Carbon Monoxide (0.1000% - 0.9999%), Neon (0.0001% - 75.50%), Oxygen (19.50% - 23.50%) in Nitrogen

Safety Data Sheet
according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations
Date of issue: 11/17/2014 Version: 1.0

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier
Product form: Mixture
Product name: Carbon Monoxide (0.1000% - 0.9999%), Neon (0.0001% - 75.50%), Oxygen (19.50% - 23.50%) in Nitrogen
Product code: SG-2004-02464
Other means of identification: SG Lung Diffusion Gas

1.2. Relevant identified uses of the substance or mixture and uses advised against
Use of the substance/mixture: Respiratory diagnosis monitoring and calibration gas.

1.3. Details of the supplier of the safety data sheet
Air Liquide America Specialty Gases
6141 Easton Rd
Plumsteadville, PA 18949 - USA
T 1.800.217.2688
www.airliquide.com

1.4. Emergency telephone number
Emergency number: CHEMTREC: 1-800-424-9300

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture
Classification (GHS-US)
Compressed gas
Repr. 1A
H280
H360

2.2. Label elements
GHS-US labeling
Hazard pictograms (GHS-US):

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
P271 - Use only outdoors or in a well-ventilated area
P280 - Wear protective gloves, protective clothing, eye protection, face protection
P304+P313 - 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
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
P405 - Store locked up
Carbon Monoxide (0.1000% - 0.9999%), Neon (0.0001% - 75.50%), Oxygen (19.50% - 23.50%) in Nitrogen

Safety Data Sheet

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2.3. Other hazards

Other hazards not contributing to the classification:

This product contains a chemical asphyxiant.

2.4. Unknown acute toxicity (GHS-US)

No data available

SECTION 3: Composition/information on ingredients

3.1. Substance

Not applicable

3.2. Mixture

<table>
<thead>
<tr>
<th>Name</th>
<th>Product identifier</th>
<th>%</th>
<th>Classification (GHS-US)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrogen</td>
<td>(CAS No)7727-37-9</td>
<td>0.0001 - 80.3999</td>
<td>Compressed gas, H280</td>
</tr>
<tr>
<td>Neon</td>
<td>(CAS No)7440-01-9</td>
<td>0.0001 - 75.5</td>
<td>Compressed gas, H280</td>
</tr>
<tr>
<td>Oxygen</td>
<td>(CAS No)7782-44-7</td>
<td>19.5 - 23.5</td>
<td>Ox. Gas 1, H270 Compressed gas, H280</td>
</tr>
<tr>
<td>Carbon monoxide</td>
<td>(CAS No)630-08-0</td>
<td>0.1 - 0.9999</td>
<td>Flam. Gas 1, H220 Compressed gas, H280 Acute Tox. 3 (Inhalation:gas), H331 Rep. 1A, H360 STOT RE 1, H372</td>
</tr>
</tbody>
</table>

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures after inhalation:
Remove 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:
Symptoms similar to those listed under inhalation.

Symptoms/Injuries after inhalation:
Headache. Asphyxiating even with adequate oxygen. If you feel unwell, seek medical advice.

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. Ingestion is not 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 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.

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.

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.

Incompatible products
None known.

Incompatible materials
Flammable materials.

7.3. Specific end use(s)

See Section 1.2.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

<table>
<thead>
<tr>
<th>Compound</th>
<th>Source</th>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon monoxide (630-08-0)</td>
<td>USA ACGIH</td>
<td>ACGIH TWA (ppm)</td>
<td>25 ppm</td>
</tr>
<tr>
<td></td>
<td>USA OSHA</td>
<td>OSHA PEL (TWA) (mg/m³)</td>
<td>55 mg/m³</td>
</tr>
<tr>
<td></td>
<td>USA OSHA</td>
<td>OSHA PEL (TWA) (ppm)</td>
<td>50 ppm</td>
</tr>
</tbody>
</table>

Nitrogen (7727-37-9)

Neon (7440-01-9)
8.2. Exposure controls

Appropriate engineering controls: Provide adequate general and local exhaust ventilation. Systems under pressure should be regularly checked for leakages. Ensure exposure is below occupational exposure limits. Oxygen detectors should be used when asphyxiating gases may be released. Consider work permit system e.g. for maintenance activities.


