



# ARGON, REFRIGERATED LIQUID

## Safety Data Sheet

### 1. IDENTIFICATION

Product identifier

Product Name ARGON, REFRIGERATED LIQUID

Other means of identification

Safety data sheet number LIND-P006  
UN/ID no. UN1951  
Synonyms Argon, Liquid; LAR  
Trade name ARNO; Crude Argon

Recommended use of the chemical and restrictions on use

Recommended Use Industrial and professional use.  
Uses advised against Consumer use

Details of the supplier of the safety data sheet

Linde Gas Singapore Pte Ltd  
50 Jurong Island Highway, Singapore 627877

Phone: +65 68678998  
www.linde.com.sg

For additional product information contact your local customer service.

Emergency telephone number

Company Phone Number +65 68670860

### 2. HAZARDS IDENTIFICATION

Classification

## OSHA Regulatory Status

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).

Gases under pressure	Refrigerated liquefied gas
Simple asphyxiants	Yes

Label elements

Signal word

Warning

**Hazard Statements**

Contains refrigerated gas; may cause cryogenic burns or injury  
May displace oxygen and cause rapid suffocation

**Precautionary Statements - Prevention**

Do not handle until all safety precautions have been read and understood  
Use and store only outdoors or in a well ventilated place  
Wear cold insulating gloves, face shield, and eye protection  
Use a backflow preventive device in piping  
Do NOT change or force fit connections  
Close valve after each use and when empty  
Always keep container in upright position

**Precautionary Statements - Response**

IF INHALED: Remove person to fresh air and keep comfortable for breathing. Get medical attention/advice.  
IF ON SKIN: Thaw frosted parts with lukewarm water. Do not rub affected area. Get immediate medical advice/attention.

**Hazards not otherwise classified (HNOC)**

Not applicable

**3. COMPOSITION/INFORMATION ON INGREDIENTS**

Chemical Name	CAS No.	Volume %	Chemical Formula
Argon	7440-37-1	100	Ar

Crude argon may contain oxygen up to 5% however, this does not influence classification of the product.

**4. FIRST AID MEASURES****Description of first aid measures**

General advice	Show this safety data sheet to the doctor in attendance.
Inhalation	Remove to fresh air and keep comfortable for breathing. If breathing is difficult, give oxygen. If breathing has stopped, give artificial respiration. Get medical attention immediately.
Skin contact	For dermal contact or suspected frostbite, remove contaminated clothing and flush affected areas with lukewarm water. DO NOT USE HOT WATER. A physician should see the patient promptly if contact with the product has resulted in blistering of the dermal surface or in deep tissue freezing.
Eye contact	If frostbite is suspected, flush eyes with cool water for 15 minutes and obtain immediate medical attention.
Ingestion	Not an expected route of exposure.
Self-protection of the first aider	RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS.

**Most important symptoms and effects, both acute and delayed**

Symptoms	Simple asphyxiant. May cause suffocation by displacing the oxygen in the air. Exposure to oxygen-deficient atmosphere (<19.5%) may cause dizziness, drowsiness, nausea, vomiting, excess salivation, diminished mental alertness, loss of consciousness and death. Exposure to atmospheres containing 8-10% or less oxygen will bring about unconsciousness without warning and so quickly that the individuals cannot help or protect themselves. Lack of sufficient oxygen may cause serious injury or death. Contact with liquid may cause cold burns/frostbite.
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Indication of any immediate medical attention and special treatment needed

Note to physicians                      Treat symptomatically.

## 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Specific extinguishing methods

Continue to cool fire exposed cylinders until flames are extinguished. Damaged cylinders should be handled only by specialists.

Specific hazards arising from the chemical

Non-flammable gas. Cylinders may rupture under extreme heat.

Protective equipment and precautions for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, NIOSH (approved or equivalent) and full protective gear.

## 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal precautions                      Evacuate personnel to safe areas. Ensure adequate ventilation, especially in confined areas. Monitor oxygen level. Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe. Use personal protection recommended in Section 8.

Other Information                      When in contact with refrigerated/cryogenic liquids, many materials become brittle and are likely to break without warning.

Environmental precautions

Environmental precautions                      Prevent spreading of vapors through sewers, ventilation systems and confined areas.

