

Danger



SECTION 1: Identification of the hazardous chemical and of the supplier

1.1. Product identifier

Trade name : oxygen
Name : oxygen
CAS-No. : 7782-44-7
Formula : O₂

1.2. Other means of identification

Product code : ALM/SDS/30

1.3. Recommended use of the chemical and restrictions on use

Recommended use : Test gas/Calibration gas.
Use for manufacture of electronic/photovoltaic components.
Laboratory use.
Industrial and professional uses. Perform risk assessment prior to use.
Contact supplier for more information on uses.

Restrictions on use : Consumer use.

1.4. Supplier details

AIR LIQUIDE MALAYSIA SDN. BHD.
Lot PT 2317, No. 21, Jalan PTB 1
Kawasan Perindustrian Tangga Batu, Mukim Sungai Udang,
76400 Melaka
Malaysia
T +606-3513512

1.5. Emergency phone number

Emergency number : +606-3513512

SECTION 2: Hazards identification

2.1. Classification of the hazardous chemical

Classification according to Industry Code of Practice on chemicals classification and hazard communication (2019)

Oxidising Gases, Category 1 H270
Gases under pressure : Compressed gas H280

2.2. Label elements

Labelling according to Industry Code of Practice on chemicals classification and hazard communication (2019)

Hazard pictograms (GHS MY) :



Signal word (GHS MY) : Danger
Hazard statements (GHS MY) : H270 - May cause or intensify fire; oxidizer
H280 - Contains gas under pressure; may explode if heated
Precautionary statements (GHS MY) : P220 - Keep/Store away from clothing/.../combustible materials
P244 - Keep reduction valves free from grease and oil

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P370+P376 - In case of fire: stop leak if safe to do so
P403 - Store in a well-ventilated place
P410+P403 - Protect from sunlight. Store in a well-ventilated place

2.3. Other hazards that do not result in classification

Other hazards which do not result in classification : Not classified as PBT or vPvB, The substance/mixture has no endocrine disrupting properties.

SECTION 3: Composition and information of the ingredients of the hazardous chemical

3.1. Substances

Name	Product identifier	%
oxygen (Main constituent)	CAS-No.: 7782-44-7	100

Full text of H-statements: see section 16

3.2. Mixtures

Not applicable

SECTION 4: First-aid measures

4.1. Description of necessary first aid measures

First-aid measures after inhalation : Remove victim to uncontaminated area.
First-aid measures after skin contact : Adverse effects not expected from this product.
First-aid measures after eye contact : Adverse effects not expected from this product.
First-aid measures after ingestion : Ingestion is not considered a potential route of exposure.

4.2. Most important symptoms/effects, acute and delayed

Most important symptoms and effects, both acute and delayed : Continuous inhalation of concentrations higher than 75% may cause nausea, dizziness, respiratory difficulty and convulsion. See section 11.

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

Other medical advice or treatment : None.

SECTION 5: Fire-fighting measures

5.1. Suitable extinguishing media

Suitable extinguishing media : Water spray or fog. Product does not burn, use fire control measures appropriate for the surrounding fire.
Unsuitable extinguishing media : Do not use water jet to extinguish.

5.2. Physicochemical hazards arising from the chemical

Reactivity in case of fire : No reactivity hazard other than the effects described in sub-sections below.
Hazardous combustion products : None.

5.3. Special protective equipment and precautions for fire fighters

Special protective equipment for fire fighters : Standard protective clothing and equipment (Self Contained Breathing Apparatus) for fire fighters. Standard EN 469 - Protective clothing for firefighters. Standard - EN 659: Protective gloves for firefighters. Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask.
Specific methods : Use fire control measures appropriate for the surrounding fire. Exposure to fire and heat radiation may cause gas receptacles to rupture. Cool endangered receptacles with water spray jet from a protected position. Prevent water used in emergency cases from entering sewers and drainage systems, If possible, stop flow of product, Use water spray or fog to knock down fire fumes if possible, Move containers away from the fire area if this can be done without risk.
EAC code : 2S

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SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment, and emergency procedures

6.1.1. For non-emergency personnel

Emergency procedures : Act in accordance with local emergency plan. Try to stop release. Evacuate area. Eliminate ignition sources. Ensure adequate air ventilation. See section 8 of the SDS for more information on personal protective equipment.

6.1.2. For emergency responders

Emergency procedures : Monitor concentration of released product. Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe. See section 5.3 of the SDS for more information.

6.2. Environmental precautions

Try to stop release.

