

Safety Data Sheet

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

Date of issue: 07/21/2015 Version: 2.0

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

1.1. Product identifier

Product form : Mixture

Product name : Halothane (3.00% - 5.00%), Carbon Dioxide (3.00% - 57.82%), Nitrous Oxide (39.17% -

65.00%) in Oxygen

Product code : HC-2004-03492

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 2700 Post Oak Boulevard Houston, TX 77056 - USA T 1-800-819-1704 www.us.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

GHS-US classification

 Ox. Gas 1
 H270

 Compressed gas
 H280

 Eye Dam. 1
 H318

 Repr. 2
 H361

 STOT SE 3
 H335

 STOT SE 3
 H336

Full text of H-phrases: see section 16

2.2. Label elements

GHS-US labeling

Hazard pictograms (GHS-US)



GHS04





GHS07



Signal word (GHS-US) : Danger

Hazard statements (GHS-US) : H270 - May cause or intensify fire; oxidizer

H280 - Contains gas under pressure; may explode if heated

H318 - Causes serious eye damage

H336 - May cause drowsiness or dizziness

H361 - Suspected of damaging fertility or the unborn child (Inhalation) OSHA-H01 - May displace oxygen and cause rapid suffocation

CGA-HG03 - May increase respiration and heart rate CGA-HG22 - Corrosive to the respiratory tract.

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

P220 - Keep/Store away from combustible materials, clothing

P244 - Keep reduction valves/valves and fittings free from oil and grease

P261 - Avoid breathing gas

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

P280 - Wear eye protection, face protection, protective gloves, protective clothing

P284 - Wear respiratory protection. Consult respiratory device supplier's product information

for the selection of the appropriate device.

P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing P305+P351+P338 - If in eyes: Rinse cautiously with water for several minutes. Remove contact

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lenses, if present and easy to do. Continue rinsing P307+P311 - If exposed: Call a poison center/doctor

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-PG14 - Approach suspected leak area with caution CGA-PG20 - Use only with equipment of compatible materials of construction

CGA-PG21 - Open valve slowly

CGA-PG22 - Use only with equipment cleaned for oxygen service

2.3. Other hazards

No additional information available

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
Nitrous oxide	(CAS No) 10024-97-2	39.17 - 65	Ox. Gas 1, H270 Liquefied gas, H280 STOT SE 3, H336
Carbon dioxide	(CAS No) 124-38-9	3 - 57.82	Liquefied gas, H280
Oxygen	(CAS No) 7782-44-7	0.01 - 50	Ox. Gas 1, H270 Compressed gas, H280
Halothane	(CAS No) 151-67-7	3 - 5	Acute Tox. 4 (Inhalation), H332 Skin Irrit. 2, H315 Eye Dam. 1, H318 Repr. 2, H361 STOT SE 3, H336 STOT SE 3, H335

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 : Rinse immediately with plenty of water for 15 minutes. Remove contact lenses, if present and

easy to do. Continue rinsing. Get immediate medical advice/attention.

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 : May displace oxygen and cause rapid suffocation. May cause drowsiness or dizziness. May

increase respiration and heart rate. Corrosive to the respiratory tract.

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

Symptoms/injuries after eye contact : Causes serious eye damage.

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

Symptoms/injuries upon intravenous : Not k

administration

: Not known.

Chronic symptoms : Suspected of damaging fertility. Suspected of damaging 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.

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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. 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. Combustible materials. Reducing agents.

7.3. Specific end use(s)

See Section 1.2.

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Halothane (3.00% - 5.00%), Carbon Dioxide (3.00% - 57.82%), Nitrous Oxide (39.17% - 65.00%) in Oxygen

SECTION 8: Exposure controls/personal protection

Control parameters

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ACGIH	Not applicable
OSHA	Not applicable
Halothane (151-67-7)	
ACGIH	Not applicable
OSHA	Not applicable

Carbon dioxide (124-38-9)		
ACGIH	ACGIH TWA (ppm)	5000 ppm
ACGIH	ACGIH STEL (ppm)	30000 ppm
OSHA	OSHA PEL (TWA) (mg/m³)	9000 mg/m³
OSHA	OSHA PEL (TWA) (ppm)	5000 ppm

Nitrous oxide (10024-97-2)		
ACGIH	ACGIH TWA (ppm) 50 ppm	
OSHA	Not applicable	

Oxygen (7782-44-7)	
ACGIH	Not applicable
OSHA	Not applicable

Exposure controls

Eye protection

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. Oxygen detectors should be used

when asphyxiating gases may be released.

