



Issue date March 1, 2015

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## Safety Data Sheet

**SDS ID# 2040**

### Section 1. IDENTIFICATION

#### 1.1. Product identifier

Product form : Mixture

Product name : Carbon Monoxide (0.0001%-0.1199%) in Air (Oxygen 20.9% bal. Nitrogen)

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

Product use : Calibration gas/Bumptest gas/Function test gas

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

Intermountain Specialty Gases

520 N. Kings Road

Nampa, ID 83687

Telephone 1-208-466-9425 or Toll free 1-800-552-5003

Fax 1-208-466-9144

www.isgases.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 GASES UNDER PRESSURE - Compressed gas

#### 2.2. Label elements

Hazard pictograms



Signal word : WARNING

Hazard statements : H280 - CONTAINS GAS UNDER PRESSURE; MAY EXPLODE IF HEATED  
: CGA-HG24 - MAY SUPPORT COMBUSTION  
: OSHA - PG01 - DO NOT REMOVE THIS PRODUCT LABEL

#### Precautionary statements

[General] : Read and follow all Safety Data Sheets (SDS's) before use. Read label before use. Keep out



of reach of children. If medical advice is needed, have a product container or label at hand. Use equipment rated for cylinder pressure.

- [Prevention] : P202 - Do not handle until all safety precautions have been read and understood  
: P271+P403- Use only outdoors or in a well-ventilated area
- [Response] : P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing.
- [Storage] : CGA-PG02 - Protect from sunlight when ambient temperature exceeds 52°C (125°F)
- [Disposal] : Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

**2.3. Other hazards**

No additional information available

**2.4. Unknown acute toxicity**

No data available

**Section 3. COMPOSITION/INFORMATION ON INGREDIENTS**

**3.1. Substance**

Not applicable

**3.2. Mixture**

Name	Product Identifier	%
Nitrogen	(CAS No) 7727-37-9	76.3801 - 80.4999
Oxygen	(CAS No) 7782-44-7	19.5 - 23.5
Carbon Monoxide	(CAS No) 630-08-0	0.0001 - 0.1199

**Section 4. FIRST AID MEASURES**

**4.1. Description of first aid measures**

- General : IF exposed or concerned: Get medical advice/attention.
- Inhalation : Remove to fresh air and keep at rest in a position comfortable for breathing. If breathing has stopped, give artificial respiration or oxygen by trained personnel. If victim feels unwell, seek medical advice.
- Skin contact : Immediately flush with copious amount of water for at least 15 minutes.
- Eye contact : Immediately flush with copious amount of water for at least 15 minutes.
- Ingestion : Ingestion is not considered a potential route of exposure, refer to the inhalation section.

**4.2. Most important symptoms/effects, acute and delayed**

**Acute**

- Inhalation : May displace oxygen and cause rapid suffocation.
- Skin contact : Contact with rapidly expanding gas may cause burns or frostbite.
- Eye contact : Contact with rapidly expanding gas may cause burns or frostbite.



Ingestion	: Ingestion is not considered a potential route of exposure, refer to the inhalation section.
Frostbite	: Thaw frosted parts with lukewarm water. Do not rub affected areas. Get immediate medical advice/attention.
Symptoms/injuries upon intravenous administration	: Symptoms of overexposure are dizziness, headache, tiredness, nausea, unconsciousness, cessation of breathing.
Chronic symptoms	: Adverse effects not expected from this product.
Delayed	: Adverse effects not expected from this product.

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

If victim feels unwell, seek medical advice. If breathing is difficult, give artificial respiration or oxygen by trained personnel.

**Section 5. FIREFIGHTING MEASURES**

**5.1. Extinguishing media**

Suitable extinguishing media	: Use extinguishing media appropriate for surrounding fire.
Unsuitable extinguishing media	: None known

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

Fire hazard	: The product is not flammable
Explosion hazard	: Heat may build pressure, rupturing closed containers, spreading fire and increasing risk of burns and injuries.
Reactivity	: None known.