Skin and body protection: Wear suitable protective clothing, e.g. - lab coats, coveralls or flame resistant clothing.

Respiratory protection: None necessary during normal and routine operations.

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.


SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state: Gas
Appearance: Clear, colorless gas.
Color: Colorless
Odor: odorless
Odor threshold: No data available
pH: Not applicable.
Relative evaporation rate (butyl acetate=1): No data available
Relative evaporation rate (ether=1): Not applicable for gas-mixtures.
Melting point: No data available
Freezing point: No data available
Boiling point: No data available
Flash point: No data available
Auto-ignition temperature: No data available
Decomposition temperature: No data available
Flammability (solid, gas): Not flammable - - not combustible
Vapor pressure: Not applicable.
Relative vapor density at 20 °C: No data available.
Relative density: No data available
Relative gas density: Lighter or similar to air.
Solubility: Water: Solubility in water of component(s) of the mixture:
• : Insoluble • : 20 mg/l • : 39 mg/l • : 8.9 mg/l
Log Pow: No data available
Log Kow: No data available
Viscosity, kinematic: Not applicable.
Viscosity, dynamic: Not applicable
Explosive properties: Not applicable - not flammable.
Oxidizing properties: Supports combustion. Not combustible but enhances combustion of other substances.
Explosive limits: No data available

9.2. Other information

Additional information: None.

SECTION 10: Stability and reactivity

10.1. Reactivity

None known.

10.2. Chemical stability

Stable under normal conditions.
Carbon Monoxide (0.1000% - 0.9999%), Neon (0.0001% - 75.50%), Oxygen (19.50% - 23.50%) in Nitrogen
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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

Acute toxicity : Not classified

<table>
<thead>
<tr>
<th>Substance</th>
<th>LC50 inhalation rat (ppm)</th>
<th>ATE US (gases)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon monoxide (630-08-0)</td>
<td>1880 ppm/4h</td>
<td>1880.00000000 ppmV/4h</td>
</tr>
<tr>
<td>Nitrogen (7727-37-9)</td>
<td>410000 ppm/4h</td>
<td></td>
</tr>
<tr>
<td>Oxygen (7782-44-7)</td>
<td>400000 ppm/4h</td>
<td></td>
</tr>
<tr>
<td>Neon (7440-01-9)</td>
<td>410000 ppm/4h</td>
<td>410000.00000000 ppmV/4h</td>
</tr>
</tbody>
</table>

Skin corrosion/irritation : Not classified
pH: Not applicable.

Serious eye damage/irritation : Not classified
pH: Not applicable.

Respiratory or skin sensitization : Not classified

Germ cell mutagenicity : Not classified

Carcinogenicity : Not classified

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 : Headache. Asphyxiating even with adequate oxygen. If you feel unwell, seek medical advice.
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

12.2. Persistence and degradability

<table>
<thead>
<tr>
<th>Substance</th>
<th>Persistence/degradability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon monoxide (630-08-0)</td>
<td></td>
</tr>
</tbody>
</table>

11/18/2014 EN (English US) 5/9
---|---
**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.
**Neon (7440-01-9)**
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.
**Neon (7440-01-9)**  
Log Pow | Not applicable for inorganic gases.  
Bioaccumulative potential | No ecological damage caused by this product.

### 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.
**Neon (7440-01-9)**  
Ecology - soil | No ecological damage caused by this product.

### 12.5. Other adverse effects

Effect on ozone layer | No additional information available  
Effect on the global warming | Contains greenhouse gas(es) not covered by 842/2006/EC.

### 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.
Additional information | None.
Carbon Monoxide (0.1000% - 0.9999%), Neon (0.0001% - 75.50%), Oxygen (19.50% - 23.50%) in Nitrogen

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SECTION 14: Transport information
In accordance with DOT

Transport document description : UN1956 Compressed gas, n.o.s.
UN-No.(DOT) : 1956
DOT NA no. : UN1956
Proper Shipping Name (DOT) : Compressed gas, n.o.s.
Hazard labels (DOT) : 2.2 - Non-flammable gas

DOT Symbols : G - Identifies PSN requiring a technical name
DOT Packaging Exceptions (49 CFR 173.xxx) : 306;307
DOT Packaging Non Bulk (49 CFR 173.xxx) : 302;305
DOT Packaging Bulk (49 CFR 173.xxx) : 314;315
DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27) : 75 kg
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75) : 150 kg
DOT Vessel Stowage Location : A - The material may be stowed “on deck” or “under deck” on a cargo vessel and on a passenger vessel.

