Safety data sheet · UN 1072

Oxygen (O2

compressed) — safety
data sheet (SDS / MSDS)

By Mithillessh Garg (kigl.co.in/about/history#mithillessh-garg), Director (Gas Supply)

Oxygen (O_2, CAS 7782-44-7, UN 1072) is a non-flammable oxidiser that makes other materials burn violently. Hydrocarbons such as oil and grease can ignite spontaneously on contact with high-pressure oxygen, without any spark. Keep all equipment scrupulously free of oil, and open cylinder valves slowly.

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

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

UN 1072
UN number (compressed)

UN 1073
UN number (refrigerated liquid)

7782-44-7
CAS number

2.2 with 5.1 oxidiser subsidiary risk
Transport class

≈1.1
Vapour density (air = 1)

Section 1 — Identification

Product name

Oxygen, compressed **Chemical formula:** O_2 **CAS number:** 7782-44-7 · **EC number:** 231-956-9 · **UN number:** UN 1072 **Specification:** IS 309 (industrial), IS 12406 and Indian Pharmacopoeia (medical)

Identified uses

Oxy-fuel cutting, welding and heating; combustion enrichment; chemical oxidation; water and effluent treatment; aquaculture; medical therapy (medical grade only). **Uses advised against:** Ventilation or cooling of any kind. Blowing down clothing, equipment or workspaces. Any use with oil, grease or hydrocarbon-contaminated equipment.

Supplier

The Kamrup Industrial Gases Limited.

Section 2 — Hazards identification

GHS classification

Oxidising gases, Category 1 · Gases under pressure, Compressed gas.

Signal word

DANGER

Hazard statements

- H270 — May cause or intensify fire; oxidiser.
- H280 — Contains gas under pressure; may explode if heated.

Precautionary statements

- P220 — Keep away from clothing and other combustible materials.
- P244 — Keep valves and fittings free from oil and grease.
- P370+P376 — In case of fire: stop leak if safe to do so.
- P403 — Store in a well-ventilated place.

The defining hazard is not that oxygen burns — it does not. It is that oxygen makes ordinary materials burn with an intensity people do not anticipate. Steel burns in oxygen. Clothing that has absorbed oxygen can ignite from a spark and be consumed before it can be removed.

Section 3 — Composition

Component	CAS	Concentration
Oxygen	7782-44-7	≥99.5 % (industrial, IS 309) / ≥99.0 % (medical, IP)

Single-substance product. No hazardous additives.

Section 4 — First aid

Inhalation

Oxygen at normal concentrations is not harmful. Prolonged breathing of high concentrations can cause respiratory irritation and, at very high partial pressures, oxygen toxicity. Move to fresh air and seek medical attention if symptoms persist.

Skin contact

No hazard from the gas. Contact with liquid oxygen causes severe cold burns — flush with tepid water, do not rub, and seek immediate medical attention.

Eye contact

Flush with water. Cold-burn injuries from liquid require immediate medical attention.

Note for medical personnel

Treat cold burns as thermal burns. For suspected oxygen toxicity, reduce inspired concentration and treat symptomatically.

Section 5 — Firefighting

Oxygen does not burn but will vigorously support combustion

Extinguish the surrounding fire and stop the oxygen flow — a fire fed by an oxygen leak cannot be controlled while the leak continues.

Suitable media

appropriate to the burning material. Water spray to cool cylinders from a protected position.

Specific hazards

Cylinders exposed to fire may rupture. Materials not normally regarded as combustible, including many metals, will burn in an oxygen-enriched atmosphere.

Advice for firefighters

Evacuate. Cool cylinders from a distance behind protection. Self-contained breathing apparatus required. Be aware that oxygen enrichment can extend well beyond the immediate leak.

Section 6 — Accidental release

Evacuate and eliminate all ignition sources. Ventilate thoroughly — oxygen is slightly heavier than air and can accumulate at low level, in pits and in trenches. Close the valve if it can be reached safely.

Do not enter an oxygen-enriched area until it has been confirmed clear by monitoring. Anyone whose clothing may have been enriched must stay away from ignition sources for at least fifteen minutes.

RULES THAT MATTER

Handling — the oil and grease rule above all.

Section 7 — Handling and storage

No oil, grease, hydrocarbon or hand cream on any part of the system, on fittings, or on the hands of the person fitting them.

Never lubricate an oxygen regulator or valve. A stiff valve is a faulty valve.

Open valves slowly. Rapid pressurisation causes adiabatic compression heating in the regulator, which has ignited many of them.

Use only oxygen-clean equipment with the correct thread forms. Never substitute compressed-air fittings.

Never use oxygen as a substitute for compressed air.

Never test for leaks with a flame; use approved leak-detection fluid.

Storage. Upright, secured, in a well-ventilated area. **Segregate from fuel gases** — particularly acetylene, LPG and hydrogen — and from oil, grease and combustible materials. Keep away from heat. Operate first-in, first-out. No smoking.
The code of practice is **IS 6044**.

Section 8 — Exposure controls

Oxygen is not toxic at atmospheric concentration. Controls target **fire risk from enrichment** and, in the case of liquid, cold hazards.