6.3. Methods and materials for containment and cleaning up

Methods and material for containment and cleaning up : Ventilate area.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Safe handling of the gas receptacle : Refer to supplier's container handling instructions. Do not allow backfeed into the container. Protect containers from physical damage; do not drag, roll, slide or drop. When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders. Leave valve protection caps in place until the container has been secured against either a wall or bench or placed in a container stand and is ready for use. If user experiences any difficulty operating valve discontinue use and contact supplier. Never attempt to repair or modify container valves or safety relief devices. Damaged valves should be reported immediately to the supplier. Keep container valve outlets clean and free from contaminants particularly oil and water. Replace valve outlet caps or plugs and container caps where supplied as soon as container is disconnected from equipment. Close container valve after each use and when empty, even if still connected to equipment. Never attempt to transfer gases from one cylinder/container to another. Never use direct flame or electrical heating devices to raise the pressure of a container. Do not remove or deface labels provided by the supplier for the identification of the content of the container. Suck back of water into the container must be prevented. Open valve slowly to avoid pressure shock.

Safe use of the product : Use no oil or grease. Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt. Do not smoke while handling product. Keep equipment free from oil and grease. For more guidance, refer to the EIGA Doc. 33 - Cleaning of Equipment for Oxygen Service downloadable at <http://www.eiga.eu>. Use only oxygen approved lubricants and oxygen approved sealings. Avoid suck back of water, acid and alkalis. Only experienced and properly instructed persons should handle gases under pressure. Ensure the complete gas system was (or is regularly) checked for leaks before use. Use only with equipment cleaned for oxygen service and rated for container pressure. The product must be handled in accordance with good industrial hygiene and safety procedures. Consider pressure relief device(s) in gas installations. Do not breathe gas.

7.2. Conditions for safe storage, including any incompatibilities

Conditions for safe storage, including any incompatibilities : Segregate from flammable gases and other flammable materials in store. Observe all regulations and local requirements regarding storage of containers. Containers should not be stored in conditions likely to encourage corrosion. Container valve guards or caps should be in place. Containers should be stored in the vertical position and properly secured to prevent them from falling over. Stored containers should be periodically checked for general condition and leakage. Keep container below 50°C in a well ventilated place. Store containers in location free from fire risk and away from sources of heat and ignition. Keep away from combustible materials.

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SECTION 8: Exposure controls and personal protection

8.1. Control parameters

No additional information available

Exposure limit values for the other components

No additional information available

8.1.1 Biological monitoring

No additional information available

8.2. Appropriate engineering controls

Appropriate engineering controls : Avoid oxygen rich (>23,5%) atmospheres. Gas detectors should be used when oxidising gases may be released. Provide adequate general and local exhaust ventilation. Consider the use of a work permit system e.g. for maintenance activities. Systems under pressure should be regularly checked for leakages.

8.3. Individual protection measures, such as PPE

Hand protection:

Wear working gloves when handling gas containers. Standard EN 388 - Protective gloves against mechanical risks, performance level 1 or higher.

Eye protection:

Wear safety glasses with side shields. Standard EN 166 - Personal eye-protection - specifications

Respiratory protection:

None necessary. Self contained breathing apparatus is recommended, where unknown exposure may be expected, e.g. during maintenance activities on installation systems. Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask.

Personal protective equipment symbol(s):



Thermal hazard protection

: None in addition to the above sections.

Environmental exposure controls

: Refer to local regulations for restriction of emissions to the atmosphere. See section 13 for specific methods for waste gas treatment.

SECTION 9: Physical and chemical properties

Physical state	: Gas
Appearance	: No data available
Colour	: Colourless.
Odour	: Odourless.
Odour threshold	: Odour threshold is subjective and inadequate to warn of overexposure.
pH	: Not applicable for gases and gas mixtures.
Melting point	: -219 °C
Freezing point	: No data available
Boiling point	: -183 °C
Flash point	: Not applicable for gases and gas mixtures.
Evaporation rate	: No data available
Flammability (solid, gas)	: Non flammable.
Explosive limits	: Upper explosion limit: Not applicable. Lower explosion limit: Not applicable.
Vapour pressure	: Vapour pressure: Not applicable. Vapour pressure at 50°C: Not applicable.

