Safety Data Sheet

Section 1: Identification

Product identifier

Product Name • **Oxygen (0.0001 - 19.49%), Nitrogen (Balance)**

Product Code • MSDS No.: 90058

Relevant identified uses of the substance or mixture and uses advised against

Recommended use • Calibration Gas

Details of the supplier of the safety data sheet

Manufacturer • Air Liquide

2700 Post Oak Blvd.
Houston, TX 77056
United States
www.us.airliquide.com

Telephone (Technical) • 713-896-2896

Telephone (Technical) • 800-819-1704

Emergency telephone number

Manufacturer • 800-424-9300

Manufacturer • +1 703-527-3887

Section 2: Hazard Identification

United States (US)

According to OSHA 29 CFR 1910.1200 HCS

Classification of the substance or mixture

OSHA HCS 2012 • Compressed Gas - H280
Simple Asphyxiant

Label elements

OSHA HCS 2012

WARNING

Hazard statements • Contains gas under pressure; may explode if heated - H280
May displace oxygen and cause rapid suffocation.

Precautionary statements

Storage/Disposal • Store in a well-ventilated place. - P403

Other hazards

OSHA HCS 2012

- Under United States Regulations (29 CFR 1910.1200 - Hazard Communication Standard), this product is considered hazardous.

Canada

According to WHMIS

Classification of the substance or mixture

WHMIS

- Compressed Gas - A

Label elements

WHMIS

- Compressed Gas - A

Other hazards

WHMIS

- This material is a simple asphyxiant. May displace or reduce oxygen available for breathing especially in confined spaces.
  In Canada, the product mentioned above is considered hazardous under the Workplace Hazardous Materials Information System (WHMIS).

Section 3 - Composition/Information on Ingredients

Substances

- Material does not meet the criteria of a substance.

Mixtures

Hazardous Components					
Chemical Name	**Identifiers**	**%(weight)**	**LD50/LC50**	**Classifications According to Regulation/Directive**	**Comments**
Nitrogen	**CAS:**7727-37-9	80.51% TO 99.999%	NDA	**OSHA HCS 2012:** Press. Gas - Comp.; Simple Asphyxiant	Balance
Oxygen	**CAS:**7782-44-7	0.0001% TO 19.49%	NDA	**OSHA HCS 2012:** Ox. Gas 1; Press Gas - Comp.	1 ppm to 19.49%

See Section 16 for full text of H-statements and R-phrases.

Section 4: First-Aid Measures

Description of first aid measures

Inhalation

- IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Administer oxygen if breathing is difficult. Give artificial respiration if victim is not breathing. If signs/symptoms continue, get medical attention.

Skin

- Although exposure is unlikely, in case of contact immediately flush skin with running water. If skin irritation develops get medical advice/attention.

Eye
- First aid is not expected to be necessary if material is used under ordinary conditions and as recommended. If irritation develops and persists, get medical attention.

Ingestion
- Ingestion is not considered a potential route of exposure.

Most important symptoms and effects, both acute and delayed

- Refer to Section 11 - Toxicological Information.

Indication of any immediate medical attention and special treatment needed

Notes to Physician
- All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred. A potential health hazard associated with this gas is anoxia.

Other information

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves. RESCUERS SHOULD NOT ATTEMPT TO RETRIEVE VICTIMS OF EXPOSURE TO GASES WITHOUT ADEQUATE PERSONAL PROTECTIVE EQUIPMENT. At a minimum, Self-Contained Breathing Apparatus must be worn. Victim(s) who experience any adverse effect after over-exposure to this gas mixture must be taken for medical attention. Rescuers should be taken for medical attention if necessary. Take a copy of the label and the MSDS to physician or other health professional with victim(s).

Section 5: Fire-Fighting Measures

Extinguishing media

Suitable Extinguishing Media
- Use extinguishing agent suitable for type of surrounding fire.

Unsuitable Extinguishing Media
- No data available

Special hazards arising from the substance or mixture

Unusual Fire and Explosion Hazards
- Containers may explode when heated.
Ruptured cylinders may rocket.

Hazardous Combustion Products
- No data available

Advice for firefighters

- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.
Always wear thermal protective clothing when handling refrigerated/cryogenic liquids.
Wear positive pressure self-contained breathing apparatus (SCBA).
Move containers from fire area if you can do it without risk.
FIRE: If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.
FIRE INVOLVING TANKS: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
FIRE INVOLVING TANKS: Cool containers with flooding quantities of water until well after fire is out.
FIRE INVOLVING TANKS: Do not direct water at source of leak or safety devices; icing may occur.
FIRE INVOLVING TANKS: Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
FIRE INVOLVING TANKS: ALWAYS stay away from tanks engulfed in fire.

