Safety Data Sheet

Oxygen, compressed

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

1.1. Product identifier

Product form	Substance
Trade name	i) Oxygen, Compressed (Medical) ii) Oxygen, Compressed (Purified) iii) Oxygen, Compressed (UHP) iv) Oxygen, Compressed (5.0 Grade) v) Oxygen, Compressed (5.5 Grade) vi) Oxygen, Compressed (Industrial) vii) Oxygen, Compressed (Aviation) Viii) Oxygen, Compressed 99.999% ix) Oxygen 5.0 x) Oxygen free Nitrogen xi) CONOXIA
CAS-No.	7782-44-7
Formula	O2

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

No additional information available

1.3. Supplier's details

Supplier
Linde Gas Products Malaysia Sdn Bhd (453560-K)
P.O. Box 10633, GPO Kuala Lumpur, 50670 WPKL.
No. 1, Jalan Graphite 3, Kawasan Perindustrian Bandar Mahkota Banting,
42700 Banting, Kuala Langat, Selangor Darul Ehsan.
T oll Free: 1800 883 888 / +603 5651 7000
csc.lg.my@linde.com

Other
Linde Malaysia Sdn. Bhd.
Lot PLO 87, Jalan Gangsa Dua,
Kawasan Perindustrian Pasir Gudang,
81700, Pasir Gudang, Johor Darul Takzim.
T oll Free: 1800 883 888 / +603 5651 7000
csc.lg.my@linde.com

Other
Linde EOX Sdn. Bhd.
Lot 36, Section 66, Jalan Peteri, Bintawa Industrial Estate,
93460 Kuching, Sarawak.
T oll Free: 1800 883 888 / +603 5651 7000
csc.lg.my@linde.com

Other
Linde EOX Sdn. Bhd.
Lot 1525, Block 3, Piasu Industrial Estate, MCLD,
98008, Miri, Sarawak.
T oll Free: 1800 883 888 / +603 5651 7000
csc.lg.my@linde.com

Other
Linde EOX Sdn. Bhd.
No.27, Lorong Sukun 28, Jalan Upper Lanang,
96008, Sibu, Sarawak.
T oll Free: 1800 883 888 / +603 5651 7000
csc.lg.my@linde.com

Other
Linde Malaysia Sdn. Bhd.
No.2026, Mukim 1, Prai Industrial Complex,
13600, Prai, Pulau Pinang.
T oll Free: 1800 883 888 / +603 5651 7000
csc.lg.my@linde.com

1.4. Emergency telephone number

Emergency phone number (24h): 1800 883 888
Poison center : Unit HAZMAT Malaysia, tel: 999

SECTION 2: Hazards identification

2.1. Classification of the hazardous chemical

Classification according to Industry Code of Practice on chemicals classification and hazard communication (2014)

Ox. Gas 1	H270
Press. Gas (Comp.)	H280

2.2. Label elements

Labelling according to Industry Code of Practice on chemicals classification and hazard communication (2014)

Hazard pictograms (GHS MY) :

GHS03 GHS04

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)

- Prevention : P220 - Keep/Store away from clothing and others combustible materials.
P244 - Keep reduction valves free from grease and oil
- Response : P370+P376 - In case of fire: stop leak if safe to do so
- Storage : P403 - Store in a well-ventilated place.
P410+P403 - Protect from sunlight. Store in a well-ventilated place

2.3. Other hazards not contributing to the classification

Other hazards which do not result in classification None.

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

3.1. Substances

Name	Product identifier	%
Oxygen, compressed (Main constituent)	(CAS-No.) 7782-44-7	100

3.2. Mixtures

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures after inhalation : Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Perform cardiopulmonary resuscitation if breathing stopped. 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 and effects, both acute and delayed

Most important symptoms and effects, both acute and delayed : See section 11.

4.3. Indication of any immediate medical attention and special treatment needed

Other medical advice or treatment : None.

SECTION 5: Fire-fighting measures

5.1. Extinguishing media

Suitable extinguishing media : Water spray or fog.

Unsuitable extinguishing media : Do not use water jet to extinguish.

5.2. Special hazards arising from the substance or mixture

Reactivity : No reactivity hazard other than the effects described in sub-sections below.

Reactivity in case of fire : No reactivity hazard other than the effects described in sub-sections below.

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.

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

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : Try to stop release. Evacuate area. Monitor concentration of released product. Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe. Eliminate ignition sources. Ensure adequate air ventilation. Act in accordance with local emergency plan. Stay upwind.

