



# Argon/Oxygen Mixture

## Safety Data Sheet E-4718

according to the Hazardous Products Regulation (February 11, 2015)

Issue date: 10-15-1979

Revision date: 09-25-2023

Supersedes: 05-29-2023

SDS CA Version: 1.1

### SECTION 1: Identification

#### 1.1. Product identifier

Product form : Mixture  
Product name : Argon/Oxygen Mixture  
Other means of identification : StarGold O1, O2, O5;  
Mixtures of Argon and Oxygen  
Product group : Core Products

#### 1.2. Recommended use and restrictions on use

Recommended uses and restrictions : Industrial use, Use as directed.

#### 1.3. Supplier

Linde Canada inc.  
500 — 5015 Spectrum Way  
Mississauga - Canada L4W 0E4  
T 1-905-803-1600 - F 1-905-803-1682  
[www.lindecana.ca](http://www.lindecana.ca)

#### 1.4. Emergency telephone number

Emergency number : 1-800-363-0042  
Call emergency number 24 hours a day only for spills, leaks, fire, exposure, or accidents involving this product.  
For routine information, contact your supplier or Linde sales representative.

### SECTION 2: Hazard identification

#### 2.1. Classification of the substance or mixture

##### GHS-CA classification

Gases under pressure : Compressed gas H280  
Simple Asphyxiant

#### 2.2. GHS Label elements, including precautionary statements

##### GHS CA labelling

Hazard pictograms :   
GHS04

Signal word : Warning

Hazard statements : CONTAINS GAS UNDER PRESSURE; MAY EXPLODE IF HEATED  
MAY DISPLACE OXYGEN AND CAUSE RAPID SUFFOCATION

Precautionary statements : Do not handle until all safety precautions have been read and understood.  
Use and store only outdoors or in a well-ventilated place.  
Use a back flow preventive device in the piping.  
Use only with equipment rated for cylinder pressure.  
Close valve after each use and when empty.  
Protect from sunlight when ambient temperature exceeds 52°C (125°F).

#### 2.3. Other hazards

Other hazards which do not result in classification : Asphyxiant in high concentrations.

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### 2.4. Unknown acute toxicity (GHS CA)

Not applicable

## SECTION 3: Composition/information on ingredients

### 3.1. Substances

Not applicable

### 3.2. Mixtures

Name	CAS No.	% (Vol)	Common Name (synonyms)
Argon	(CAS-No.) 7440-37-1	85.5401 – 99.9999	Argon, compressed
Oxygen (Component)	(CAS-No.) 7782-44-7	0.0001 – 14.4599	Oxygen (dissolved) / Oxygen gas / Oxygen, compressed / Oxygen, dissolved

## 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 not breathing, give artificial respiration. If breathing is difficult, trained personnel should give oxygen. Call a physician.
- First-aid measures after skin contact : Adverse effects not expected from this product.
- First-aid measures after eye contact : Immediately flush eyes thoroughly with water for at least 15 minutes. Hold the eyelids open and away from the eyeballs to ensure that all surfaces are flushed thoroughly. Contact an ophthalmologist immediately.
- First-aid measures after ingestion : Ingestion is not considered a potential route of exposure.

### 4.2. Most important symptoms and effects (acute and delayed)

- Symptoms/effects : No additional information available
- Most Important Symptoms/Effects : Asphyxiant in high concentrations.

### 4.3. Immediate medical attention and special treatment, if necessary

- Other medical advice or treatment : None.

## SECTION 5: Fire-fighting measures

### 5.1. Suitable extinguishing media

- Suitable extinguishing media : Use extinguishing media appropriate for surrounding fire.

### 5.2. Unsuitable extinguishing media

No additional information available

### 5.3. Specific hazards arising from the hazardous product

- Fire hazard : May accelerate combustion. Avoid contact with combustible materials.
- Reactivity : None.
- Reactivity in case of fire : No reactivity hazard other than the effects described in sub-sections below.

