

## SAFETY DATA SHEET

### SECTION 1: IDENTIFICATION OF THE SUBSTANCE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier:

**Argon**

IUPAC name: Argon

Description: refrigerated, liquid

CAS number: 7440-37-1

EU number: 231-147-0

Registration number:

The argon is exempted from registration based on (7) a) of Article 2 1907/2006/EC (REACH) regulation.

1.2. Relevant identified uses of the substance and uses advised against:

Identified uses: industrial inert gases, protective atmosphere (metal production, semiconductor, electronics and food industries), welding, carrier gas (semiconductor industry, measuring technology), lighting technology (incandescent and fluorescent filler).

Uses advised against: No uses advised against.

1.3. Details of the supplier of the safety data sheet:

**NITROGÉN MŰVEK Zrt.**

Pétfürdő, Hősök tere 14.

8105 Pétfürdő, Pf. 450

Telefon: +36-88-620-100

Fax: +36-88-620-102

E-mail: sds@nitrogen.hu

1.3.1. Responsible person: -

E-mail: sds@nitrogen.hu

1.4. Emergency telephone number:

The UK National Poisons Emergency number +44 870 600 6266

### SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance:

Classification according to Regulation 1272/2008/EC (CLP):

Gases under pressure, refrigerated liquefied gas – H281

**Warning H statements:**

**H281** – Contains refrigerated gas; may cause cryogenic burns or injury.

2.2. Label elements

IUPAC name: Argon

CAS number: 7440-37-1

EU number: 231-147-0

GHS04



**WARNING**

**Warning H statements:**

**H281** – Contains refrigerated gas; may cause cryogenic burns or injury.

**Precautionary P statements:**

**P282** – Wear cold insulating gloves/face shield/eye protection.

**P315** – Get immediate medical advice/attention.

**P336** – Thaw frosted parts with lukewarm water. Do not rub affected area.

**P403** – Store in a well-ventilated place.

2.3. Other hazards:

The gas is heavier than air and may accumulate in the storage area, causing oxygen deficiency.

### SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substance

IUPAC name: Argon  
Description: refrigerated, liquid  
CAS number: 7440-37-1  
EU number: 231-147-0  
Purity: 99,999

### SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures:

IN CASE OF INGESTION:

Measures:

- Practically not possible.

IN CASE OF INHALATION:

Measures:

- Immediately take the injured person into fresh air.
- Keep him warm and calm, loosen his tight clothes.
- If the breathing stops or in case of breathing difficulties, administer artificial respiration if qualified personnel is available.
- In case of unconsciousness, place the injured person into a recovery position.

IN CASE OF SKIN CONTACT:

Measures:

- Contact with refrigerated liquid argon may cause frostbite.
- Flush the affected area with plenty of water.
- In the frozen body parts the clothes may stuck on the skin.
- Carefully demister with pleasantly tepid water.
- Obtain immediate medical help.

IN CASE OF EYE CONTACT:

Measures:

- Contact with refrigerated liquid argon may cause frostbite.
- Flush the eyes with plenty of water for some (15) minutes.
- Remove the contact lenses if easy to do so, and continue rinsing.
- Obtain immediate medical help.

4.2. Most important symptoms and effects, both acute and delayed:

Eyes, skin: frostbites, pain, redness, in severe cases: insensitivity of the skin, or skin turning white or blue, blistering; as delayed effects in severe cases: blistering, ulceration, gangrene.

Inhalation: dizziness, dullness, headache, hampered respiration, asphyxia, unconsciousness; in severe cases death by suffocation; delayed, chronic effects are not known.

4.3. Indication of any immediate medical attention and special treatment needed:

Obtain immediate medical help.

### SECTION 5: FIRE-FIGHTING MEASURES

5.1. Extinguishing media:

5.1.1. Suitable extinguishing media:

All extinguishing media can be used.

5.1.2. Unsuitable extinguishing media:

None known.

5.2. Special hazards arising from the substance or mixture:

Non-flammable gas.