**5.3. Advice for fire-fighters**

Firefighting instructions	: In case of fire: Evacuate all personnel from the danger area. Stop the leak and flow of gas before extinguishing fire, if safe to do so. If this is not possible, withdraw from area and allow fire to burn. Fight fire remotely due to the risk of explosion. Use water spray or fog for cooling exposed containers. Let the fire burn. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas. Exercise caution when fighting any chemical fire.
Protection during firefighting	: Standard protective clothing and equipment (e.g., Self Contained Breathing Apparatus, SCBA) 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.
<b>6.1.1. For non -emergency personnel</b>	
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.
<b>6.1.12. For emergency responders</b>	
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. See information above "For non-emergency personnel".

**6.2. Methods and material for containment and cleaning up**

For containment : Immediately contact emergency personnel. Try to stop gas leak if safe to do so.  
 Methods for cleaning up : Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

**Section 7. HANDLING AND STORAGE**

**7.1. Precautions for safe handling**

Precautions for safety handling : Pressurized container: Do not pierce or burn, even after use. Use equipment rated for cylinder pressure. Do not handle until all safety precautions have been read and understood. Use only outdoors or in a well-ventilated area. Avoid contact with eyes, skin and clothing. Avoid breathing gas. Protect cylinders from physical damage; do not drag, roll, slide, or drop.  
 Hygiene measures : Do not eat, drink or smoke when using this product.

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

Technical measures : None known.  
 Storage conditions : Do not expose to temperatures exceeding 52°C (125°F). Store locked up. Keep containers closed when not in use. Protect cylinder from physical damage. Store and use away from heat, sparks, open flame or any other ignition source. Store in well ventilated area.  
 Incompatible products : None known.  
 Incompatible materials : None known.

**Section 8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

Nitrogen (7727-37-9)					
OSHA PEL		Cal/OSHA PEL	NIOSH REL	ACGIH 2015 TLV	
		(as of 4/26/13)	(as of 4/26/13)		
ppm	mg/m <sup>3</sup>	8-hour TWA (ST) STEL ( C ) Ceiling	up to 10-hour TWA (ST) STEL ( C ) Ceiling	8-hour TWA (ST) STEL ( C ) Ceiling	
Not established	Not established	Not established	Not established	Simple asphyxiant	
Oxygen (7782-44-7)					
OSHA PEL		Cal/OSHA PEL	NIOSH REL	ACGIH 2015 TLV	
		(as of 4/26/13)	(as of 4/26/13)		
ppm	mg/m <sup>3</sup>	8-hour TWA (ST) STEL ( C ) Ceiling	up to 10-hour TWA (ST) STEL ( C ) Ceiling	8-hour TWA (ST) STEL ( C ) Ceiling	
There are no specific exposure limits for Nitrogen. Nitrogen is a simple asphyxiant (SA). Oxygen levels should be maintained above 19.5%.					



Carbon Monoxide (630-08-0)					
OSHA PEL		Cal/OSHA PEL	NIOSH REL	ACGIH 2015 TLV	
		(as of 4/26/13)	(as of 4/26/13)		
ppm	mg/m <sup>3</sup>	8-hour TWA (ST) STEL ( C ) Ceiling	up to 10-hour TWA (ST) STEL ( C ) Ceiling (IDLH) Immediately Dangerous to Life or Health	8-hour TWA (ST) STEL ( C ) Ceiling	
50 ppm	55 mg/m <sup>3</sup>	25 ppm ( C ) 200 ppm	35 ppm ( C ) 200 ppm (IDLH) 1,200 ppm	25 ppm	

