

Safety Data Sheet

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

Date of issue: 08/20/2014 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 Dioxide (20%), Carbon Monoxide (10%), Hydrogen (4%) in Nitrogen

Product code : SG-2004-00320

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 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)

Flam. Gas 1	H220
Compressed gas	H280
Acute Tox. 4 (Inhalation:gas)	H332
Repr. 1A	H360
STOT RE 1	H372

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2.2. Label elements

GHS-US labeling

Hazard pictograms (GHS-US)









Signal word (GHS-US)

Hazard statements (GHS-US)

: Danger

: H220 - Extremely flammable gas

H280 - Contains gas under pressure; may explode if heated

H332 - Harmful if inhaled

H360 - May damage fertility or the unborn child

H372 - Causes damage to organs (central nervous system) through prolonged or repeated exposure (Inhalation)

CGA-HG03 - May form explosive mixtures with air

Precautionary statements (GHS-US)

CGA-HG10 - Asphyxiating even with adequate oxygen
P202 - Do not handle until all safety precautions have been read and understood

P210 - Keep away from heat, open flames, sparks, hot surfaces. - No smoking P220 - Keep/Store away from clothing, combustible materials

P260 - Do not breathe gas

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

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

P304 + P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing

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

P370 + P376 - In case of fire, stop leak if safe to do so.

P377 - Leaking gas fire: Do not extinguish, unless leak can be stopped safely P381 - In case of leaking gas fire, eliminate all ignition sources if safe to do so

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

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

Name	Product identifier	%	Classification (GHS-US)
Nitrogen	(CAS No)7727-37-9	66	Compressed gas, H280
Carbon dioxide	(CAS No)124-38-9	20	Simple Asphy, H380 Liquefied gas, H280
Carbon monoxide	(CAS No)630-08-0	10	Flam. Gas 1, H220 Compressed gas, H280 Acute Tox. 3 (Inhalation:gas), H331 Repr. 1A, H360 STOT RE 1, H372
Hydrogen	(CAS No)1333-74-0	4	Flam. Gas 1, H220 Compressed gas, H280

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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. May increase respiration and heart rate. If

you feel unwell, seek medical advice.

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

Symptoms/injuries after ingestion

: Ingestion is not considered a potential route of exposure.

Symptoms/injuries upon intravenous

: Not known.

administration
Chronic symptoms

: May damage fertility. May damage the unborn child. Causes damage to organs (CNS) through

prolonged or repeated exposure (Inhalation).

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

Reactivity

: This product is flammable. Extremely flammable gas.

Explosion hazard

May form flammable/explosive vapor-air mixture. Heat may build pressure, rupturing closed

containers, spreading fire and increasing risk of burns and injuries.

: 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. Remove ignition sources. Monitor concentration of released product. Consider the risk of potentially explosive atmospheres. Wear self-contained breathing apparatus when entering atmospheres of unknown contaminant concentration until proven to be safe.

6.2. Environmental precautions

Try to stop release if safe to do so.

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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. Handle empty containers with care because residual vapors are flammable. In use, may form flammable vapor-air mixture. Close valve after each use and when empty.

Precautions for safe handling

Do not handle until all safety precautions have been read and understood. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Use only non-sparking tools. Use only

outdoors or in a well-ventilated area.

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

Conditions for safe storage, including any incompatibilities

Technical measures

: Comply with applicable regulations. Proper grounding procedures to avoid static electricity should be followed.

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 Incompatible materials None known.

Air. Oxidizing materials.

7.3. Specific end use(s)

Test gas/Calibration gas.

SECTION 8: Exposure controls/personal protection

Control parameters

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

Nitrogen (7727-37-9)

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

Hydrogen (1333-74-0)

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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.

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 : 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.

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

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

Relative evaporation rate (ether=1) : Not applicable for gas-mixtures.

Melting point No data available No data available Freezing point No data available **Boiling point** Flash point No data available Auto-ignition temperature No data available Decomposition temperature No data available No data available Flammability (solid, gas) Vapor pressure No data available 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 •: 2000 mg/l •: 1.6 mg/l

Log Pow: No data availableLog Kow: No data availableViscosity, kinematic: No data availableViscosity, dynamic: No data availableExplosive properties: No data available

Oxidizing properties : None.

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

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Possibility of hazardous reactions

Can form explosive mixture with air.

10.4. **Conditions to avoid**

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

Incompatible materials

Air. Oxidizing materials.

Hazardous decomposition products

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

SECTION 11: Toxicological information

Information on toxicological effects

Acute toxicity : Harmful if inhaled.

Carbon Dioxide (20%), Carbon Monoxide (10%), Hydrogen (4%) in Nitrogen		
ATE US (gases)	4500.00000000 ppmV/4h	
Carbon monoxide (630-08-0)		
LC50 inhalation rat (ppm)	1880 ppm/4h	
ATE US (gases)	1880.00000000 ppmV/4h	
Nitrogen (7727-37-9)		
LC50 inhalation rat (ppm)	410000 ppm/4h	
Hydrogen (1333-74-0)		
LC50 inhalation rat (ppm)	410000 ppm/4h	
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

: May damage fertility or the unborn child. Reproductive toxicity

Specific target organ toxicity (single exposure) : Not classified

Specific target organ toxicity (repeated

exposure)

: Causes damage to organs (central nervous system) through prolonged or repeated exposure (Inhalation).