In case of heating pressure can increase and the container may be burst. In case of spillage, dense and cold gas cloud may decrease the visibility. After quitting the heat source, try to block the spillage. The spillage has to be approached from downwind.

5.3. Advise for fire fighters

Use water spray to cool the fire affected containers and for the protection of the personnel. Due to the lack of oxygen the use of self-contained breathing apparatus and full protective suit is recommended.

### SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures:

6.1.1 For non-emergency personnel:

Keep unprotected people away, allow only well trained experts wearing suitable protective clothing to abide in the field of accident.

- 6.1.2. For emergency responders:  
 The spillage has to be approached from down-wind, evacuate the area from down-wind direction. With the help of skilled personnel stop the leak the soonest and the area has to be ventilated. The structural materials affected by cold liquid have to be protected against cold break with the help of water spray. The personnel dealing with the cleaning up of large spillages has to wear cold insulating protective clothes, gloves, boots and due to the lack of oxygen, they have to use self-contained breathing apparatus.
- 6.2. Environmental precautions:  
 It does not pose any hazard for the environment, the natural constituent of the air.
- 6.3. Methods and material for containment and cleaning up:  
 With the help of skilled personnel stop the leak the soonest and the area has to be ventilated.
- 6.4. Reference to other sections:  
 For further and detailed information see section 8 and 13.

## SECTION 7: HANDLING AND STORAGE

- 7.1. Precautions for safe handling:  
 Observe conventional hygiene precautions.  
 In case of spillage or splashing use PPE detailed in Section 8.  
 Technical measures:  
 Ensure adequate ventilation in closed areas.  
 Precautions against fire and explosion:  
 No specific prescription.
- 7.2. Conditions for safe storage, including any incompatibilities:  
 Technical measures and storage condition:  
 Store refrigerated, in cryogen container, in a well ventilated area.  
 Incompatible materials: none known.  
 Packaging material: no special prescriptions.
- 7.3. Specific end use(s):  
 Industrial inert gases, protective atmosphere (metal production, semiconductor, electronics and food industries), welding, carrier gas (semiconductor industry, measuring technology), lighting technology (incandescent and fluorescent filler).

## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

- 8.1. Control parameters:

Occupational exposure limit values:  
 The substance is not regulated with exposure limit value.

DNEL		Routes of exposure	Exposure frequency:	Remarks:
Worker	Consumer			
no data available	no data available	Dermal	Short term (acute) Long term (repeated)	no data available
no data available	no data available	Inhalative	Short term (acute) Long term (repeated)	no data available
no data available	no data available	Oral	Short term (acute) Long term (repeated)	no data available

PNEC			Exposure frequency:	Remarks:
Water	Soil	Air		
no data available	no data available	no data available	Short term (single use) Long term (continuous)	no data available
no data available	no data available	no data available	Short term (single use) Long term (continuous)	no data available
no data available	no data available	no data available	Short term (single use) Long term (continuous)	no data available

- 8.2. Exposure controls:  
 25/2000.. (IX. 30.) In case of a hazardous material with no controlled concentration limit it is the employer's duty to keep concentration levels down to a minimum achievable by existing scientific and technological means, where the hazardous substance poses no harm to workers.
- 8.2.1. Appropriate engineering controls  
 The use and storage of the product in closed areas is only allowed in case of appropriate ventilation. If applicable, apply local exhaust ventilation.
- 8.2.2. Individual protection measures, such as personal protective equipment:
1. Eye/face protection: Protective glasses with side shield (against splashing of liquid)
  2. Skin protection:

- a. Hand protection: in case of spillage or splashing risk, or in case of rescue personnel the use of cold insulating protective gloves (EN 511), work clothes (EN 14058) and boots (CI) are obligatory.
  - b. Other: in case of spillage or splashing risk, or in case of rescue personnel the use of cold insulating protective gloves (EN 511), work clothes (EN 14058) and boots (CI) are obligatory.
3. Respiratory protection: in case of rescue personnel the use of self-contained breathing apparatus is recommended.
4. Thermal hazard: None known.
- 8.2.3. Environmental exposure controls:  
No specific prescription.