### 5.4. Special protective equipment and precautions for fire-fighters

- Firefighting instructions : Evacuate all personnel from the danger area. Use self-contained breathing apparatus (SCBA) and protective clothing. Immediately cool containers with water from maximum distance. Stop flow of gas if safe to do so, while continuing cooling water spray. Remove ignition sources if safe to do so. Remove containers from area of fire if safe to do so. On-site fire brigades must comply with their provincial and local fire code regulations.
- Protection during firefighting : Compressed gas: asphyxiant. Suffocation hazard by lack of oxygen.
- Special protective equipment for fire fighters : Standard protective clothing and equipment (Self Contained Breathing Apparatus) for fire fighters.

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Specific methods	: Use fire control measures appropriate for the surrounding fire. Exposure to fire and heat radiation may cause gas containers to rupture. Cool endangered containers with water spray jet from a protected position. Prevent water used in emergency cases from entering sewers and drainage systems.  Stop flow of product if safe to do so.  Use water spray or fog to knock down fire fumes if possible.
Other information	: Containers are equipped with a pressure relief device. (Exceptions may exist where authorized by TC.).

### SECTION 6: Accidental release measures

#### 6.1. Personal precautions, protective equipment and emergency procedures

General measures	: <b>DANGER!</b> Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous. Evacuate area. Ensure adequate air ventilation. Wear self-contained breathing apparatus when entering area unless atmosphere is proven to be safe. Stop leak if safe to do so.
Personal Precautions, Protective Equipment and Emergency Procedures	: General measures : Ensure adequate ventilation. Personal Precautions, Protective Equipment and Emergency Procedures : <b>EVACUATE ALL PERSONNEL FROM AFFECTED AREA.</b> Use appropriate protective equipment. If leak is on user's equipment, be certain to purge piping before attempting repairs. If leak is on a container or container valve contact the closest Linde Canada location.

#### 6.2. Methods and materials for containment and cleaning up

For containment	: Try to stop release if safe to do so.
Methods for cleaning up	: Dispose of contents/container in accordance with container supplier/owner instructions.

### SECTION 7: Handling and storage

#### 7.1. Precautions for safe handling

Precautions for safe handling	: Wear leather safety gloves and safety shoes when handling cylinders. Protect containers from physical damage; do not drag, roll, slide or drop. While moving cylinder, always keep in place removable valve cover. Never attempt to lift a cylinder by its cap; the cap is intended solely to protect the valve. When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders. Never insert an object (e.g. wrench, screwdriver, pry bar) into cap openings; doing so may damage the valve and cause a leak. Use an adjustable strap wrench to remove over-tight or rusted caps. Slowly open the valve. If the valve is hard to open, discontinue use and contact your supplier. Close the container valve after each use; keep closed even when empty. Never apply flame or localized heat directly to any part of the container. High temperatures may damage the container and could cause the pressure relief device to fail prematurely, venting the container contents. For other precautions in using this product, see section 16.
Additional hazards when processed	: When working with cryogenic/cold liquid or gas under pressure, avoid using materials that are incompatible with cryogenic use. Some metals, such as carbon steel, may fracture easily at low temperature. Use only transfer lines designed for cryogenic liquids. Prevent liquid or cold gas from being trapped in piping between valves. Equip the piping with pressure relief devices. Linde recommends piping all vents to the exterior of the building.

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

Storage conditions	: Store in a cool, well-ventilated place. Store and use with adequate ventilation. Store only where temperature will not exceed 125°F (52°C). Firmly secure containers upright to keep them from falling or being knocked over. Install valve protection cap firmly in place by hand. Store full and empty containers separately. Use a first-in, first-out inventory system to prevent storing full containers for long periods.
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**OTHER PRECAUTIONS FOR HANDLING, STORAGE, AND USE:** When handling product under pressure, use piping and equipment adequately designed to withstand the pressures to be encountered. Never work on a pressurized system. Use a back flow preventive device in the piping. Gases can cause rapid suffocation because of oxygen deficiency; store and use with adequate ventilation. If a leak occurs, close the container valve and blow down the system in a safe and environmentally correct manner in compliance with all international, federal/national, state/provincial, and local laws; then repair the leak. Never place a container where it may become part of an electrical circuit.