Hand protection : Wear working gloves when handling gas containers. 29 CFR 1910.138: Hand Protection. Wear chemically resistant protective gloves when making or breaking process connections.

Wear safety glasses with side shields. Wear goggles and a face shield when transfilling or

breaking transfer connections. 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.

Wear a respirator when performing non-routine tasks not limited to line breaking or sampling. Respiratory protection

Wear a respirator during routine operations if determined to be necessary during a processspecific review. Consult respirator suppliers' product information or their representatives for the

selection of the appropriate respirator.

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.

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

SECTION 9: Physical and chemical properties

Information on basic physical and chemical properties

Physical state

Clear, colorless gas. **Appearance**

Color : Colorless Odor : Sweet

Odor threshold No data available рΗ No data available Melting point : No data available Freezing point No data available Boiling point : No data available

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Flash point : Not applicable - not flammable

Relative evaporation rate (butyl acetate=1) : No data available

Flammability (solid, gas) : See Section 2.1 and 2.2

Explosion limits : Not applicable - not flammable

Explosive properties : Not applicable - not flammable.

Oxidizing properties : Not combustible but enhances combustion of other substances. May cause or intensify fire;

oxidizer.

Vapor pressure : No data available
Relative density : No data available
Relative vapor density at 20 °C : No data available

Molecular mass : Not applicable for gas-mixtures.

Relative gas density : Heavier than air : No data available Solubility Log Pow No data available : No data available Log Kow Auto-ignition temperature No data available Decomposition temperature : No data available : No data available Viscosity Viscosity, kinematic No data available Viscosity, dynamic : No data available

9.2. Other information

Additional information : Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below

ground level.

SECTION 10: Stability and reactivity

10.1. Reactivity

None known.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

May react violently with reducing agents. 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

Combustible materials. Flammable materials. Reducing agents.

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

Halothane (151-67-7)	
LD50 oral rat	5450 μl/kg
LC50 inhalation rat (mg/l)	120 mg/l/4h
LC50 inhalation rat (ppm)	29000 ppm/4h
ATE US (gases)	4500.000 ppmV/4h
ATE US (dust, mist)	1.500 mg/l/4h
Carbon dioxide (124-38-9)	
LC50 inhalation rat (ppm)	820000 ppm/4h

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Nitrous oxide (10024-97-2)	
LC50 inhalation rat (ppm)	250000 ppm/4h
Oxygen (7782-44-7)	- Control Ph
LC50 inhalation rat (ppm)	800000 ppm/4h
Skin corrosion/irritation	: Not classified
Serious eye damage/irritation	: Causes serious eye damage.
Respiratory or skin sensitization	: Not classified
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified
Carcinogenicity	. Not classified
Reproductive toxicity	: Suspected of damaging fertility or the unborn child (Inhalation).
Specific target organ toxicity (single exposure)	: May cause respiratory irritation. May cause drowsiness or dizziness.
Specific target organ toxicity (repeated exposure)	: Not classified
Aspiration hazard	: Not classified
Symptoms/injuries after inhalation	: May displace oxygen and cause rapid suffocation. May cause drowsiness or dizziness. May increase respiration and heart rate. Corrosive to the respiratory tract.
Symptoms/injuries after skin contact	: Adverse effects not expected from this product.
Symptoms/injuries after eye contact	: Causes serious eye damage.
Symptoms/injuries after ingestion	: Ingestion is not considered a potential route of exposure.
Symptoms/injuries upon intravenous administration	: Not known.

SECTION 12: Ecological information

12.1. Toxicity

Chronic symptoms

No additional information available

12.2. Persistence and degradability

Carbon dioxide (124-38-9)	
Persistence and degradability	No ecological damage caused by this product.
Nitrous oxide (10024-97-2)	
Persistence and degradability	Not applicable for inorganic gases.
Oxygen (7782-44-7)	
Persistence and degradability	No ecological damage caused by this product.

: Suspected of damaging fertility. Suspected of damaging the unborn child.

