

Safety Data Sheet

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

Date of issue: 10/20/2015 Version: 2.0

SECTION 1: Identification

1.1. Identification

Product form : Mixture

Product name : Nitric Oxide (0.50% - 0.9999%), Sulfur Dioxide (0.50% - 2.00%) in Nitrogen

Product code : SG-2003-04236

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

www.us.airliquide.com

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

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

Acute Tox. 4 (Inhalation:gas)

H332 - Harmful if inhaled

Skin Irrit. 2

H315 - Causes skin irritation

Eye Irrit. 2A

H319 - Causes serious eye irritation

Full text of H-phrases: see section 16

2.2. Label elements

GHS-US labeling

Hazard pictograms (GHS-US)





GHS04

04 GHS07

Signal word (GHS-US) : Warning

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

H315 - Causes skin irritation

H319 - Causes serious eye irritation

H332 - Harmful if inhaled

CGA-HG11 - Symptoms may be delayed

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

P261 - Avoid breathing gas

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

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

P302+P352 - If on skin: Wash with plenty of water

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

lenses, if present and easy to do. Continue rinsing

P308+P313 - If exposed or concerned: Get medical advice/attention P362 - Take off contaminated clothing and wash it before reuse

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

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CGA-PG21 - Open valve slowly

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
Nitrogen	(CAS No) 7727-37-9	97.0001 - 99	Compressed gas, H280
Sulfur Dioxide	(CAS No) 7446-09-5	0.5 - 2	Liquefied gas, H280 Acute Tox. 3 (Inhalation:gas), H331 Skin Corr. 1B, H314 Eye Dam. 1, H318
Nitric oxide	(CAS No) 10102-43-9	0.5 - 0.9999	Ox. Gas 1, H270 Compressed gas, H280 Acute Tox. 1 (Inhalation:gas), H330 Skin Corr. 1B, H314 STOT SE 2, H371

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 : Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash

contaminated clothing before reuse. If skin irritation occurs: Get medical advice/attention.

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

First-aid measures after eye contact : Rinse immediately with plenty of water for 15 minutes. Remove contact lenses, if

easy to do. Continue rinsing. If eye irritation occurs, seek medical 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 : Harmful if inhaled.

Symptoms/injuries after skin contact : Causes skin irritation.

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

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

Symptoms/injuries upon intravenous

administration

: Not known.

Chronic symptoms : Adverse effects not expected from this product.

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.

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.

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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.

Incompatible products : None known.
Incompatible materials : None known.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Nitric oxide (10102-43-9)		
ACGIH	ACGIH TWA (ppm)	25 ppm
OSHA	OSHA PEL (TWA) (mg/m³)	30 mg/m³
OSHA	OSHA PEL (TWA) (ppm)	25 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

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Exposure controls

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

exhaust ventilation. Systems under pressure should be regularly checked for leakages. 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. 29 CFR 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. 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 Odor threshold No data available No data available pΗ No data available Melting point Freezing point No data available

Boiling point No data available

: Not applicable - not flammable Flash point

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

Flammability (solid, gas) See Section 2.1 and 2.2 : Not applicable - not flammable **Explosion limits** Explosive properties Not applicable - not flammable.

: None. Oxidizing properties

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

Molecular mass Not applicable for gas-mixtures.

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

Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

None known.

10.2. **Chemical stability**

Stable under normal conditions

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10.3. Possibility of hazardous reactions

None known.

10.4. Conditions to avoid

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

10.5. Incompatible materials

None known.

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 : Inhalation:gas: Harmful if inhaled.