**The requirements detailed in Section 8 assume skilled work under normal conditions and usage of the product for appropriate aims. If conditions differ from normal or work is carried out under extreme conditions an expert's advice should be sought out before deciding upon further protective measures.**

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

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

Parameter		Test method:	Remarks:
1. <b>Appearance:</b>	colourless gas	(20°C, 1013 hPa):	product is refrigerated, liquid
2. <b>Odour:</b>	odourless		
3. Odour threshold:	none		
4. pH value:	not applicable		
5. Melting point/ freezing point:	-189.2°C		
6. Initial boiling point/boiling range:	-185.9°C		
7. Flash point:	not applicable (non-combustible, inorganic)		
8. Evaporation rate:	no data available		
9. Flammability:	not applicable (non-combustible)		
10. Upper/lower flammability or explosive limits:	not applicable (non-combustible)		
11. Vapour pressure:	101.325 kPa	-185,9 °C	
12 Vapour density:	no data available		
13. Relative density:	no data available		
14. Solubility(ies):	very slightly soluble in water*		
15. Partition coefficient: n-octanol/water:	not applicable (inorganic gas)		
16. Self-ignition temperature:	non-combustible		
17. Degradation temperature:	not applicable (atom)		
18. Viscosity:	not applicable (gas)		
19. Explosive properties:	non explosive		
20. Oxidizing properties:	non oxidizing		

### 9.2. Other information:

Refrigerated, liquid gas. Its gas/vapour is heavier than air. It may easily accumulated in closed areas, especially at the level of the floor or in low lying areas.

Critical temperature: -122.5°C

Gas density: (0C. 101.325kPa): 1.784 g/l

Relative gas density: (air=1): 1.38 (15°C, 101.325 kPa):

Liquid density: 1.400 g/cm<sup>3</sup> (at -186 °C)

\*: 5.24 cm<sup>3</sup>/100cm<sup>3</sup> water at 0°C at 101.325 kPa pressure 3.40 cm<sup>3</sup>/100cm<sup>3</sup> water at 20°C at 101.325 kPa pressure

## SECTION 10: STABILITY AND REACTIVITY

### 10.1. Reactivity:

Inert gas in atomic state. Its reactivity is very low.

### 10.2. Chemical stability:

Stabile, inert gas in atomic state.

### 10.3. Possibility of hazardous reactions:

In case of heating the liquid may evaporate, the pressure may increase and the container may be burst. The liquid released into the environment can make the contacted materials frigid and it may cause frostbites.

### 10.4. Conditions to avoid:

Heating or injury of closed containers, direct sunlight.

### 10.5. Incompatible materials:

None known.

### 10.6. Hazardous decomposition products:

None known.

## SECTION 11: TOXICOLOGICAL INFORMATION

- 11.1. Information on toxicological effects:  
Acute toxicity: none known.  
Skin corrosion/irritation: none known.  
Serious eye damage/eye irritation: none known.  
Respiratory or skin sensitisation: none known.  
Germ cell mutagenicity: none known.  
Carcinogenicity: none known.  
Reproductive toxicity: none known.  
STOT-single exposure: none known.  
STOT-repeated exposure: none known.  
Aspiration hazard: none known.
- 11.1.1. For substances subject to registration, brief summaries of the information derived from the test conducted:  
No data available.
- 11.1.2. Relevant toxicological properties of the hazardous substances:  
No data available.
- 11.1.3. Information on likely routes of exposure:  
Ingestion, inhalation, skin contact, eye contact.
- 11.1.4. Symptoms related to the physical, chemical and toxicological characteristics:  
Eyes, skin: Contact with refrigerated liquid argon may cause frostbite.  
Inhalation: The evaporating liquid if inhaled may lead to asphyxiation because in case of insufficient ventilation it may exclude the oxygen from the air.  
For information on symptoms, see section 4.2.
- 11.1.5. Delayed and immediate effects as well as chronic effects from short and long-term exposure:  
No data available.
- 11.1.6. Interactive effects:  
No data available.
- 11.1.7. Absence of specific data:  
No information.
- 11.1.8. Other information:  
No toxicological data available about argon. According to our current knowledge it is not toxic, not sensitizing, non-mutagen, non-carcinogen, non-reproduction toxic. The substance itself is not irritating or corrosive. Aspiration hazard can not be interpreted since it is a gas.