Aspiration hazard

: Not classified

Symptoms/injuries after inhalation

: Headache. Asphyxiating even with adequate oxygen. May increase respiration and heart rate. If

you feel unwell, seek medical advice.

Symptoms/injuries after skin contact Symptoms/injuries after eye contact

: Adverse effects not expected from this product.

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. Causes damage to organs (CNS) through

prolonged or repeated exposure (Inhalation).

SECTION 12: Ecological information

12.1. **Toxicity**

No additional information available

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.

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Nitrogen (7727-37-9)	
Persistence and degradability	No ecological damage caused by this product.
Carbon dioxide (124-38-9)	
Persistence and degradability	No ecological damage caused by this product.
Hydrogen (1333-74-0)	
Persistence and degradability	No ecological damage caused by this product.
	The cooling can damage caucous 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.
Carbon dioxide (124-38-9)	
BCF fish 1	(no bioaccumulation)
Log Pow	0.83
Bioaccumulative potential	No ecological damage caused by this product.
Hydrogen (1333-74-0)	
BCF fish 1	(no bioaccumulation expected)
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.
	140 ccological damage caused by this product.
Carbon dioxide (124-38-9)	No coolerical demand accord by this product
Ecology - soil	No ecological damage caused by this product.
Hydrogen (1333-74-0)	
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.
	. 55 3.55
SECTION 13: Disposal conside	rations
13.1. Waste treatment methods	Tallono ——————————————————————————————————
Vaste treatment methods	Contact cumplior if guidance is required. Do not disphared into any place where its accomplate
waste treatment methods	: Contact supplier if guidance is required. Do not discharge into any place where its accumulation

Vaste 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 gas should be flared through a suitable burner with flash back arrestor. Do not discharge into areas where there is a risk of forming an explosive mixture with air.

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.

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SECTION 14: Transport information

In accordance with DOT

Transport document description : UN1954 Compressed gas, flammable, n.o.s., 2.1

UN-No.(DOT) : 1954 DOT NA no. : UN1954

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

Department of Transportation (DOT) Hazard

Classes

Hazard labels (DOT) : 2.1 - Flammable gas

2

DOT Symbols : G - Identifies PSN requiring a technical name

DOT Packaging Exceptions (49 CFR 173.xxx) : 306

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 : Forbidden

(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

: 2.1 - Class 2.1 - Flammable gas 49 CFR 173.115

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.

DOT Vessel Stowage Other : 40 - Stow "clear of living quarters"

Additional information

Other information : No supplementary information available.

ADR

Transport document description : UN 1954, 2.1, (B/D)

Class (ADR) : 2 - Gases Hazard identification number (Kemler No.) : 23

Classification code (ADR) : 1F

Danger labels (ADR) : 2.1 - Flammable gases



Orange plates :



Tunnel restriction code (ADR) : B/D LQ : 0 Excepted quantities (ADR) : E0

Transport by sea

UN-No. (IMDG) : 1954

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

Class (IMDG) : 2.1 - Flammable gases

Air transport

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UN-No.(IATA) : 1954

Proper Shipping Name (IATA) : COMPRESSED GAS, FLAMMABLE, 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 Sustance	es 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 Sustances List)

WHMIS Classification Class A - Compressed Gas

Carbon dioxide (124-38-9)

Listed on the Canadian DSL (Domestic Sustances List)

WHMIS Classification Class A - Compressed Gas

Hydrogen (1333-74-0)

Listed on the Canadian DSL (Domestic Sustances List)

WHMIS Classification

Class A - Compressed Gas
Class B Division 1 - Flammable Gas

EU-Regulations

No additional information available

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

Not classified

Classification according to Directive 67/548/EEC or 1999/45/EC

15.2.2. National regulations

No additional information available

15.3. US State regulations

Carbon monoxide (630-08-0	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)
	Yes			

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

Carbon dioxide (124-38-9)

U.S. - Massachusetts - Right To Know List

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Carbon dioxide (124-38-9)

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

Hydrogen (1333-74-0)

- 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

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:

kt of 11 philaded: dee deedlon 10.	
Acute Tox. 3 (Inhalation:gas)	Acute toxicity (inhalation:gas) Category 3
Acute Tox. 4 (Inhalation:gas)	Acute toxicity (inhalation:gas) Category 4
Compressed gas	Gases under pressure Compressed gas
Flam. Gas 1	Flammable gases Category 1
Liquefied gas	Gases under pressure Liquefied gas
Repr. 1A	Reproductive toxicity Category 1A
Simple Asphy	Simple Asphyxiant
STOT RE 1	Specific target organ toxicity (repeated exposure) Category 1
H220	Extremely flammable gas
H280	Contains gas under pressure; may explode if heated
H331	Toxic if inhaled
H332	Harmful if inhaled
H360	May damage fertility or the unborn child
H372	Causes damage to organs through prolonged or repeated exposure
H380	May displace oxygen and cause rapid suffocation

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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