Nitric Oxide (0.50% - 0.9999%), Sulfur Dioxide (0.50% - 2.00%) in Nitrogen		
ATE US (gases)	10998.102 ppmV/4h	
Nitrogen (7727-37-9)		
LC50 inhalation rat (ppm)	820000 ppm/4h	
Nitric oxide (10102-43-9)		
LC50 inhalation rat (ppm)	57.5 ppmV/4h	
ATE US (gases)	57.500 ppmV/4h	
Sulfur Dioxide (7446-09-5)		
LC50 inhalation rat (ppm)	1260 ppm/4h	
ATE US (gases)	1260.000 ppmV/4h	
Skin corrosion/irritation	: Causes skin irritation.	
Serious eye damage/irritation	: Causes serious eye irritation.	
Respiratory or skin sensitization : Not classified		
Germ cell mutagenicity	: Not classified	
Carcinogenicity	: Not classified	

Sulfu	ır Diox	ida (7.	446-N	9-51

IARC group 3 - Not classifiable

Reproductive toxicity : Not classified

Specific target organ toxicity (repeated

Specific target organ toxicity (single exposure)

exposure)

: Not classified

: Not classified

Aspiration hazard : Not classified

Symptoms/injuries after inhalation : Harmful if inhaled.

Symptoms/injuries after skin contact : Causes skin irritation.

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

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

Symptoms/injuries upon intravenous : Not known.

administration

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Chronic symptoms : Adverse effects not expected from this product.

SECTION 12: Ecological information

12.1. Toxicity

No additional information available

12.2. Persistence and degradability

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Nitrogen (7727-37-9)		
Persistence and degradability No ecological damage caused by this product.		
Nitric oxide (10102-43-9)		
Persistence and degradability	Not applicable for inorganic gases.	

12.3. Bioaccumulative potential

Nitrogen (7727-37-9)		
Log Pow	Not applicable for inorganic gases.	
Bioaccumulative potential	No ecological damage caused by this product.	
Nitric oxide (10102-43-9)		
Log Pow	Not applicable for inorganic gases.	
Bioaccumulative potential	No data available.	
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

Nitrogen (7727-37-9)	
Ecology - soil	No ecological damage caused by this product.
Nitric oxide (10102-43-9)	
Ecology - soil Because of its high volatility, the product is unlikely to cause ground or water pollution.	

12.5. Other adverse effects

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

Effect on the global warming : No known ecological damage caused by 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., 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

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

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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.

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

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)

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)

SECTION 15: Regulatory information

15.1. US Federal regulations

Nitrogen	(7727-37-9)

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

Nitric oxide (10102-43-9)

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

Listed on the United States SARA Section 302

100 SARA Section 302 Threshold Planning

Quantity (TPQ)

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

Quantity (TPQ)

500

15.2. International regulations

CANADA

Nitrogen (7727-37-9)			
Listed on the Canadian DSL (Domestic Sustances List)			
WHMIS Classification	WHMIS Classification Class A - Compressed Gas		
Nitric oxide (10102-43-9)			
Listed on the Canadian DSL (Domestic Sustances List)			
WHMIS Classification	Class A - Compressed Gas Class C - Oxidizing Material Class D Division 1 Subdivision A - Very toxic material causing immediate and serious toxic effects Class E - Corrosive Material		

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Sulfur Dioxide (7446-09-5)		
Listed on the Canadian DSL (Domestic Sustances 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

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)

Nitric oxide (10102-43-9)

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)

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

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	

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

Nitric oxide (10102-43-9)

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

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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:

At Of Fi-philases.	
Acute Tox. 1 (Inhalation:gas)	Acute toxicity (inhalation:gas) Category 1
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
Eye Dam. 1	Serious eye damage/eye irritation Category 1
Eye Irrit. 2A	Serious eye damage/eye irritation Category 2A
Liquefied gas	Gases under pressure Liquefied gas
Ox. Gas 1	Oxidizing gases Category 1
Skin Corr. 1B	Skin corrosion/irritation Category 1B
Skin Irrit. 2	Skin corrosion/irritation Category 2
STOT SE 2	Specific target organ toxicity (single exposure) Category 2
H270	May cause or intensify fire; oxidizer
H280	Contains gas under pressure; may explode if heated
H314	Causes severe skin burns and eye damage
H315	Causes skin irritation
H318	Causes serious eye damage
H319	Causes serious eye irritation
H330	Fatal if inhaled
H331	Toxic if inhaled
H332	Harmful if inhaled
H371	May cause damage to organs

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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