Section 6 - Accidental Release Measures

Personal precautions, protective equipment and emergency procedures

Personal Precautions

- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Do not touch or walk through spilled material. Ventilate the area before entry.

Emergency Procedures

- Stop leak if you can do it without risk. Keep unauthorized personnel away. Keep out of low areas. Stay upwind. Do not direct water at spill or source of leak. LARGE SPILL: Consider initial downwind evacuation for at least 500 meters (1/3 mile)

Environmental precautions

- No special environmental precautions necessary.

Methods and material for containment and cleaning up

Containment/Clean-up Measures

- Stop leak if you can do it without risk.
  Do not direct water at spill or source of leak.
  Use water spray to reduce vapors; do not put water directly on leak, spill area or inside container.
  If possible, turn leaking containers so that gas escapes rather than liquid.
  Isolate area until gas has dispersed.
  Ventilate the area.

Reference to other sections

- Refer to Section 8 - Exposure Controls/Personal Protection and Section 13 - Disposal Considerations.

Section 7 - Handling and Storage

Precautions for safe handling

Handling

- Use only with adequate ventilation. Ventilate closed spaces before entering. Be aware of any signs of dizziness or fatigue, especially if work is done in a poorly ventilated area; exposures to fatal concentrations of this gas mixture could occur without any significant warning symptoms, due to olfactory fatigue or oxygen deficiency. Cylinders should be firmly secured to prevent falling or being knocked -over. Do not attempt to repair, adjust, or in any other way modify cylinders. If there is a malfunction or another type of operational problem, contact nearest distributor immediately. Empty containers retain product residue and can be hazardous. Do not cut, weld, puncture or incinerate container.

Conditions for safe storage, including any incompatibilities

Storage

- Store in a cool, dry, well-ventilated place. Protect cylinders against physical damage. Cylinders should be firmly secured to prevent falling or being knocked -over.

Specific end use(s)

- Refer to Section 1.2 - Relevant identified uses.

Section 8 - Exposure Controls/Personal Protection

Control parameters

Exposure Limits/Guidelines

- Currently there are no applicable exposure limits established for this material.

Exposure controls

Engineering Measures/Controls

- Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Personal Protective Equipment

Pictograms

- 

Respiratory

- Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or symptoms are experienced.

Eye/Face

- Wear safety glasses.

Skin/Body

- Wear leather gloves when handling cylinders.

Environmental Exposure Controls

- Follow best practice for site management and disposal of waste. Controls should be engineered to prevent release to the environment, including procedures to prevent spills, atmospheric release and release to waterways.

Section 9 - Physical and Chemical Properties

Information on Physical and Chemical Properties

Material Description			
Physical Form	Gas	Appearance/Description	Colorless gas with no odor.
Color	Colorless	Odor	Odorless
Taste	Data lacking	Particulate Type	Not relevant
Particulate Size	Not relevant	Aerosol Type	Not relevant
Odor Threshold	None	Physical and Chemical Properties	Data lacking
General Properties			
Boiling Point	Data lacking	Melting Point	Data lacking
Decomposition Temperature	Data lacking	Heat of Decomposition	Data lacking
pH	Not relevant	Specific Gravity/Relative Density	Data lacking
Density	Data lacking	Bulk Density	Data lacking
Water Solubility	Moderately soluble	Solvent Solubility	Data lacking
Viscosity	Not relevant	Explosive Properties	Not explosive.
Oxidizing Properties:	Not an oxidizing gas.		
Volatility			
Vapor Pressure	Data lacking	Vapor Density	0.967 to 0.974 Air=1
Evaporation Rate	Data lacking	VOC (Wt.)	Data lacking
VOC (Vol.)	Data lacking	Volatiles (Wt.)	Data lacking
Volatiles (Vol.)	Data lacking		
Flammability			
Flash Point	Not relevant	UEL	Not relevant
LEL	Not relevant	Autoignition	Not relevant
Self-Accelerating Decomposition Temperature (SADT)	Not relevant	Heat of Combustion (ΔHc)	Not relevant
Burning Time	Not relevant	Flame Height	Not relevant
Flame Extension	Not relevant	Ignition Distance	Not relevant
Flame Duration	Not relevant	Flammability (solid, gas)	Not flammable.
Environmental			
Half-Life	Data lacking	Octanol/Water Partition coefficient	Data lacking
Coefficient of water/oil distribution	Data lacking	Bioaccumulation Factor	Data lacking
Bioconcentration Factor	Data lacking	Biochemical Oxygen Demand BOD/BOD5	Data lacking
Chemical Oxygen Demand	Data lacking	Persistence	Data lacking
Degradation	Data lacking		

Section 10: Stability and Reactivity

Reactivity

- No dangerous reaction known under conditions of normal use.

Chemical stability

- Stable under normal temperatures and pressures.

Possibility of hazardous reactions

- Hazardous polymerization will not occur.

