Safety data sheet · UN 1006

Argon (Ar

compressed) — safety data sheet (SDS / MSDS)

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Argon (Ar, CAS 7440-37-1, UN 1006) is inert, non-toxic and non-flammable, and asphyxiates with no warning. It is about 1.38 times heavier than air, so it collects and persists in pits, trenches, tank bottoms and vessel interiors. This is the hazard that kills welders.

Request a quotation (kigl.co.in/contact) 0361-4519363

Safety data sheet (kigl.co.in/sds/nitrogen)

UN 1006
UN number (compressed)

UN 1951
UN number (refrigerated liquid)

7440-37-1
CAS number

39.948
Atomic weight

≈1.38
Vapour density (air = 1)

Section 1 — Identification

Product name

Argon, compressed **Chemical symbol:** Ar **CAS number:** 7440-37-1 · **EC number:** 231-147-0 · **UN number:** UN 1006 **Specification:** IS 5760

Identified uses

Shielding gas for TIG and MIG welding; root purging; heat treatment and brazing atmospheres; metal degassing; carrier and plasma gas in analytical instruments. **Uses advised against:** Ventilation or cooling. Any confined-space use without oxygen monitoring and forced ventilation.

Supplier

The Kamrup Industrial Gases Limited.

Section 2 — Hazards identification

GHS classification

Gases under pressure — compressed gas (refrigerated liquefied gas for the liquid product).

Signal word

WARNING

Hazard statements

- H280 — Contains gas under pressure; may explode if heated.

- (Refrigerated liquid) H281 — Contains refrigerated gas; may cause cryogenic burns or injury.

The hazard the classification does not capture. Argon is chemically inert and carries no health-hazard classification, which is precisely why it is underestimated. It **asphyxiates without warning**, and because it is **about 1.38 times heavier than air** it collects in low places and persists there.

Pits, trenches, tank bottoms, vessel interiors, ship double-bottoms and inspection chambers are where argon kills people.

Section 3 — Composition

Component	CAS	Concentration
Argon	7440-37-1	≥99.99 % (welding grade, IS 5760); higher grades on request

Single-substance product.

Section 4 — First aid

Inhalation

Remove to fresh air — **but do not enter an oxygen-deficient space without air-supplied breathing apparatus and a standby person outside**. Give oxygen if trained. If breathing has stopped, give artificial respiration. Seek immediate medical attention.

Skin contact (liquid or cold gas)

Cold burns: flush with copious tepid water, do not rub, do not apply direct heat, cover loosely with a sterile dressing, seek immediate medical attention.

Eye contact (liquid or cold gas)

Flush with tepid water for at least 15 minutes and seek immediate medical attention.

Section 5 — Firefighting

Non-flammable; does not support combustion.

Specific hazards. Cylinders exposed to fire may rupture. Cool from a protected position or evacuate. Argon discharged into a confined space during firefighting creates an asphyxiating atmosphere at low level.

Section 6 — Accidental release

Evacuate, **paying particular attention to pits, trenches, basements, drains and any low-lying area**, where argon will collect and remain. Ventilate at **low level** — high-level extraction will not clear a dense gas from a pit.

Do not enter to isolate a leak without oxygen monitoring and, where deficiency is possible, air-supplied breathing apparatus.

Section 7 — Handling and storage

Gas

Secure cylinders upright. Open valves slowly. Never use argon for ventilation or cooling. Where argon is used inside a vessel or pit, provide **forced ventilation and**

continuous oxygen monitoring for the duration of the work.

Liquid

Cryogenic gloves, face shield and covered footwear. Only vessels rated for cryogenic service. **Never seal liquid argon in a closed container** — vaporisation will rupture it.

Storage

Well-ventilated area, ventilated at low level. Never store in a basement or pit. Keep cylinders secured and away from heat.

Section 8 — Exposure controls

Argon has no occupational exposure limit; it is not toxic. The control parameter is **oxygen concentration**.

19.5 % oxygen is the widely used minimum for safe entry. Measure before entry and monitor continuously throughout, at the working level rather than at the top of the space.

Personal protection: oxygen monitoring and, where deficiency is possible, air-supplied breathing apparatus; cryogenic PPE for liquid; welding eye protection of the correct shade.