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### SECTION 8: Exposure controls/personal protection

#### 8.1. Control parameters

No additional information available

#### 8.2. Appropriate engineering controls

Appropriate engineering controls : Oxygen detectors should be used when asphyxiating gases may be released. Systems under pressure should be regularly checked for leakages. Consider the use of a work permit system e.g. for maintenance activities. Provide adequate general and local exhaust ventilation. Ensure exposure is below occupational exposure limits (where available).

#### 8.3. Individual protection measures/Personal protective equipment

Personal protective equipment : Gloves. Face shield. Safety glasses.



Hand protection : Wear working gloves when handling gas containers. Wear work gloves when handling containers. Wear heavy rubber gloves where contact with product may occur.

Eye protection : Wear safety glasses with side shields. Select in accordance with the current CSA standard Z94.3, "Industrial Eye and Face Protection", and any provincial regulations, local bylaws or guidelines. Safety eye wear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, or dusts. Select in accordance with the current CSA standard Z94.3, "Industrial Eye and Face Protection" and any provincial regulations, local bylaws, or guidelines.

Skin and body protection : Wear work gloves when handling containers. Wear heavy rubber gloves where contact with product may occur. Wear metatarsal shoes and work gloves for cylinder handling, and protective clothing where needed. Wear appropriate chemical gloves during cylinder changeout or wherever contact with product is possible.

Respiratory protection : Choose in accordance with provincial directives and regulations. Selection should also be based on the current CSA standards Z94.4, "Selection, care and use of respirators." Respirators should be approved by NIOSH and MSHA. **Respiratory protection:** Use respirable fume respirator or air supplied respirator when working in confined space or where local exhaust or ventilation does not keep exposure below TLV. Select in accordance with provincial regulations, local bylaws or guidelines. Selection should be based on the current CSA standard Z94.4, "Selection, Care, and Use of Respirators." Respirators should also be approved by NIOSH and MSHA. For emergencies or instances with unknown exposure levels, use a self-contained breathing apparatus (SCBA).

Thermal hazard protection : Wear cold insulating gloves when transfilling or breaking transfer connections.

Other information : **Other protection** : Safety shoes for general handling at customer sites. Metatarsal shoes and cuffless trousers for cylinder handling at packaging and filling plants. Select in accordance with the current CSA standard Z195, "Protective Foot Wear", and any provincial regulations, local bylaws or guidelines. For working with flammable and oxidizing materials, consider the use of flame resistant anti-static safety clothing.

### SECTION 9: Physical and chemical properties

#### 9.1. Information on basic physical and chemical properties

(a) Physical state : Gas

(b) Colour : Colourless.

(c) Odour : Odourless.

Odour threshold : No data available

(d) Melting point : No data available

Freezing point : No data available

(e) Boiling point : No data available

(f) Flammability : Non flammable.

(g) Flammability (solid, gas) :

(h) Flash point : No data available

(i) Auto-ignition temperature : No data available

(j) Decomposition temperature : No data available

(k) pH : Not applicable.

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(l) Viscosity, kinematic	: Not applicable.
(m) Solubility	: Water: No data available
(n) Partition coefficient – n-octanol/water [log Pow]	: Not applicable.
(o) Vapour pressure	: Not applicable.
(p) Density	: 1.65 kg/m <sup>3</sup> Vapor density, 70°F (21.1°C), 1 atm (Based on the Argon component)
Relative gas density	: 1.38 (Based on the Argon component)
(r) Particle characteristics	: No data available
(v) Oxidizing properties	: None.
(w) Relative evaporation rate (butylacetate=1)	: No data available
Relative evaporation rate (ether=1)	: Not applicable.