Methods and material for containment and cleaning up

Methods for containment                      Stop the flow of gas or remove cylinder to outdoor location if this can be done without risk. If leak is in container or container valve, contact the appropriate emergency telephone number in Section 1 or call your closest Linde location.

Methods for cleaning up                      Return cylinder to Linde or an authorized distributor. Return Portable Cryogenic Container to Linde or an authorized distributor.

## 7. HANDLING AND STORAGE

### Precautions for safe handling

#### Advice on safe handling

Never allow any unprotected part of the body to touch uninsulated pipes or vessels that contain cold fluids. The extremely cold metal will cause moist flesh to stick fast and tear when one attempts to withdraw from it. Do NOT change or force fit connections.

Protect cylinders from physical damage; do not drag, roll, slide or drop. When moving cylinders, even for short distance, use a cart designed to transport cylinders. Never attempt to lift a cylinder by its valve protection cap. Never insert an object (e.g. wrench, screwdriver, pry bar, etc.) into valve cap openings. Doing so may damage valve, causing leak to occur. Use an adjustable strap wrench to remove over-tight or rusted caps. Use only with adequate ventilation. Use a backflow preventive device in piping. Close valve after each use and when empty. If user experiences any difficulty operating cylinder valve discontinue use and contact supplier. Ensure the complete gas system has been checked for leaks before use.

Never put cylinders into trunks of cars or unventilated areas of passenger vehicles. Never attempt to refill a compressed gas cylinder without the owner's written consent. Never strike an arc on a compressed gas cylinder or make a cylinder a part of an electrical circuit.

Only experienced and properly instructed persons should handle gases under pressure. Always store and handle compressed gas cylinders in accordance with Compressed Gas Association, pamphlet CGA-P1, Safe Handling of Compressed Gases in Containers.

For additional recommendations consult Compressed Gas Association's Pamphlets AV-5, G-11.1, P-9, P-18, P-1, and Safety Bulletin SB-2.

### Conditions for safe storage, including any incompatibilities

#### Storage Conditions

Store in cool, dry, well-ventilated area of non-combustible construction away from heavily trafficked areas and emergency exits. Keep at temperatures below 52°C / 125°F. Cylinders should be stored upright with valve protection cap in place and firmly secured to prevent falling. Use a "first in-first out" inventory system to prevent full cylinders from being stored for excessive periods of time. Full and empty cylinders should be segregated. Stored containers should be periodically checked for general condition and leakage.

#### Incompatible materials

None known.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Control parameters

#### Exposure Guidelines

This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.

### Appropriate engineering controls

#### Engineering Controls

Ventilation systems. Local exhaust ventilation to prevent accumulation of high concentrations and maintain air-oxygen levels at or above 19.5%. Oxygen detectors should be used when asphyxiating gases may be released. Showers. Eyewash stations.

Individual protection measures, such as personal protective equipment

Eye/face protection	Wear safety glasses with side shields (or goggles). If splashes are likely to occur, wear: Face-shield. Goggles.
Skin and body protection	Work gloves and safety shoes are recommended when handling cylinders. Wear cold insulating gloves when handling liquid.
Respiratory protection	Use positive pressure airline respirator with escape cylinder or self contained breathing apparatus for oxygen-deficient atmospheres (<19.5%).
General Hygiene Considerations	Handle in accordance with good industrial hygiene and safety practice. Do not get in eyes, on skin, or on clothing.

**9. PHYSICAL AND CHEMICAL PROPERTIES**Information on basic physical and chemical properties

Physical state	Refrigerated liquefied gas
Appearance	Colorless.
Odor	Odorless.
Odor threshold	No information available
pH	No data available
Melting point	-189.4 °C / -308.9 °F
Evaporation rate	Not applicable
Lower flammability limit:	Not applicable
Upper flammability limit:	Not applicable
Flash point	Not applicable
Autoignition temperature	No data available
Decomposition temperature	No data available
Water solubility	Very slight
Partition coefficient	No data available
Kinematic viscosity	Not applicable

Chemical Name	Molecular weight	Boiling point	Vapor Pressure	Vapor density (air =1)	Gas Density kg/m <sup>3</sup> @20°C	Critical Temperature
Argon	39.95	-185.9 °C	Above critical temperature	1.38	1.65	-122.3 °C

**10. STABILITY AND REACTIVITY**Reactivity

Not reactive under normal conditions

Chemical stability

Stable under normal conditions.

