

Chemical Safety Data Sheet MSDS / SDS

Oxygen SDS

Revision Date:2024-04-25 Revision Number:1

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SECTION 1: Identification of the substance/mixture and of the company/undertaking**Product identifier**

Product name: Oxygen
CAS: 7782-44-7

Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses: For R&D use only. Not for medicinal, household or other use.
Uses advised against: none

Company Identification

Company: Chemicalbook.in
Address: 5 vasavi Layout Basaveswara Nilayam Pragathi Nagar Hyderabad, India -500090
Telephone: +91 9550333722

SECTION 2: Hazards identification**Classification of the substance or mixture**

Gases under pressure: Compressed gas
Oxidizing gases, Category 1

GHS label elements, including precautionary statements

Pictogram(s)



Signal word

Danger

Hazard statement(s)

H270 May cause or intensify fire; oxidizer

Precautionary statement(s)

Prevention

P220 Keep away from clothing and other combustible materials.

P244 Keep valves and fittings free from oil and grease.

Response

P370+P376 In case of fire: Stop leak if safe to do so.

Storage

P410+P403 Protect from sunlight. Store in a well-ventilated place.

P403 Store in a well-ventilated place.

Disposal

none

Other hazards which do not result in classification

no data available

SECTION 3: Composition/information on ingredients

Substance

Chemical name: Oxygen

Common names and synonyms: Oxygen

CAS number: 7782-44-7
EC number: 231-956-9
Concentration: 100%

SECTION 4: First aid measures

Description of necessary first-aid measures

If inhaled

Refer for medical attention.

Following skin contact

ON FROSTBITE: rinse with plenty of water, do NOT remove clothes. Refer for medical attention .

Following eye contact

First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then refer for medical attention.

Following ingestion

Rinse mouth with water. Do not induce vomiting. Never give anything by mouth to an unconscious person. Call a doctor or Poison Control Center immediately.

Most important symptoms/effects, acute and delayed

Excerpt from ERG Guide 122 [Gases - Oxidizing (Including Refrigerated Liquids)]: Vapors may cause dizziness or asphyxiation without warning. Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite. Fire may produce irritating and/or toxic gases. (ERG, 2016)

Excerpt from ERG Guide 122 [Gases - Oxidizing (Including Refrigerated Liquids)]: Vapors may cause dizziness or asphyxiation without warning. Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite. Fire may produce irritating and/or toxic gases. (ERG, 2016)

Inhalation of 100% oxygen can cause nausea, dizziness, irritation of lungs, pulmonary edema, pneumonia, and collapse. Liquid may cause frostbite of eyes and skin. (USCG, 1999)

Excerpt from ERG Guide 122 [Gases - Oxidizing (Including Refrigerated Liquids)]: Vapors may cause dizziness or asphyxiation without warning. Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite. Fire may produce irritating and/or toxic gases. (ERG, 2016)

Indication of immediate medical attention and special treatment needed, if necessary

Some protection against oxygen toxicity syndrome is offered by admin of gamma-aminobutyric acid, succinate, chelating agents, certain anesthetics, and trimethamine (tris-(hydroxymethyl)aminomethane).

SECTION 5: Firefighting measures

Suitable extinguishing media

LIQ: When fire results from a leak or flow of liq oxygen onto wood, paper, waste or another similar material, the first thing to do is stop flow if possible. For small spills, or after leak or flow of liq oxygen has been stopped, use enough water to put out fire quickly. When fire involves liq oxygen and liq fuels, control it as follows: (a) When liq oxygen leaks or flows into large quantities of fuel, shut off flow of liq oxygen, and put remaining fuel fire out with extinguishing agents suitable for use on class B fires. When fuel leaks or flows into large quantities of liq oxygen, shut off flow of fuel. (b) When fuel and liq oxygen are mixed or mixing but are not yet burning, isolate area from sources of ignition and get out quickly, allowing oxygen to evaporate. When large pools of water-soluble fuel are present, use water to dilute fuel and reduce intensity of fire. This method cannot be used with fuels which do not mix with water. Appropriate extinguishing agents may be used to put out fuel fires after the oxygen has evaporated.