### 9.2. Other information

Gas group	: Compressed gas
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## SECTION 10: Stability and reactivity

Reactivity	: None.
Chemical stability	: Stable under normal conditions.
Hazardous decomposition products	: Under normal conditions of storage and use, hazardous decomposition products should not be produced. Using this product in welding and cutting may create additional hazards. The arc from electric arc welding may form gaseous reaction products such as carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by the radiation from the arc. Other decomposition products of arc welding and cutting originate from the volatilization, reaction, and oxidization of the material being worked.

## SECTION 11: Toxicological information

<b>11.1 Likely routes of exposure</b>	: Inhalation. Skin contact. Eye contact.
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<b>11.2 Symptoms related to the physical, chemical, and toxicological characteristics</b>	: No additional information available
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### **11.3 Delayed and immediate effects and chronic effects**

Acute toxicity (oral)	: Not classified
Acute toxicity (dermal)	: Not classified
Acute toxicity (inhalation)	: Not classified
Skin corrosion/irritation	: Not classified
	pH: Not applicable.
Serious eye damage/irritation	: Not classified
	pH: Not applicable.
Respiratory or skin sensitization	: Not classified
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified
Reproductive toxicity	: Not classified
STOT-single exposure	: Not classified
STOT-repeated exposure	: Not classified
Aspiration hazard	: Not classified

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### 11.4 Toxicity

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LC50 Inhalation - Rat [ppm]	No data available

## SECTION 12: Ecological information

### 12.1. Toxicity

Ecology - general : No ecological damage caused by this product.

### 12.2. Persistence and degradability

Argon/Oxygen Mixture	
Persistence and degradability	No ecological damage caused by this product.
Oxygen (7782-44-7)	
Persistence and degradability	No data available.
Argon (7440-37-1)	
Persistence and degradability	No ecological damage caused by this product.

### 12.3. Bioaccumulative potential

Argon/Oxygen Mixture	
Partition coefficient n-octanol/water (Log Pow)	Not applicable.
Partition coefficient n-octanol/water (Log Kow)	Not applicable.
Bioaccumulative potential	No ecological damage caused by this product.
Oxygen (7782-44-7)	
Partition coefficient n-octanol/water (Log Pow)	Not applicable.
Partition coefficient n-octanol/water (Log Kow)	Not applicable.
Bioaccumulative potential	No ecological damage caused by this product.
Argon (7440-37-1)	
Partition coefficient n-octanol/water (Log Pow)	Not applicable.
Partition coefficient n-octanol/water (Log Kow)	Not applicable.
Bioaccumulative potential	No ecological damage caused by this product.

### 12.4. Mobility in soil

Argon/Oxygen Mixture	
Mobility in soil	No data available.
Partition coefficient n-octanol/water (Log Pow)	Not applicable.
Partition coefficient n-octanol/water (Log Kow)	Not applicable.
Oxygen (7782-44-7)	
Mobility in soil	No data available.
Partition coefficient n-octanol/water (Log Pow)	Not applicable.
Partition coefficient n-octanol/water (Log Kow)	Not applicable.
Ecology - soil	Because of its high volatility, the product is unlikely to cause ground or water pollution. Partition into soil is unlikely.
Argon (7440-37-1)	
Mobility in soil	No data available.
Partition coefficient n-octanol/water (Log Pow)	Not applicable.
Partition coefficient n-octanol/water (Log Kow)	Not applicable.
Ecology - soil	No ecological damage caused by this product.

### 12.5. Other adverse effects

Other adverse effects : Can cause frost damage to vegetation.

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Effect on the ozone layer : None.

### SECTION 13: Disposal considerations

Product/Packaging disposal recommendations : Dispose of contents/container in accordance with local/regional/national/international regulations. Contact supplier for any special requirements. Dispose of contents/container in accordance with container supplier/owner instructions.

### SECTION 14: Transport information

#### 14.1. Basic shipping description

In accordance with TDG

#### Transportation of Dangerous Goods

UN-No. (TDG) : UN1956  
TDG Primary Hazard Classes : 2.2 - Class 2.2 - Non-Flammable, Non-Toxic Gases  
Proper shipping name : COMPRESSED GAS, N.O.S.