Conditions to avoid

- Excess heat.

Incompatible materials

- No data available

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

Component Name	CAS	Data
Oxygen (0.0001% TO 19.49%)	7782-44-7	**Reproductive:** ihl-rat TCLo:10 pph/9H (22D preg)

GHS Properties	Classification
Acute toxicity	**OSHA HCS 2012** • Classification criteria not met
Aspiration Hazard	**OSHA HCS 2012** • Classification criteria not met
Carcinogenicity	**OSHA HCS 2012** • Classification criteria not met
Germ Cell Mutagenicity	**OSHA HCS 2012** • Classification criteria not met
Respiratory sensitization	**OSHA HCS 2012** • Classification criteria not met
Serious eye damage/Irritation	**OSHA HCS 2012** • Classification criteria not met
Skin corrosion/Irritation	**OSHA HCS 2012** • Classification criteria not met
Skin sensitization	**OSHA HCS 2012** • Classification criteria not met
STOT-RE	**OSHA HCS 2012** • Classification criteria not met
STOT-SE	**OSHA HCS 2012** • Classification criteria not met
Toxicity for Reproduction	**OSHA HCS 2012** • Classification criteria not met

Potential Health Effects

Inhalation

Acute (Immediate)

- If this material is released in a small, poorly ventilated area (i.e. an enclosed or confined space), an oxygen-deficient environment may occur. Individuals breathing such an atmosphere may experience symptoms which include headaches, ringing in ears, dizziness, drowsiness, unconsciousness, nausea, vomiting, and depression of all the senses. Under some circumstances of over -exposure, death may occur. The

following effects associated with decreased levels of oxygen: increase in breathing and pulse rate, emotional upset, abnormal fatigue, nausea, vomiting, collapse, loss of consciousness, convulsive movements, respiratory collapse and death.

Chronic (Delayed)
- No data available

Skin

Acute (Immediate)
- Under normal conditions of use, no health effects are expected.

Chronic (Delayed)
- Under normal conditions of use, no health effects are expected.

Eye

Acute (Immediate)
- Under normal conditions of use, no health effects are expected.

Chronic (Delayed)
- Under normal conditions of use, no health effects are expected.

Ingestion

Acute (Immediate)
- Ingestion is not anticipated to be a likely route of exposure to this product.

Chronic (Delayed)
- Ingestion is not anticipated to be a likely route of exposure to this product.

Mutagenic Effects
- No data available.

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.

Reproductive Effects
- No data available.

Section 12 - Ecological Information

Toxicity
- Material data lacking.

Persistence and degradability
- Material data lacking.

Bioaccumulative potential
- Material data lacking.

Mobility in Soil
- Material data lacking.

Results of PBT and vPvB assessment
- PBT and vPvB assessment has not been conducted for this material.

Other adverse effects
- Material data lacking.

Section 13 - Disposal Considerations

Waste treatment methods

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

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

Section 14 - Transport Information

	14.1 UN number	14.2 UN proper shipping name	14.3 Transport hazard class(es)	14.4 Packing group	14.5 Environmental hazards
DOT	UN1956	Compressed gases, n.o.s. (Nitrogen, oxygen)	2.2	NDA	NDA
TDG	UN1956	COMPRESSED GAS, N.O.S. (Nitrogen, oxygen)	2.2	NDA	NDA
IMO/IMDG	UN1956	COMPRESSED GAS, N.O.S. (Nitrogen, oxygen)	2.2	NDA	NDA
IATA/ICAO	UN1956	Compressed gases, n.o.s. (Nitrogen, oxygen)	2.2	NDA	NDA

Special precautions for user

- Cylinders should be transported in a secure position, in a well -ventilated vehicle. The transportation of compressed gas cylinders in automobiles or in closed -body vehicles can present serious safety hazards. If transporting these cylinders in vehicles, ensure these cylinders are not exposed to extremely high temperatures (as may occur in an enclosed vehicle on a hot day). Additionally, the vehicle should be well -ventilated during transportation.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

- Not relevant.

Section 15 - Regulatory Information

Safety, health and environmental regulations/legislation specific for the substance or mixture

SARA Hazard Classifications

- Pressure(Sudden Release of), Acute

State Right To Know				
Component	**CAS**	**MA**	**NJ**	**PA**
Nitrogen	7727-37-9	Yes	Yes	Yes
Oxygen	7782-44-7	Yes	Yes	Yes

Inventory				
Component	**CAS**	**Canada DSL**	**Canada NDSL**	**TSCA**
Nitrogen	7727-37-9	Yes	No	Yes
Oxygen	7782-44-7	Yes	No	Yes

Canada

Labor

Canada - WHMIS - Classifications of Substances

- Oxygen 7782-44-7 0.0001% TO 19.49% A, C
- Nitrogen 7727-37-9 80.51% TO 99.999% A