Specific hazards arising from the chemical

Excerpt from ERG Guide 122 [Gases - Oxidizing (Including Refrigerated Liquids)]: Substance does not burn but will support combustion. Some may react explosively with fuels. May ignite combustibles (wood, paper, oil, clothing, etc.). Vapors from liquefied gas are initially heavier than air and spread along ground. Runoff may create fire or explosion hazard. Containers may explode when heated. Ruptured cylinders may rocket. (ERG, 2016)

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Behavior in Fire: Increases intensity of any fire. Mixtures of liquid oxygen and any fuel are highly explosive. (USCG, 1999)

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Special protective actions for fire-fighters

In case of fire in the surroundings, use appropriate extinguishing media. In case of fire: keep drums, etc., cool by spraying with water. NO direct contact with water. Combat fire from a sheltered position.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

Ventilation. Remove all ignition sources. Do NOT absorb in saw-dust or other combustible absorbents. NEVER direct water jet on liquid.

Environmental precautions

Ventilation.

Methods and materials for containment and cleaning up

Notify safety personnel of significant leaks or spills. ... Shut off oxygen source if possible.

SECTION 7: Handling and storage

Precautions for safe handling

NO open flames, NO sparks and NO smoking. NO contact with flammables. NO contact with reducing agents. Handling in a well ventilated place. Wear suitable protective clothing. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Use non-sparking tools. Prevent fire caused by electrostatic discharge steam.

Conditions for safe storage, including any incompatibilities

Fireproof. Separated from combustible substances and reducing agents. Cool. GAS & LIQ: GASEOUS OXYGEN IS STORED ... IN CYLINDERS AT A PRESSURE OF 150-160 ATM, & INSULATED TANKS ARE USED FOR LIQUID OXYGEN; SMALL QUANTITIES OF LIQUID OXYGEN (2-50 L) CAN BE STORED IN DEWAR FLASKS.

SECTION 8: Exposure controls/personal protection

Control parameters

Occupational Exposure limit values

no data available

Biological limit values

no data available

Appropriate engineering controls

Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Set up emergency exits and the risk-elimination area.

Individual protection measures, such as personal protective equipment (PPE)

Eye/face protection

Wear safety goggles or face shield.

Skin protection

Cold-insulating gloves. Protective clothing.

Respiratory protection

If the exposure limits are exceeded, irritation or other symptoms are experienced, use a full-face respirator.

Thermal hazards

no data available

SECTION 9: Physical and chemical properties and safety characteristics

Physical state:	Ordinary air, compressed and shipped in cylinders under pressure. Under prolonged exposure to fire or heat containers may rupture violently and rocket.
Colour:	Colorless gas
Odour:	Odorless
Melting point/freezing point:	-218°C
Boiling point or initial boiling point and boiling range:	-183°C
Flammability:	Not combustible but enhances combustion of other substances. Heating will cause rise in pressure with risk of bursting.

Lower and upper explosion limit/flammability limit:	Not flammable in air. /Liquid oxygen/
Flash point:	none
Auto-ignition temperature:	no data available
Decomposition temperature:	no data available
pH:	no data available
Kinematic viscosity:	Gas: 101.325 kPa at 25 deg C (0.020 75 cP); Liquid: 99.70 K (0.156 cP)
Solubility:	1 vol gas dissolves in 32 vol water at 20 deg C, in 7 vol alcohol at 20 deg C; sol in other organic liquids and usually to a greater extent than in water
Partition coefficient n-octanol/water:	log Kow = 0.65
Vapour pressure:	3.27E-25mmHg at 25°C
Density and/or relative density:	1.429 (0°C)
Relative vapour density:	1.11 (vs air)
Particle characteristics:	no data available

SECTION 10: Stability and reactivity

Reactivity

The substance is a strong oxidant. It reacts with combustible and reducing materials. This generates fire and explosion hazard.
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Chemical stability

no data available

Possibility of hazardous reactions

Gas: moderate fire risk as oxidizing agent. The gas is heavier than air., The gas is heavier than air. Oxygen, which is a major component of air, is a propellant; ignites upon contact with alcohols, amines, ammonia, beryllium alkyls, boranes, dicyanogen, hydrazines, hydrocarbons, hydrogen, nitroalkanes, powdered metals, silanes, or thiols [Bretherick 1979. p.174]. Heat of water will vigorously vaporize liquid oxygen, pressures may build to dangerous levels if this occurs in a closed container. Liquid oxygen gives a detonable mixture when combined with powdered aluminum [NFPA 491M. 1991]. Almost any reducing agent and all hydrocarbons can form explosive mixtures with liquid air [Chem. Eng. News 27:2612. 1949]. Explosions have occurred when liquid air contacts organic matter. A cracked tube of activated charcoal immersed in liquid air exploded violently [J. Sci. Inst. 5:24. 1928]. Allyldimethylarsine ignites in air and on filter paper [NFPA 491M. 1991].