Section 9 — Physical and

chemical properties

Property	Value	Source
Physical state	Gas (compressed) or cryogenic liquid	—
Appearance	Colourless	—
Odour	Odourless	—
Atomic weight	39.948	NIST
Molecular weight	39.95 g/mol	NIST
Normal boiling point	−185.85 °C (87.30 K)	NIST
Triple point	−189.4 °C (83.78 K) at 0.689 bar	NIST
Critical temperature	−122.3 °C (150.86 K)	NIST
Critical pressure	≈48.98 bar	NIST
Vapour density (air = 1)	≈1.38	Calculated
Flammability	Non-flammable	—
Oxidising properties	None	—
Proportion of atmosphere	0.93 %	Composition of dry air, U.S. Standard Atmosphere (1976)

The 1.38 vapour density is the whole safety case. Argon is materially denser than air. It sinks, it collects, and it stays. Every argon fatality in welding follows from that one number, and no amount of chemical inertness offsets it.

Thermophysical constants from the NIST Chemistry WebBook (public domain). NIST records two critical-pressure figures differing by a factor of ten; ≈48.98 bar is the accepted value. Remaining values are standard literature.

Section 10 — Stability and reactivity

Stable and chemically inert. Argon is a noble gas and does not react under any normal industrial condition — including in a welding arc, which is why it is the preferred shielding gas.

Conditions to avoid: heat; and for the liquid, contact with materials not rated for cryogenic service.

Section 11 — Toxicological information

Not toxic. A simple asphyxiant. Oxygen deficiency causes rapid loss of coordination and judgement followed by unconsciousness, usually without the casualty recognising anything is wrong.

Section 12 — Ecological information

Not classified as environmentally hazardous. Argon is a natural component of air.

Section 13 — Disposal

Vent to atmosphere in a safe, well-ventilated **outdoor** location, away from pits, drains, basements and building intakes where the dense gas could collect. Return cylinders to the supplier.

Section 14 — Transport

UN number	UN 1006 (compressed) · UN 1951 (refrigerated liquid)
Proper shipping name	ARGON, COMPRESSED
Class	2.2

Transport upright and secured, valves closed, caps fitted, in a ventilated vehicle. Never carry cylinders in an enclosed passenger compartment.

Section 15 — Regulatory information

- **Gas Cylinders Rules, 2016** (PESO)
- **IS 5760** — argon specification
- **IS 7285** — seamless steel cylinders
- **IS 3224** — cylinder valves
- **EN ISO 14175** — argon as a welding shielding gas
- **ADR 2025** — UN 1006 / UN 1951

Section 16 — Other information

Revision 1, issued 6 August 2026.

Relates to argon as supplied and does not release the user from assessing their own installation and application. A signed PDF copy is available on request for audit files; this HTML page is the current version.

PRODUCT	CAS NUMBER	UN NUMBER
Argon, compressed	**7440-37-1**	**UN 1006**
TRANSPORT CLASS	SPECIFICATION	REVISION
2.2 — Non-flammable, non-toxic gas	**IS 5760**	**1 · 6 August 2026**

Also known as: Ar · Liquid argon when refrigerated · LAR

Argon — frequently asked questions

- Why is argon more dangerous in a confined space than nitrogen? +
- Will an argon atmosphere give any warning? +
- Is welding inside a tank with argon shielding safe? +
- How long does argon persist in a pit after work stops? +
- What are the hazards of liquid argon? +

Does an oxygen meter protect me? +

References

Bureau of Indian Standards. (2021). *Valve for compressed gas cylinders excluding LPG cylinders — Specification* (IS 3224:2021, Fourth Revision).

Government of India. (2016). *Gas Cylinders Rules, 2016* (G.S.R. 1081(E)). Petroleum and Explosives Safety Organisation.

Linstrom, P. J., & Mallard, W. G. (Eds.). (n.d.). *NIST Chemistry WebBook* (NIST Standard Reference Database 69). National Institute of Standards and Technology.

National Oceanic and Atmospheric Administration, National Aeronautics and Space Administration, & United States Air Force. (1976). *U.S. Standard Atmosphere, 1976*.

ENQUIRIES

Request a quotation

State the gas or equipment, the quantity or capacity, and your location. KIGL will confirm the grade, the cylinder or plant size, and whether the location can be served from Noonmati, or through the agent network.

Request a quotation (kigl.co.in/contact) 0361-4519363

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Oxygen safety data sheet	→	(kigl.co.in/sds/oxygen)	
Nitrogen safety data sheet	→	(kigl.co.in/sds/nitrogen)	
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Last reviewed 24 October 2026.