Maintain ventilation sufficient to prevent enrichment. Monitor oxygen concentration where enrichment is possible, particularly in confined spaces, pits and trenches. Atmospheres above roughly 23–25 % oxygen should be treated as enriched and hazardous.

Personal protection: flame-resistant clothing free of oil contamination; eye protection to the correct shade for cutting or welding; cryogenic gloves and face shield when handling liquid.

Section 9 — Physical and chemical properties

Property	Value
Physical state	Gas — supplied as compressed gas
Appearance	Colourless; pale blue as a liquid
Odour	Odourless
Molecular weight	32 g/mol
Melting point	−218.4 °C
Boiling point	−183 °C
Critical temperature	−118.0 °C
Vapour density (air = 1)	1.1 (0 °C)
Solubility in water	39 mg/l
Flammability	Not flammable — no flammability limits apply
Oxidising properties	**Oxidising**

Heavier than air. Oxygen accumulates in confined spaces, particularly at or below ground level — pits, trenches, tank bottoms and basements. An oxygen-enriched pit looks exactly like an ordinary one.

Thermophysical constants from the NIST Chemistry WebBook (public domain); remaining values are standard literature.

Section 10 — Stability and reactivity

Stable under normal conditions.

Incompatible materials: oils, greases and all hydrocarbons; combustible materials generally; and many finely divided metals. Reacts violently with reducing agents and flammable gases.

Conditions to avoid: contact with hydrocarbons, heat, rapid pressurisation, and back-flow of fuel gas into the oxygen line — which is why non-return valves and flashback arrestors are fitted on both lines, not just the fuel line.

Section 11 — Toxicological information

Not toxic at ambient concentration. Breathing high concentrations for extended periods can cause pulmonary irritation; at elevated partial pressure, central nervous system oxygen toxicity is possible. Clinical administration is controlled for this reason.

Section 12 — Ecological information

Not classified as environmentally hazardous. Oxygen is a natural component of air and causes no ecological damage on release. Local enrichment is a fire hazard, not an environmental one.

Section 13 — Disposal

Vent to atmosphere in a safe, well-ventilated outdoor location away from ignition sources and confined spaces. Return cylinders to the supplier — do not treat as scrap, and do not attempt to remove residual pressure by any means other than a proper regulator.

Section 14 — Transport

UN number	UN 1072 (compressed) · UN 1073 (refrigerated liquid)
Proper shipping name	OXYGEN, COMPRESSED
Class	2.2
Subsidiary risk	5.1 Oxidiser

Transport upright and secured, valves closed, caps fitted, in a ventilated vehicle. **Never transport oxygen cylinders alongside fuel gas cylinders in an enclosed space.** Keep free of oil contamination in the load area.

Section 15 — Regulatory information

- **Gas Cylinders Rules, 2016** (PESO)
- **IS 309** — industrial oxygen specification
- **IS 12406** — medical oxygen specification
- **IS 6044** — code of practice for safe use of oxygen cylinders
- **IS 7285** — seamless steel cylinders

- **IS 3224** — cylinder valves
- **EN ISO 9809 / EN ISO 10297** — international cylinder and valve standards
- **Indian Pharmacopoeia** — medicinal oxygen
- **ADR 2025** — UN 1072 / UN 1073

More detail on the oxygen standards page (kigl.co.in/standards/oxygen-standards).

Section 16 — Other information

Revision 1, issued 6 August 2026.

Compiled from Indian and international standards and established literature. Relates to oxygen 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
Oxygen, compressed	**7782-44-7**	**UN 1072**
TRANSPORT CLASS	SPECIFICATION	REVISION
2.2 — Non-flammable, non-toxic gas (oxidising, subsidiary risk 5.1)	**IS 309 (industrial) / IS 12406 (medical)**	**1 · 6 August 2026**

Also known as: Industrial oxygen · Medical oxygen · O_2 · LOX when liquefied

Oxygen — frequently asked questions

Can oxygen itself catch fire? +

Why can oil and grease ignite on contact with oxygen? +

What does oxygen-clean mean for fittings and regulators? +

Is it safe to use oxygen to ventilate a confined space? +

What should I do if clothing becomes oxygen-saturated? +

Is the SDS different for medical oxygen? +

References

Bureau of Indian Standards. (2021). *Identification of the contents of industrial gas cylinders* (IS 4379:2021, Second Revision).

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

Bureau of Indian Standards. (2023). *Oxygen, compressed gas and liquid — Specification* (IS 309:2023, Fifth Revision).

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

Indian Pharmacopoeia Commission. (n.d.). *Indian Pharmacopoeia: Indian Pharmacopoeia monographs*.

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

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)

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RELATED

- Industrial oxygen gas — product page → (kigl.co.in/oxygen-gas)
- Medical oxygen to Indian Pharmacopoeia → (kigl.co.in/medical-oxygen-gas)
- Acetylene safety data sheet → (kigl.co.in/sds/acetylene)
- Flashback arrestors for oxy-fuel systems → (kigl.co.in/flash-back-arrestors)
- Standards governing oxygen in India → (kigl.co.in/standards/oxygen-standards)

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