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Relative vapour density at 20°C	: Not applicable.
Relative density	: 1.1 Relative gas density: 1.1
Solubility	: Water: 39 mg/l
Partition coefficient n-octanol/water (Log Pow)	: No data available
Partition coefficient n-octanol/water (Log Kow)	: Not applicable for inorganic products.
Critical temperature	: -118 °C
Auto-ignition temperature	: Non flammable.
Decomposition temperature	: Not applicable.
Viscosity, kinematic	: No reliable data available.
Viscosity, dynamic	: No reliable data available.
Density	: Not applicable for gases and gas mixtures.
Critical pressure	: 5043 kPa
Molecular mass	: 32 g/mol
Oxidising properties	: Oxidiser.
Ci	: 1

SECTION 10: Stability and reactivity

Reactivity	: No reactivity hazard other than the effects described in sub-sections below.
Chemical stability	: Stable under normal conditions.
Possibility of hazardous reactions	: Violently oxidises organic material.
Conditions to avoid	: Avoid moisture in installation systems.
Incompatible materials	: Keep equipment free from oil and grease. For more guidance, refer to the EIGA Doc. 33 - Cleaning of Equipment for Oxygen Service downloadable at http://www.eiga.eu , Consider the potential toxicity hazard due to the presence of chlorinated or fluorinated polymers in high pressure (> 30 bar) oxygen lines in case of combustion, May react violently with combustible materials, May react violently with reducing agents, For additional information on compatibility refer to ISO 11114.
Hazardous decomposition products	: None.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral)	: Not classified
Acute toxicity (dermal)	: Not classified
Acute toxicity (inhalation)	: Not classified
Skin corrosion or irritation	: Not classified pH: Not applicable for gases and gas mixtures.
Serious eye damage or eye irritation	: Not classified
Respiratory sensitization	: Not classified
Skin sensitization	: Not classified
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified
Reproductive toxicity	: Not classified
Specific target organ toxicity (STOT) – single exposure	: Not classified
Specific target organ toxicity (STOT) – repeated exposure	: Not classified
Aspiration hazard	: Not classified

oxygen (7782-44-7)

Viscosity, kinematic	No reliable data available.
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Other information	: The substance/mixture has no endocrine disrupting properties.
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SECTION 12: Ecological information

12.1. Ecotoxicity

Ecology - general : No ecological damage caused by this product.
Hazardous to the aquatic environment, short-term (acute) : Not classified
Hazardous to the aquatic environment, long-term (chronic) : Not classified

oxygen (7782-44-7)	
Partition coefficient n-octanol/water (Log Kow)	Not applicable for inorganic products.

12.2. Persistence and degradability

oxygen (7782-44-7)	
Persistence and degradability	No ecological damage caused by this product.

12.3. Bioaccumulative potential

oxygen (7782-44-7)	
Partition coefficient n-octanol/water (Log Kow)	Not applicable for inorganic products.
Bioaccumulative potential	No ecological damage caused by this product.

12.4. Mobility in soil

oxygen (7782-44-7)	
Mobility in soil	No additional information available
Partition coefficient n-octanol/water (Log Kow)	Not applicable for inorganic products.
Ecology - soil	No ecological damage caused by this product.

12.5. Other adverse effects

Ozone : Not classified
Effect on global warming : None.
Effect on the ozone layer : No effect on the ozone layer.
Other adverse effects : No known effects from this product.

SECTION 13: Disposal information

13.1. Disposal methods

Waste treatment methods : May be vented to atmosphere in a well ventilated place. Contact supplier if guidance is required. Ensure that the emission levels from local regulations or operating permits are not exceeded. Refer to the EIGA code of practice Doc.30 "Disposal of Gases", downloadable at <http://www.eiga.eu> for more guidance on suitable disposal methods. Do not discharge into any place where its accumulation could be dangerous. Return unused product in original container to supplier.

Additional information : External treatment and disposal of waste should comply with applicable local and/or national regulations.

SECTION 14: Transportation information

14.1. UN number

UN-No. (UN RTDG) : 1072
UN-No. (IMDG) : 1072
UN-No. (IATA) : 1072

14.2. UN proper shipping name

Proper Shipping Name (UN RTDG) : OXYGEN, COMPRESSED
Proper Shipping Name (IMDG) : OXYGEN, COMPRESSED

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Proper Shipping Name (IATA) : Oxygen, compressed

14.3. Transport hazard class(es)

UN RTDG

Transport hazard class(es) (UN RTDG) : 2.2 (5.1)

Danger labels (UN RTDG) : 2.2, 5.1



IMDG

Transport hazard class(es) (IMDG) : 2.2 (5.1)

Danger labels (IMDG) : 2.2, 5.1



IATA

Transport hazard class(es) (IATA) : 2.2 (5.1)

Danger labels (IATA) : 2.2, 5.1



14.4. Packing Group, if applicable

Packing group (UN RTDG) : Not applicable

Packing group (IMDG) : Not applicable

Packing group (IATA) : Not applicable

14.5. Environmental hazards

Dangerous for the environment : No

Marine pollutant : No

Other information : No supplementary information available

14.6. Transport in bulk (according to Annex II of MARPOL 73/78 and the IBC Code)

Special transport precautions : Avoid transport on vehicles where the load space is not separated from the driver's compartment, Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency, Before transporting product containers: - Ensure there is adequate ventilation, - Ensure that containers are firmly secured, - Ensure valve is closed and not leaking, - Ensure valve outlet cap nut or plug (where provided) is correctly fitted, - Ensure valve protection device (where provided) is correctly fitted.

