Safety data sheet · UN 1046

Helium (He

compressed) — safety data sheet (SDS / MSDS)

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Helium (He, CAS 7440-59-7, UN 1046) is inert, non-toxic and non-flammable, and asphyxiates without warning. At 0.165 kg/m³ it is roughly one seventh the density of air, so it rises and collects against ceilings and in roof voids — the opposite of argon, and it defeats floor-level gas detection entirely.

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

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

UN 1046
UN number (compressed)

7440-59-7
CAS number

4.003
Atomic weight

0.165 kg/m³ at 21.1 °C
Vapour density

−268.9 °C
Normal boiling point

Section 1 — Identification

Product name

Helium, compressed **Chemical symbol:** He **CAS number:** 7440-59-7 · **EC number:** 231-168-5 · **UN number:** UN 1046

Identified uses

Inert shielding and purging where argon is unsuitable; leak detection by mass spectrometry; carrier gas in gas chromatography; pressurising and purging of process systems; lifting gas; cooling in cryogenic and superconducting service. **Uses advised against:** Inhalation for voice effect — this has killed people. Any confined-space use without oxygen monitoring at working height and above.

Supplier

The Kamrup Industrial Gases Limited.

Section 2 — Hazards identification

GHS classification

Gases under pressure — compressed gas.

Signal word

WARNING

Hazard statements

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

The hazard the classification does not capture. Helium carries no health-hazard classification and no exposure limit, because it is genuinely inert and genuinely non-toxic. It still asphyxiates without warning, and **it does so at the top of the room.**

At **0.165 kg/m³** helium is about one seventh the density of air. It rises immediately on release and forms a layer against the ceiling that thickens downward. Roof voids, the tops of tall vessels, mezzanines, stairwell heads and any space with a raised or vaulted ceiling are where a helium atmosphere accumulates, and a person working at height reaches it first.

Section 3 — Composition

Component	CAS	Concentration
Helium	7440-59-7	>99 %

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**. Rescuer deaths in helium and nitrogen atmospheres consistently outnumber the original casualties. Give oxygen if trained. If breathing has stopped, give artificial respiration. Seek immediate medical attention.

Skin contact (rapidly expanding gas)

Frostbite: 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 (rapidly expanding gas)

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

Section 5 — Firefighting

Non-flammable; does not support combustion. Helium will not contribute to a fire under any circumstance.

Specific hazards. Cylinders exposed to fire may rupture. Cool from a protected position or evacuate. Helium released into an enclosed space during firefighting creates an asphyxiating layer at **high** level, where anyone on a ladder or platform will meet it.

Section 6 — Accidental release

Evacuate and ventilate **at high level**. Extraction at floor level will not clear a gas that has already risen. This is the exact inverse of the response for argon or carbon dioxide, and applying the wrong one wastes the time that matters.

Pay particular attention to roof spaces, ceiling voids, upper floors of stairwells and the head space of tall vessels. Do not enter to isolate a leak without oxygen monitoring at working height and, where deficiency is possible, air-supplied breathing apparatus.

Section 7 — Handling and storage

Gas

Secure cylinders upright. Open valves slowly. Never use helium to ventilate, cool or blow down clothing. Where helium is used inside a vessel or a roofed space, provide forced ventilation drawing from **high level** and continuous oxygen monitoring at the working position.

Never inhale helium from a cylinder

Cylinder pressure can rupture lung tissue, and the gas displaces oxygen immediately.

Storage

Well-ventilated area with ventilation at high level. Keep cylinders secured, valve caps fitted, away from heat, and below 52 °C.

Section 8 — Exposure controls

Helium 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, **at head height and above**, not at floor level.

Personal protection: oxygen monitoring positioned for a light gas; air-supplied breathing apparatus where deficiency is possible; gloves and eye protection when making and breaking connections.

Section 9 — Physical and chemical properties

Property	Value	Source
Physical state	Gas (compressed)	—
Appearance	Colourless	—
Odour	Odourless	—
Atomic weight	4.003	Group technical data
Molecular weight	4.003 g/mol	NIST
Normal boiling point	−268.9 °C	Group technical data
Critical temperature	−267.9 °C	Group technical data
Critical pressure	33.2 psia (≈2.29 bar)	Group technical data
Vapour density	0.165 kg/m³ at 21.1 °C	Group technical data
Specific volume	96.7 ft³/lb at 21.1 °C, 1 atm	Group technical data
Water solubility	Very slightly soluble	Group technical data
Flammability	Non-flammable	—

The density is the whole safety case, and it points upward. Every control for helium — where you ventilate, where you mount the detector, where you expect to find the hazard — is the mirror image of the control for argon. A site that has learned to look down for gas will look in the wrong place for this one.

Constants from group technical data.

Section 10 — Stability and reactivity

Stable. Helium is a noble gas and forms no compounds under any industrial condition. No incompatible materials, no hazardous decomposition products, no polymerisation.

Conditions to avoid: heat above 52 °C, which raises cylinder pressure.

Section 11 — Toxicological information

Not toxic. A simple asphyxiant. Oxygen deficiency causes rapid breathing, reduced alertness, impaired coordination and judgement, fatigue, nausea, unconsciousness and death, in that order and quickly.

A **rise in voice pitch** is a genuine and unusually useful early indicator, because helium transmits sound faster than air. It is a reason to leave immediately — not a measurement.

Section 12 —

Ecological information

Not classified as environmentally hazardous. Helium is a natural, if scarce, component of the atmosphere and escapes to space rather than accumulating.

Section 13 — Disposal

Vent to atmosphere in a safe, well-ventilated **outdoor** location, clear of building intakes and away from any roofed or overhung area where the rising gas could be trapped. Return cylinders to the supplier.

Section 14 — Transport

UN number	UN 1046
Proper shipping name	HELIUM, COMPRESSED
Class	2.2 — Non-flammable, non-toxic gas
Labels	2.2

Transport upright and secured, valves closed, caps fitted, in a ventilated vehicle. Never carry cylinders in an enclosed passenger compartment: a leak in a car fills it from the roof down.

Section 15 — Regulatory information

- **Gas Cylinders Rules, 2016** (PESO)
- **IS 7285** — seamless steel cylinders

- **IS 3224** — cylinder valves
- **ADR 2025** — UN 1046

Section 16 — Other information

Revision 1, issued 10 August 2026.

Relates to helium 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
Helium, compressed	**7440-59-7**	**UN 1046**
TRANSPORT CLASS	REVISION	
2.2 — Non-flammable, non-toxic gas	**1 · 10 August 2026**	

Also known as: He · Helium-4 · Balloon gas when supplied to that grade

Helium — frequently asked questions

Why does helium need different precautions from argon? +

Is the voice change a reliable warning? +

Will a floor-mounted gas detector protect me? +

Helium is inert. Where does the risk actually come from? +

Can rapidly escaping helium cause cold burns? +

Does helium have an occupational exposure limit? +

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.

The Kamrup Industrial Gases Limited. (2026). *Company information and manufacturer's data* [Company statement].

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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- Hydrogen safety data sheet — the other light gas → (kigl.co.in/sds/hydrogen)
- Helium Technical Data: Properties and Grades → (kigl.co.in/guides/helium-technical-data)
- Helium hazards explained → (kigl.co.in/guides/helium-safety-data-explained)

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