Canada - WHMIS - Ingredient Disclosure List

- Oxygen 7782-44-7 0.0001% TO 19.49% Not Listed
- Nitrogen 7727-37-9 80.51% TO 99.999% Not Listed

Environment

Canada - CEPA - Priority Substances List

- Oxygen 7782-44-7 0.0001% TO 19.49% Not Listed
- Nitrogen 7727-37-9 80.51% TO 99.999% Not Listed

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United States

Labor

U.S. - OSHA - Process Safety Management - Highly Hazardous Chemicals

- Oxygen 7782-44-7 0.0001% TO 19.49% Not Listed
- Nitrogen 7727-37-9 80.51% TO 99.999% Not Listed

U.S. - OSHA - Specifically Regulated Chemicals

- Oxygen 7782-44-7 0.0001% TO 19.49% Not Listed
- Nitrogen 7727-37-9 80.51% TO 99.999% Not Listed

Environment

U.S. - CAA (Clean Air Act) - 1990 Hazardous Air Pollutants

- Oxygen 7782-44-7 0.0001% TO 19.49% Not Listed
- Nitrogen 7727-37-9 80.51% TO 99.999% Not Listed

U.S. - CERCLA/SARA - Hazardous Substances and their Reportable Quantities

- Oxygen 7782-44-7 0.0001% TO 19.49% Not Listed
- Nitrogen 7727-37-9 80.51% TO 99.999% Not Listed

U.S. - CERCLA/SARA - Radionuclides and Their Reportable Quantities

- Oxygen 7782-44-7 0.0001% TO 19.49% Not Listed
- Nitrogen 7727-37-9 80.51% TO 99.999% Not Listed

U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances EPCRA RQs

- Oxygen 7782-44-7 0.0001% TO 19.49% Not Listed
- Nitrogen 7727-37-9 80.51% TO 99.999% Not Listed

U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances TPQs

- Oxygen 7782-44-7 0.0001% TO 19.49% Not Listed
- Nitrogen 7727-37-9 80.51% TO 99.999% Not Listed

U.S. - CERCLA/SARA - Section 313 - Emission Reporting

- Oxygen 7782-44-7 0.0001% TO 19.49% Not Listed
- Nitrogen 7727-37-9 80.51% TO 99.999% Not Listed

U.S. - CERCLA/SARA - Section 313 - PBT Chemical Listing

- Oxygen 7782-44-7 0.0001% TO 19.49% Not Listed
- Nitrogen 7727-37-9 80.51% TO 99.999% Not Listed

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United States - California

Environment

U.S. - California - Proposition 65 - Carcinogens List

- Oxygen 7782-44-7 0.0001% TO 19.49% Not Listed
- Nitrogen 7727-37-9 80.51% TO 99.999% Not Listed

U.S. - California - Proposition 65 - Developmental Toxicity

- Oxygen 7782-44-7 0.0001% TO 19.49% Not Listed
- Nitrogen 7727-37-9 80.51% TO 99.999% Not Listed

U.S. - California - Proposition 65 - Maximum Allowable Dose Levels (MADL)

- Oxygen 7782-44-7 0.0001% TO 19.49% Not Listed
- Nitrogen 7727-37-9 80.51% TO 99.999% Not Listed

U.S. - California - Proposition 65 - No Significant Risk Levels (NSRL)

- Oxygen 7782-44-7 0.0001% TO 19.49% Not Listed
- Nitrogen 7727-37-9 80.51% TO 99.999% Not Listed

U.S. - California - Proposition 65 - Reproductive Toxicity - Female

- Oxygen 7782-44-7 0.0001% TO 19.49% Not Listed
- Nitrogen 7727-37-9 80.51% TO 99.999% Not Listed

U.S. - California - Proposition 65 - Reproductive Toxicity - Male

- Oxygen 7782-44-7 0.0001% TO 19.49% Not Listed
- Nitrogen 7727-37-9 80.51% TO 99.999% Not Listed

United States - Pennsylvania

Labor

U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List

- Oxygen 7782-44-7 0.0001% TO 19.49% Not Listed
- Nitrogen 7727-37-9 80.51% TO 99.999% Not Listed

U.S. - Pennsylvania - RTK (Right to Know) - Special Hazardous Substances

- Oxygen 7782-44-7 0.0001% TO 19.49% Not Listed
- Nitrogen 7727-37-9 80.51% TO 99.999% Not Listed

Chemical Safety Assessment

- No Chemical Safety Assessment has been carried out.

Section 16 - Other Information

Last Revision Date
- 03/October/2012

Preparation Date
- 01/October/2012

Disclaimer/Statement of Liability
- To the best of Air Liquide'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 gas mixture 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.

Key to abbreviations

NDA = No Data Available