UN RTDG

Special provisions (UN RTDG) : 355

Limited quantities (UN RTDG) : 0

Excepted quantities (UN RTDG) : E0

Packing instruction (UN RTDG) : P200

IMDG

Special provisions (IMDG) : 355

Limited quantities (IMDG) : 0

Excepted quantities (IMDG) : E0

Packing instructions (IMDG) : P200

EmS-No. (Fire) : F-C - FIRE SCHEDULE Charlie - NON-FLAMMABLE GASES

EmS-No. (Spillage) : S-W - SPILLAGE SCHEDULE Whisky - OXIDIZING GASES

Stowage category (IMDG) : A

Properties and observations (IMDG) : Non-flammable, odourless gas. Strong oxidizing agent. Heavier than air (1.1).

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IATA

PCA Excepted quantities (IATA)	: E0
PCA Limited quantities (IATA)	: Forbidden
PCA limited quantity max net quantity (IATA)	: Forbidden
PCA packing instructions (IATA)	: 200
PCA max net quantity (IATA)	: 75kg
CAO packing instructions (IATA)	: 200
CAO max net quantity (IATA)	: 150kg
Special provisions (IATA)	: A175, A302
ERG code (IATA)	: 2X

14.7. Special precautions for user

IBC code : Not applicable.

14.8. Hazchem or Emergency Action Code

EAC code : 2S.

SECTION 15: Regulatory information

15.1. Safety, health, and environmental regulations specific for the hazardous chemical in question

oxygen (7782-44-7)	
EHS Notification and Registration Scheme	Applicable
EHS Notification and Registration Scheme	Applicable
Environmental Quality (Chlorofluorocarbons Prohibition) Order 1993	Not applicable
Environmental Quality (Industrial Effluent) Regulations 2009	
Environmental Quality (Scheduled Wastes) Regulations 2007	
Control of Industrial Major Accident Hazards Regulations 1996	Group 3 Highly reactive substance
Prohibition of Use of Substance Order 1999	Not applicable
Use and Standards of Exposure of Chemical Hazardous to Health Regulations 2000	
Chemical Weapons Convention Act	
Corrosive and Explosive Substances and Offensive Weapons Act	
Dangerous Drugs Act	
Pesticides Act	
Petroleum (Safety Measures) Act	
Poisons Act 1952	
Poisons (Psychotropic Substances) Regulations 1989	

15.2. International agreements

No additional information available

SECTION 16: Other information

Version	: 3.0
Issue date	: 11/18/2015
Revision date	: 04/10/2023
Supersedes	: 31/12/2019

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Abbreviations and acronyms

- : ATE - Acute Toxicity Estimate
 - CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008
 - REACH - Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006
 - EINECS - European Inventory of Existing Commercial Chemical Substances
 - CAS# - Chemical Abstract Service number
 - PPE - Personal Protection Equipment
 - LC50 - Lethal Concentration to 50 % of a test population
 - RMM - Risk Management Measures
 - PBT - Persistent, Bioaccumulative and Toxic
 - vPvB - Very Persistent and Very Bioaccumulative
 - STOT- SE : Specific Target Organ Toxicity - Single Exposure
 - CSA - Chemical Safety Assessment
 - EN - European Standard
 - UN - United Nations
 - ADR - European Agreement concerning the International Carriage of Dangerous Goods by Road
 - IATA - International Air Transport Association
 - IMDG code - International Maritime Dangerous Goods
 - RID - Regulations concerning the International Carriage of Dangerous Goods by Rail
 - WGK - Water Hazard Class
 - STOT - RE : Specific Target Organ Toxicity - Repeated Exposure
 - UFI : Unique Formula Identifier
- Training advice : Ensure operators understand the hazard of oxygen enrichment.
- Other information : Classification in accordance with the procedures and calculation methods of Regulation (EC) 1272/2008 (CLP). Key literature references and sources of data are maintained in EIGA doc 169 : 'Classification and Labelling Guide', downloadable at <http://www.Eiga.eu> .

Safety Data Sheet (SDS), Malaysia_AL

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.