**8.2. Appropriate engineering controls**

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

**8.3. Individual protection measures**

Hand protection : Wear working gloves when handling gas containers. 29CFR 1910.138: Hand Protection.  
 Eye protection : Wear safety glasses with side shields. 29 CFR 1910.133: Eye and Face Protection.  
 Skin and body protection : Wear suitable protective clothing, e.g.-Lab coats, coveralls or flame resistant clothing.  
 Respiratory protection : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary.  
 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**

**9.1. Exposure controls**

Appearance : Clear, colorless gas.  
 Physical state : Gas  
 Color : Colorless  
 Odor : No data available  
 Odor threshold : No data available  
 pH : No data available  
 Freezing point : No data available  
 Flash point : No data available  
 Evaporation rate : No data available  
 Flammability (solid, gas) : Not Flammable - not combustible  
 Upper flammability : Not Flammable - not combustible



Lower flammability	: Not Flammable - not combustible
Relative density	: No data available
Solubility	: No data available
Partition coefficient	: No data available
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Viscosity	: Not applicable

	Carbon Monoxide	Oxygen	Nitrogen		
Molecular weight (grams)	58.12	32.00	28.013		
Boiling point	-0.5 °C	-182.9 °C	-196 °C		
Vapor pressure	2200 hPa @ 20 °C	Above critical temperature	Above critical temperature		
Vapor density at 20°C	2.11	1.11	0.97		
Relative gas density	2.52 @ 15 °C	1.331	1.153		
Critical Temperature	152.03 °C	-118.6 °C	-146.9 °C		

**Section 10. STABILITY AND REACTIVITY**

**10.1. Reactivity**

No reactivity hazard other than the effects described below.

**10.2. Chemical stability**

Stable under normal conditions.

**10.3. Possibility of hazardous reactions**

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

**10.4. Conditions to avoid**

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

**10.5. Incompatible materials**

None known

**10.6. Hazardous decomposition products**

None known

**Section 11. TOXICOLOGICAL INFORMATION**

**Acute toxicity**

**Nitrogen (7727-37-9)**

LC50 inhalation rat (ppm) 410,000 ppm/4h

**Oxygen (7782-44-7)**

LC50 inhalation rat (ppm) 400,000 ppm/4h



**Carbon Monoxide (630-08-0)**

LC50 inhalation rat (ppm)	3,760 ppm/1h
LC50 inhalation rat (ppm)	1,807 ppm/4h

**11.1. Information on routes of exposure**

Inhalation	: May displace oxygen and cause rapid suffocation.
Skin contact	: Adverse effects not expected from this product
Eye contact	: Adverse effects not expected from this product
Ingestion	: Ingestion is not considered a potential route of exposure

**11.2. Symptoms related to physical, chemical and toxicological characteristics**

Symptoms	Simple asphyxiant. May cause suffocation by displacing the oxygen in the air. Exposure to oxygen-deficient atmosphere (<=18%) may cause dizziness, drowsiness, nausea, vomiting, excess salivation, diminished mental alertness, loss of consciousness and death. Exposure to atmospheres containing 8-10% or less oxygen will bring about unconsciousness without warning and so quickly that the individuals cannot help or protect themselves. Lack of sufficient oxygen may cause serious injury or death.
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**11.3. Delayed and immediate effects**

Skin corrosion/irritation	: Contact with rapidly expanding gas may cause burns or frostbite.
Serious eye damage/irritation	: Contact with rapidly expanding gas may cause burns or frostbite.
Respiratory or skin sensitization	: Not classified
Germ cell mutagenicity	: Genetic changes observed in mammalian cell assay systems at exposures of 1,500 to 2,500 ppm of carbon monoxide for 10 minutes
Carcinogenicity	: Not classified
Reproductive toxicity	: Category 1A. Overexposure to carbon monoxide may decrease the likelihood of successful pregnancy. In rats treated with carbon monoxide, the rate of successful pregnancy in the control group was 100% whereas the rest of successful pregnancy in animals treated with 30 and 90 ppm of carbon monoxide was 69% and 38% respectively.
Developmental Toxicity	Mice exposed to concentrations of carbon monoxide at 65 ppm and higher demonstrated dose-dependent effects on the fetus (increased mortality and decreased weight) with no signs of maternal toxicity. Offspring of rats exposed to 150 ppm carbon monoxide had minor reductions in birth weight and persistent memory deficits which became more pronounced in adulthood.
Specific target organ toxicity (single exposure)	: Not classified
Specific target organ toxicity (repeated exposure)	: Genetic changes observed in mammalian cell assay systems at exposures of 1,500 to 2,500 ppm of carbon monoxide for 10 minutes : Central vascular system (CVS), Lungs, Blood, Central nervous system (CNS)