12.3. Bioaccumulative potential

Carbon dioxide (124-38-9)	
BCF fish 1	(no bioaccumulation)
Log Pow	0.83
Bioaccumulative potential	No ecological damage caused by this product.
Nitrous oxide (10024-97-2)	
Log Pow	Not applicable for inorganic gases.
Bioaccumulative potential	No data available.
Oxygen (7782-44-7)	
Log Pow	Not applicable for inorganic gases.
Bioaccumulative potential	No ecological damage caused by this product.

12.4. Mobility in soil

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Carbon dioxide (124-38-9)	
Ecology - soil	No ecological damage caused by this product.
Nitrous oxide (10024-97-2)	
Ecology - soil	Because of its high volatility, the product is unlikely to cause ground or water pollution.
Oxygen (7782-44-7)	
Ecology - soil	No ecological damage caused by this product.

Other adverse effects

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

SECTION 13: Disposal considerations

Waste treatment methods

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

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 : UN3156 Compressed gas, oxidizing, n.o.s.

UN-No.(DOT)

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

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

5.1 - Oxidizer



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

DOT Symbols : G - Identifies PSN requiring a technical name

DOT Special Provisions (49 CFR 172.102) : A14 - This material is not authorized to be transported as a limited quantity or consumer

commodity in accordance with 173.306 of this subchapter when transported aboard an aircraft.

DOT Packaging Exceptions (49 CFR 173.xxx) 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 : D - The material must be stowed "on deck only" on a cargo vessel and on a passenger vessel

> carrying a number of passengers limited to not more than the larger of 25 passengers or one passenger per each 3 m of overall vessel length, but the material is prohibited on passenger

vessels in which the limiting number of passengers is exceeded.

Additional information

Other information : No supplementary information available.

No additional information available

Transport by sea

UN-No. (IMDG)

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

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Class (IMDG) : 2.2 - Non-flammable, non-toxic gases

Air transport

UN-No. (IATA) : 3156

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

Class (IATA) : 2

SECTION 15: Regulatory information

15.1. US Federal regulations

Carbon dioxide (124-38-9)

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

Nitrous oxide (10024-97-2)

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

15.2. International regulations

CANADA

No additional information available

Carbon dioxide (124-38-9)		
Listed on the Canadian DSL (Domestic	Sustances List)	
WHMIS Classification	Class A - Compressed Gas	
Nitrous oxide (10024-97-2)		
Listed on the Canadian DSL (Domestic Sustances List)		
WHMIS Classification	Class A - Compressed Gas Class C - Oxidizing Material Class D Division 2 Subdivision A - Very toxic material causing other toxic effects	
Oxygen (7782-44-7)		
Listed on the Canadian DSL (Domestic	Sustances List)	

Class A - Compressed Gas Class C - Oxidizing Material

WHMIS Classification

EU-RegulationsNo additional information available

Carbon dioxide (124-38-9)

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

Nitrous oxide (10024-97-2)

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

Oxygen (7782-44-7)

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Not classified

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

No additional information available

National regulations

Carbon dioxide (124-38-9)

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 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)

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Nitrous oxide (10024-97-2)

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)

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)

15.3. US State regulations

Nitrous oxide (10024-97-2)				
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 significant risk level (NSRL)
No	Yes	Yes	No	

Carbon dioxide (124-38-9)

- 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

Nitrous oxide (10024-97-2)

- 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

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.

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Full text of H-phrases:

kt of 11 philades.		
Acute Tox. 4 (Inhalation)	Acute toxicity (inhalation) Category 4	
Compressed gas	Gases under pressure Compressed gas	
Eye Dam. 1	Serious eye damage/eye irritation Category 1	
Liquefied gas	Gases under pressure Liquefied gas	
Ox. Gas 1	Oxidizing gases Category 1	
Repr. 2	Reproductive toxicity Category 2	
Skin Irrit. 2	Skin corrosion/irritation Category 2	
STOT SE 3	Specific target organ toxicity (single exposure) Category 3	
STOT SE 3	Specific target organ toxicity (single exposure) Category 3	
H270	May cause or intensify fire; oxidizer	
H280	Contains gas under pressure; may explode if heated	
H315	Causes skin irritation	
H318	Causes serious eye damage	
H332	Harmful if inhaled	
H335	May cause respiratory irritation	
H336	May cause drowsiness or dizziness	
H361	Suspected of damaging fertility or the unborn child	

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.

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