian DSL (Domestic Sustance	s List)		
WHMIS Classification	Class A - Compressed Gas Class C - Oxidizing Material		
Sulfur Dioxide (7446-09-5)			
Listed on the Canadian DSL (Domestic Sustance	s List)		
WHMIS Classification	Class A - Compressed Gas Class D Division 1 Subdivision A - Very toxic material causing immediate and serious toxic effects Class D Division 2 Subdivision B - Toxic material causing other toxic effects Class E - Corrosive Material		

#### **EU-Regulations**

No additional information available

#### **National regulations**

#### Carbon monoxide (630-08-0)

Listed on the AICS (Australian Inventory of Chemical Substances)

Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)

Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory

Listed on the Korean ECL (Existing Chemicals List)

Listed on NZIoC (New Zealand Inventory of Chemicals)

Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)

Listed on the Canadian IDL (Ingredient Disclosure List)

#### Nitrogen (7727-37-9)

Listed on the AICS (Australian Inventory of Chemical Substances)

Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)

Listed on the Korean ECL (Existing Chemicals List)

Listed on NZIoC (New Zealand Inventory of Chemicals)

Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)

## Oxygen (7782-44-7)

Listed on the AICS (Australian Inventory of Chemical Substances)

Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)

Listed on the Korean ECL (Existing Chemicals List)

Listed on NZIoC (New Zealand Inventory of Chemicals)

Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)

## Sulfur Dioxide (7446-09-5)

Listed on the AICS (Australian Inventory of Chemical Substances)

Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)

Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory

Listed on the Korean ECL (Existing Chemicals List)

Listed on NZIoC (New Zealand Inventory of Chemicals)

Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)

Listed on the Canadian IDL (Ingredient Disclosure List)

## 15.3. US State regulations

08/27/2015 EN (English US) 8/10

## Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Carbon monoxide (630-08-0)				
U.S California - Proposition 65 - Carcinogens List	U.S California - Proposition 65 - Developmental Toxicity	U.S California - Proposition 65 - Reproductive Toxicity - Female	U.S California - Proposition 65 - Reproductive Toxicity - Male	Non-significant risk level (NSRL)
No	Yes	No	No	

Sulfur Dioxide (7446-09-5)				
U.S California - Proposition 65 - Carcinogens List	U.S California - Proposition 65 - Developmental Toxicity	U.S California - Proposition 65 - Reproductive Toxicity - Female	U.S California - Proposition 65 - Reproductive Toxicity - Male	Non-significant risk level (NSRL)
No	Yes	No	No	

#### Carbon monoxide (630-08-0)

- U.S. Massachusetts Right To Know List
- U.S. New Jersey Right to Know Hazardous Substance List
- U.S. Pennsylvania RTK (Right to Know) Environmental Hazard List
- U.S. Pennsylvania RTK (Right to Know) List

#### Nitrogen (7727-37-9)

- U.S. Massachusetts Right To Know List
- U.S. New Jersey Right to Know Hazardous Substance List
- U.S. Pennsylvania RTK (Right to Know) List

## Oxygen (7782-44-7)

- U.S. Massachusetts Right To Know List
- U.S. New Jersey Right to Know Hazardous Substance List
- U.S. Pennsylvania RTK (Right to Know) List

## Sulfur Dioxide (7446-09-5)

- U.S. Massachusetts Right To Know List
- U.S. New Jersey Right to Know Hazardous Substance List
- U.S. Pennsylvania RTK (Right to Know) Environmental Hazard List
- U.S. Pennsylvania RTK (Right to Know) List

## **SECTION 16: Other information**

Indication of changes : Revised safety data sheet in accordance with OSHA final rule on GHS implementation promulgated March 26, 2012.

Other information : This Safety Data Sheet is offered pursuant to OSHA's Hazard Communication Standard, 29 CFR, 1910.1200. Other government regulations must be reviewed for applicability to this

product.

## Full text of H-phrases:

Acute Tox. 3 (Inhalation:gas)	Acute toxicity (inhalation:gas) Category 3	
Compressed gas	Gases under pressure Compressed gas	
Eye Dam. 1	Serious eye damage/eye irritation Category 1	
Flam. Gas 1	Flammable gases Category 1	
Liquefied gas	Gases under pressure Liquefied gas	
Ox. Gas 1	Oxidizing gases Category 1	
Repr. 1A	Reproductive toxicity Category 1A	
Skin Corr. 1B	Skin corrosion/irritation Category 1B	
STOT RE 1	Specific target organ toxicity (repeated exposure) Category 1	
H220	Extremely flammable gas	
H270	May cause or intensify fire; oxidizer	
H280	Contains gas under pressure; may explode if heated	
H314	Causes severe skin burns and eye damage	
H318	Causes serious eye damage	
H331	Toxic if inhaled	
H360	May damage fertility or the unborn child	
H372	Causes damage to organs through prolonged or repeated exposure	

08/27/2015 EN (English US) 9/10

## Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

SDS US (GHS HazCom 2012)

This Safety Data Sheet is offered pursuant to OSHA's Hazard Communication Standard, 29 CFR, 1910.1200. Other government regulations must be reviewed for applicability to this product. To the best of Air Liquide America Corporation's knowledge, the information contained herein is reliable and accurate as of this date; however, accuracy, suitability or completeness are not guaranteed and no warranties of any type, either express or implied, are provided. The information contained herein relates only to this specific product. If this product is combined with other materials, all component properties must be considered. Data may be changed from time to time. Be sure to consult the latest edition.

08/27/2015 EN (English US) 10/10