Aspiration hazard : Not classified  
Not applicable for gases and gas-mixtures

**11.4. Carcinogenic effects**

The components of this material are not found on the following lists: FEDERAL OSHA Z LIST, NTP AND IARC; therefore, they are not considered to be, nor suspected to be, cancer-causing agents by these agencies.

**Section 12. ECOLOGICAL INFORMATION**

**12.1. Aquatic Toxicity**

Ecology - general : No ecological damage caused by this product

**12.2. Persistence and degradability**

No information available for the product

**12.3. Bioaccumulative potential**

No information available for the product

**12.4. Mobility in soil**

No information available for the product

**12.5. Other**

No information available for the product

**Section 13. DISPOSAL CONSIDERATIONS**

**13.1. Disposal methods**

Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

**Section 14. TRANSPORTATION INFORMATION**

	<b>US DOT</b>	<b>TDG</b>	<b>IMDG</b>	<b>IATA</b>
<b>UN #</b>	UN 1956	UN 1956	UN 1956	UN 1956
<b>Proper shipping name</b>	Compressed gas, n.o.s. (Nitrogen, Oxygen)	Compressed gas, n.o.s. (Nitrogen, Oxygen)	Compressed gas, n.o.s. (Nitrogen, Oxygen)	Compressed gas, n.o.s. (Nitrogen, Oxygen)
<b>Transport hazard class(es)</b>	2.2 	2.2 	2.2 	2.2 
<b>Packing group</b>	-	-	-	-
<b>Environment</b>	No.	No.	No.	No.

**Section 15. REGULATORY INFORMATION**

**15.1. US Federal regulations**



**SARA 311/312 hazard categories**

Acute Health : No  
 Chronic Health : No  
 Fire : No  
 Pressure : Yes  
 Reactive : No

SARA Title III Notifications and Information: None known

This product does not contain toxic chemicals subject to reporting requirements of section 313 of the Emergency planning and Community Right-To-Know Act (EPCRA) of 1986 and of 40 CFR 372.

SARA 311/312	Sudden Release of Pressure Hazard
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**15.2. US State regulations**

**Nitrogen (007727-37-9)**

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

**Oxygen (007782-44-7)**

- 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 (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) List
- U.S. - California Proposition 65 (Developmental)

**Section 16. OTHER INFORMATION**

**Date of issue/Date of revision** : New SDS 3/1/2015

**Revision Note** : Initial release

**Hazardous Material Information System (USA)**

Hazard Scale : 0 = Minimal/ 1 = Slight/ 2 = Moderate/ 3 = Serious/ 4 = Severe

**Health** : 1

**Fire** : 0

**Physical hazards** : 3

**Key/Legend**

- SARA Superfund Amendments and Reauthorization Act
- OSHA Occupational Safety and Health Administration
- DOT Department of Transportation
- TSCA Toxic Substance Control Act
- NTP National Toxicology Program
- ACGIH American Conference of Governmental Industrial Hygienists



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PEL	Permissible Exposure Limit
STEL	Short Term Exposure Limit
TLV	Threshold Limit Value
TDG	Transportation of Dangerous Goods
CAS	Chemical Abstracts Service
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
TWA	Time Weighted Average
Prop	Proposition
ATE	Acute Toxicity Estimate

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