Explosion data

Sensitivity to Mechanical Impact	None.
Sensitivity to Static Discharge	None.

Possibility of Hazardous Reactions

None under normal processing.

Conditions to avoid

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

Incompatible materials

None known.

Hazardous Decomposition Products

None known.

**11. TOXICOLOGICAL INFORMATION**Information on likely routes of exposure

Inhalation	Product is a simple asphyxiant.
Skin contact	Contact with liquid may cause cold burns/frostbite.
Eye contact	Contact with liquid may cause cold burns/frostbite.
Ingestion	Not an expected route of exposure.

Information on toxicological effects

Symptoms	No information available.
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Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation	Not classified.
Sensitization	Not classified.
Germ cell mutagenicity	Not classified.
Carcinogenicity	This product does not contain any carcinogens or potential carcinogens listed by OSHA, IARC or NTP.
Reproductive toxicity	Not classified.
STOT - single exposure	Not classified.
STOT - repeated exposure	Not classified.
Chronic toxicity	None known.
Aspiration hazard	Not applicable.

Numerical measures of toxicity

Product Information	
Oral LD50	No information available
Dermal LD50	No information available
Inhalation LC50	No information available

**12. ECOLOGICAL INFORMATION**Ecotoxicity

No known acute aquatic toxicity.

Persistence and degradability

Not applicable.

Bioaccumulation

No information available.

Other adverse effects

Can cause frost damage to vegetation.

**13. DISPOSAL CONSIDERATIONS**

Waste treatment methods

## Disposal of wastes

Do not attempt to dispose of residual waste or unused quantities. Return in the shipping container PROPERLY LABELED WITH ANY VALVE OUTLET PLUGS OR CAPS SECURED AND VALVE PROTECTION CAP IN PLACE to Linde for proper disposal.

**14. TRANSPORT INFORMATION**DOT

UN/ID no.	UN1951
Proper shipping name	Argon, refrigerated liquid
Hazard Class	2.2
Special Provisions	T75, TP5
Description	UN1951, Argon, refrigerated liquid, 2.2
Emergency Response Guide Number	120

TDG

UN/ID no.	UN1951
Proper shipping name	Argon, refrigerated liquid
Hazard Class	2.2
Description	UN1951, Argon, refrigerated liquid, 2.2

MEX

UN/ID no.	UN1951
Proper shipping name	Argon, refrigerated liquid
Hazard Class	2.2
Description	UN1951, Argon, refrigerated liquid, 2.2

IATA

UN/ID no.	UN1951
Proper shipping name	Argon, refrigerated liquid
Hazard Class	2.2
ERG Code	2L
Description	UN1951, Argon, refrigerated liquid, 2.2

IMDG

UN/ID no.	UN1951
Proper shipping name	Argon, refrigerated liquid
Hazard Class	2.2
EmS-No.	F-C, S-V
Description	UN1951, Argon, refrigerated liquid, 2.2

ADR

UN/ID no.	UN1951
Proper shipping name	Argon, refrigerated liquid
Hazard Class	2.2
Classification code	3A
Tunnel restriction code	(C/E)
Special Provisions	593
Description	UN1951, Argon, refrigerated liquid, 2.2, (C/E)

**15. REGULATORY INFORMATION**International Inventories

TSCA	Complies
DSL/NDSL	Complies
EINECS/ELINCS	Complies

Legend:

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

DSL/NDL - Canadian Domestic Substances List/Non-Domestic Substances List

EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances

**16. OTHER INFORMATION**NFPA

Health hazards 3

Flammability 0

Instability 0

Physical and Chemical  
Properties Simple  
asphyxiant

Note: Ratings were assigned in accordance with Compressed Gas Association (CGA) guidelines as published in CGA Pamphlet P-19-2009, CGA Recommended Hazard Ratings for Compressed Gases, 3rd Edition.

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Revision Note SDS sections updated; 1; 3

General Disclaimer

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End of Safety Data Sheet