Additional information
Other information : No supplementary information available.

ADR
Transport document description : UN 1956, 2,2, (E)
Class (ADR) : 2 - Gases
Hazard identification number (Kemler No.) : 20
Classification code (ADR) : 1A
Hazard labels (ADR) : 2.2 - Non-flammable compressed gas

Orange plates :
Tunnel restriction code (ADR) : E
LQ : 120ml
Excepted quantities (ADR) : E1

Transport by sea
UN-No. (IMDG) : 1956
Proper Shipping Name (IMDG) : COMPRESSED GAS, N.O.S.
Class (IMDG) : 2.2 - Non-flammable, non-toxic 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

No additional information available

### 15.2. International regulations

#### CANADA

**Carbon monoxide (630-08-0)**
- Listed on the Canadian DSL (Domestic Substances List)

<table>
<thead>
<tr>
<th>WHMIS Classification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class A - Compressed Gas</td>
<td></td>
</tr>
<tr>
<td>Class B Division 1 - Flammable Gas</td>
<td></td>
</tr>
<tr>
<td>Class D Division 1 Subdivision A - Very toxic material causing immediate and serious toxic effects</td>
<td></td>
</tr>
<tr>
<td>Class D Division 2 Subdivision A - Very toxic material causing other toxic effects</td>
<td></td>
</tr>
</tbody>
</table>

**Nitrogen (7727-37-9)**
- Listed on the Canadian DSL (Domestic Substances List)

<table>
<thead>
<tr>
<th>WHMIS Classification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class A - Compressed Gas</td>
<td></td>
</tr>
</tbody>
</table>

**Oxygen (7782-44-7)**
- Listed on the Canadian DSL (Domestic Substances List)

<table>
<thead>
<tr>
<th>WHMIS Classification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class A - Compressed Gas</td>
<td></td>
</tr>
<tr>
<td>Class C - Oxidizing Material</td>
<td></td>
</tr>
</tbody>
</table>

**Neon (7440-01-9)**
- Listed on the Canadian DSL (Domestic Substances List)

<table>
<thead>
<tr>
<th>WHMIS Classification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class A - Compressed Gas</td>
<td></td>
</tr>
</tbody>
</table>

### EU-Regulations

No additional information available

**Classification according to Regulation (EC) No. 1272/2008 [CLP]**
- Not classified

**Classification according to Directive 67/548/EEC [DSD] or 1999/45/EC [DPD]**

### 15.2.2. National regulations

#### 15.3. US State 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
- No significance risk level (NSRL)

**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
Carbon Monoxide (0.1000% - 0.9999%), Neon (0.0001% - 75.50%), Oxygen (19.50% - 23.50%) in Nitrogen

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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: see section 16:

<table>
<thead>
<tr>
<th>Acute Tox. 3 (Inhalation:gas)</th>
<th>Acute toxicity (inhalation:gas) Category 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compressed gas</td>
<td>Gases under pressure Compressed gas</td>
</tr>
<tr>
<td>Flam. Gas 1</td>
<td>Flammable gases Category 1</td>
</tr>
<tr>
<td>Ox. Gas 1</td>
<td>Oxidizing gases Category 1</td>
</tr>
<tr>
<td>Repr. 1A</td>
<td>Reproductive toxicity Category 1A</td>
</tr>
<tr>
<td>STOT RE 1</td>
<td>Specific target organ toxicity (repeated exposure) Category 1</td>
</tr>
<tr>
<td>H220</td>
<td>Extremely flammable gas</td>
</tr>
<tr>
<td>H270</td>
<td>May cause or intensify fire; oxidizer</td>
</tr>
<tr>
<td>H280</td>
<td>Contains gas under pressure; may explode if heated</td>
</tr>
<tr>
<td>H331</td>
<td>Toxic if inhaled</td>
</tr>
<tr>
<td>H360</td>
<td>May damage fertility or the unborn child</td>
</tr>
<tr>
<td>H372</td>
<td>Causes damage to organs through prolonged or repeated exposure</td>
</tr>
</tbody>
</table>

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.