## SECTION 12: ECOLOGICAL INFORMATION

- 12.1. Toxicity:  
No ecotoxicological data available about argon.  
It is a natural constituent of the air.
- 12.2. Persistence and degradability  
Non persistent since it is an inorganic gas. Degradation is not applicable, since it is an atom.
- 12.3. Bioaccumulation potential:  
Non bioaccumulative.
- 12.4. Mobility in soil  
Not applicable since at normal conditions it is a gas.
- 12.5. Results of PBT and vPvB assessment  
Non PBT, and non vPvB, since it is an inorganic substance.
- 12.6. Other adverse effects:  
It can damage plants by frost.

## SECTION 13: DISPOSAL CONSIDERATIONS

- 13.1. Waste treatment methods:  
Disposal according to the local regulations.
- 13.1.1. Information regarding the disposal of the product:  
No solid waste or wastewater is formed from the product.  
In well-ventilated places it can be released to the air. Do not discharge into sewers, basements, excavations, or any place where its accumulation could be dangerous.  
European Waste Code:  
No appropriate EWC code can be given for the substance, since the identification of the proper code can be done with the method of use defined by the user of the substance. The European waste code number has to be determined after a discussion with a specialist dealing with waste disposal.
- 13.1.2. Information regarding the disposal of the packaging:  
Dispose according to the relevant regulations.
- 13.1.3. Physical/chemical properties that may affect waste treatment options shall be specified:  
None known.
- 13.1.4. Sewage disposal:

None known.

- 13.1.5. Special precautions for any recommended waste treatment:  
No data available.

#### SECTION 14: TRANSPORT INFORMATION

- 14.1. UN Number:  
1951
- 14.2. UN proper shipping name:  
ARGON, REFRIGERATED, LIQUID
- 14.3. Transport hazard class(es)  
2 (ADR/RID land transport, IMDG/CGV sea transport)  
Label: 2.2 (background: green, sign (cylinder): black or white) (shunting labels number: +13)
- 14.4. Packaging group  
-
- 14.5. Environmental hazard  
Not environmentally hazardous.
- 14.6. Special precautions for user:  
The released liquid is converting rapidly into gas and a cold mist is produced which excludes oxygen from the air and can cause asphyxiation hazard. At direct contact the liquid can cause frostbites. In case of released substance the endangered area must be closed down, and people should be evacuated moving against the wind. Leakage should be stopped, approaching by using fresh air respirator and protective clothing.  
In case of rescue personnel the use of cold insulating protective gloves (EN 511), work clothes (EN 14058), boots (CI) and self-contained breathing apparatus is recommended.
- 14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code:  
Not applicable.



#### SECTION 15: REGULATORY INFORMATION

- 15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture:  
REGULATION (EC) No 1907/2006 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC  
  
REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006  
  
Commission Regulation (EU) 2015/830 of 28 May 2015 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)
- 15.2. Chemical safety assessment: Chemical safety assessment is not required.

#### SECTION 16: OTHER INFORMATION

Information regarding the revision of the safety data sheet:

The safety data sheet has been revised according to Regulation 453/2010/EU (Section 1-16).

The classification of the components and the mixture have been amended according to Regulation 1272/2008/EC (CLP) and its amendments.

Full text of the abbreviations in the safety data sheet:

DNEL: Derived no effect level. PNEC: Predicted no effect concentration. CMR effects: carcinogenicity, mutagenicity and toxicity for reproduction. PBT: Persistent, bioaccumulative and toxic. vPvB: very persistent and very bioaccumulative. n.d.: not defined. n.a.: not applicable.

Safety data sheet (dated ...) issued by the manufacturer. 01. 06. 2015. Version: 3.0/HU)

Relevant H-Phrases (number and full text) of Section 2:

**H281** – Contains refrigerated gas; may cause cryogenic burns or injury.

Training instructions: n.d.