Conditions to avoid

no data available

Incompatible materials

Liq: Heat of water will vigorously vaporize liquid oxygen.

Hazardous decomposition products

no data available

SECTION 11: Toxicological information

Acute toxicity

Oral: no data available

Inhalation: no data available

Dermal: no data available

Skin corrosion/irritation

no data available

Serious eye damage/irritation

no data available

Respiratory or skin sensitization

no data available

Germ cell mutagenicity

no data available

Carcinogenicity

no data available

Reproductive toxicity

no data available

STOT-single exposure

Rapid evaporation of the liquid may cause frostbite. The substance at very high concentrations is irritating to the respiratory tract. The substance may cause effects on the central nervous system.

STOT-repeated exposure

Repeated or prolonged inhalation of high concentrations may cause effects on the lungs.

Aspiration hazard

no data available

SECTION 12: Ecological information

Toxicity

Toxicity to fish: no data available

Toxicity to daphnia and other aquatic invertebrates: no data available

Toxicity to algae: no data available

Toxicity to microorganisms: no data available

Persistence and degradability

no data available

Bioaccumulative potential

None Liquid oxygen

Mobility in soil

no data available

Other adverse effects

no data available

SECTION 13: Disposal considerations

Disposal methods

Product

The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

Contaminated packaging

Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

SECTION 14: Transport information

UN Number

ADR/RID: UN1072 (For reference only, please check.)

IMDG: UN1072 (For reference only, please check.)

IATA: UN1072 (For reference only, please check.)

UN Proper Shipping Name

ADR/RID: OXYGEN, COMPRESSED (For reference only, please check.)

IMDG: OXYGEN, COMPRESSED (For reference only, please check.)

IATA: OXYGEN, COMPRESSED (For reference only, please check.)

Transport hazard class(es)

ADR/RID: 2.2 (For reference only, please check.)

IMDG: 2.2 (For reference only, please check.)

IATA: 2.2 (For reference only, please check.)

Packing group, if applicable

ADR/RID: (For reference only, please check.)

IMDG: (For reference only, please check.)

IATA: (For reference only, please check.)

Environmental hazards

ADR/RID: No

IMDG: No

IATA: No

Special precautions for user

no data available

Transport in bulk according to IMO instruments

no data available

SECTION 15: Regulatory information

Safety, health and environmental regulations specific for the product in question

European Inventory of Existing Commercial Chemical Substances (EINECS)

Listed.

EC Inventory

Listed.

United States Toxic Substances Control Act (TSCA) Inventory

Listed.

China Catalog of Hazardous chemicals 2015

Listed.

New Zealand Inventory of Chemicals (NZIoC)

Listed.

(PICCS)

Listed.

Vietnam National Chemical Inventory

Listed.

IECSC)

Listed.

Korea Existing Chemicals List (KECL)

Listed.

SECTION 16: Other information

Abbreviations and acronyms

CAS: Chemical Abstracts Service

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road

RID: Regulation concerning the International Carriage of Dangerous Goods by Rail

IMDG: International Maritime Dangerous Goods

IATA: International Air Transportation Association

TWA: Time Weighted Average

STEL: Short term exposure limit

LC50: Lethal Concentration 50%

LD50: Lethal Dose 50%

EC50: Effective Concentration 50%

References

IPCS - The International Chemical Safety Cards (ICSC), website: <http://www.ilo.org/dyn/icsc/showcard.home>

HSDB - Hazardous Substances Data Bank, website: <https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm>

IARC - International Agency for Research on Cancer, website: <http://www.iarc.fr/>

eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website:
http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en

CAMEO Chemicals, website: <http://cameochemicals.noaa.gov/search/simple>

ChemIDplus, website: <http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp>

ERG - Emergency Response Guidebook by U.S. Department of Transportation, website:
<http://www.phmsa.dot.gov/hazmat/library/erg>

Germany GESTIS-database on hazard substance, website: <http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp>

ECHA - European Chemicals Agency, website: <https://echa.europa.eu/>

Other Information

Work clothes saturated with oxygen may be a serious fire hazard. Do NOT use in the vicinity of a fire or a hot surface, or during welding. Inhalation symptoms are characteristic of exposure to extremely high concentrations only. See ICSC 0138.

Disclaimer: The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. We as supplier shall not be held liable for any