Explosive Limit and Limited Quantity Index : 0.125 L

Passenger Carrying Road Vehicle or Passenger : 75 L

Carrying Railway Vehicle Index

#### 14.2. Air and sea transport

#### IMDG

No additional information available

#### IATA

No additional information available

### SECTION 15: Regulatory information

#### 15.1. National regulations

##### Oxygen (7782-44-7)

Listed on the Canadian DSL (Domestic Substances List)

##### Argon (7440-37-1)

Listed on the Canadian DSL (Domestic Substances List)

#### 15.2. International regulations

##### Oxygen (7782-44-7)

Listed introduction on Australian Industrial Chemicals Introduction Scheme (AICIS Inventory)  
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)  
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)  
Listed on KECL/KECI (Korean Existing Chemicals Inventory)  
Listed on NZIoC (New Zealand Inventory of Chemicals)  
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)  
Listed on the United States TSCA (Toxic Substances Control Act) inventory  
Listed on INSQ (Mexican National Inventory of Chemical Substances)

##### Argon (7440-37-1)

Listed introduction on Australian Industrial Chemicals Introduction Scheme (AICIS Inventory)  
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)  
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)  
Listed on KECL/KECI (Korean Existing Chemicals Inventory)  
Listed on NZIoC (New Zealand Inventory of Chemicals)  
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)  
Listed on the United States TSCA (Toxic Substances Control Act) inventory  
Listed on INSQ (Mexican National Inventory of Chemical Substances)

### SECTION 16: Other information

Issue date : 15/10/1979

Revision date : 25/09/2023

Supersedes : 29/05/2023

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### Indication of changes:

#### Other information

: When you mix two or more chemicals, you can create additional, unexpected hazards. Obtain and evaluate the safety information for each component before you produce the mixture. Consult an industrial hygienist or other trained person when you evaluate the end product. Before using any plastics, confirm their compatibility with this product.

Linde asks users of this product to study this SDS and become aware of the product hazards and safety information. To promote safe use of this product, a user should (1) notify employees, agents, and contractors of the information in this SDS and of any other known product hazards and safety information, (2) furnish this information to each purchaser of the product, and (3) ask each purchaser to notify its employees and customers of the product hazards and safety information.

The opinions expressed herein are those of qualified experts within Linde Canada Inc. We believe that the information contained herein is current as of the date of this Safety Data Sheet. Since the use of this information and the conditions of use are not within the control of Linde Canada Inc, it is the user's obligation to determine the conditions of safe use of the product. Linde Canada Inc, SDSs are furnished on sale or delivery by Linde Canada Inc, or the independent distributors and suppliers who package and sell our products. To obtain current SDSs for these products, contact your Linde sales representative, local distributor, or supplier, or download from [www.lindecana.ca](http://www.lindecana.ca).

#### NFPA health hazard

: 0 - Materials that, under emergency conditions, would offer no hazard beyond that of ordinary combustible materials.

#### NFPA fire hazard

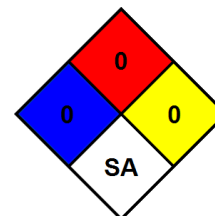
: 0 - Materials that will not burn under typical fire conditions, including intrinsically noncombustible materials such as concrete, stone, and sand.

#### NFPA instability

: 0 - Material that in themselves are normally stable, even under fire conditions.

#### NFPA specific hazard

: SA - Materials that are simple asphyxiants.



#### Hazard Rating

##### Health

: 0 Minimal Hazard - No significant risk to health

##### Flammability

: 0 Minimal Hazard - Materials that will not burn

##### Physical

: 3 Serious Hazard - Materials that may form explosive mixtures with water and are capable of detonation or explosive reaction in the presence of a strong initiating source. Materials may polymerize, decompose, self-react, or undergo other chemical change at normal temperature and pressure with moderate risk of explosion

#### SDS Canada (GHS) - Linde NEW

*This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.*

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