6.1.1. For non-emergency personnel

6.1.2. For emergency responders

6.2. Environmental precautions

Try to stop release.

6.3. Methods and material 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 : Do not breathe gas. The product must be handled in accordance with good industrial hygiene and safety procedures. Only experienced and properly instructed persons should handle gases under pressure. Consider pressure relief device(s) in gas installations. Ensure the complete gas system was (or is regularily) checked for leaks before use. 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 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. Use only oxygen approved lubricants and oxygen approved sealings. Use only with equipment cleaned for oxygen service and rated for container pressure. Avoid suck back of water, acid and alkalis.

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.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

No additional information available

Exposure limit values for the other components

No additional information available

8.2. Monitoring

8.3. Appropriate engineering controls

Appropriate engineering controls : Provide adequate general and local exhaust ventilation. Systems under pressure should be regularily checked for leakages. Consider the use of a work permit system e.g. for maintenance activities.

8.4. Personal protective equipment

Wear safety shoes while handling containers.

Wear safety shoes while handling containers. Standard EN ISO 20345 - Personal protective equipment - Safety footwear.

Hand protection:

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

Eye protection:

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

Respiratory protection:

None necessary.

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, Freezing point	:	Melting point: -219 °C Freezing point: -219 °C
Boiling point	:	-183 °C
Flash point	:	Not applicable for gases and gas mixtures.
Critical temperature	:	-118 °C
Auto-ignition temperature	:	Non flammable.
Decomposition temperature	:	Not applicable.
Flammability	:	Non flammable.
Vapour pressure	:	Vapour pressure: Not applicable. Vapour pressure at 50°C: Not applicable.
Evaporation rate	:	Relative evaporation rate (ether=1): Not applicable for gases and gas mixtures.
Explosive limits	:	Non flammable.
Lower explosion limit	:	No data available
Upper explosion limit	:	No data available
Explosive properties	:	Not applicable.
Minimum ignition energy	:	No data available
Solubility	:	Water: 39 mg/l
Density	:	Relative density: 1.1
Relative density	:	Relative vapour density at 20°C: Not applicable. Relative gas density: 1.1
Viscosity	:	Viscosity, dynamic: No reliable data available. Viscosity, kinematic: 1.1No reliable data available.
Critical pressure	:	5043 kPa
Gas group	:	Compressed gas
Partition coefficient n-octanol/water (Log Pow)	:	Not applicable for inorganic products.
Molecular mass	:	32 g/mol
Oxidising properties	:	Oxidiser.
Ci	:	1

SECTION 10: Stability and reactivity

Chemical stability	:	Stable under normal conditions.
Conditions to avoid	:	Avoid moisture in installation systems.
Hazardous decomposition products	:	None.
Incompatible materials	:	May react violently with combustible materials. May react violently with reducing agents. 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. For additional information on compatibility refer to ISO 11114.
Possibility of hazardous reactions	:	Violently oxidises organic material.
Reactivity	:	No reactivity hazard other than the effects described in sub-sections below.

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 or skin sensitisation	:	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

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Viscosity, kinematic (calculated value) (40 °C)	No reliable data available.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general	:	No data available.
Hazardous to the aquatic environment, short-term (acute)	:	Not classified
Hazardous to the aquatic environment, long-term (chronic)	:	Not classified

i) Oxygen, Compressed (Medical) ii) Oxygen, Compressed (Purified) iii) Oxygen, Compressed (UHP) iv) Oxygen, Compressed (5.0 Grade) v) Oxygen, Compressed (5.5 Grade) vi) Oxygen, Compressed (Industrial) vii) Oxygen, Compressed (Aviation) Viii) Oxygen, Compressed 99.999% ix) Oxygen 5.0 x) Oxygen free Nitrogen xi) CONOXIA (7782-44-7)	
Partition coefficient n-octanol/water (Log Kow)	Not applicable for gas mixtures.
Partition coefficient n-octanol/water (Log Pow)	Not applicable for inorganic products.

12.2. Persistence and degradability

i) Oxygen, Compressed (Medical) ii) Oxygen, Compressed (Purified) iii) Oxygen, Compressed (UHP) iv) Oxygen, Compressed (5.0 Grade) v) Oxygen, Compressed (5.5 Grade) vi) Oxygen, Compressed (Industrial) vii) Oxygen, Compressed (Aviation) Viii) Oxygen, Compressed 99.999% ix) Oxygen 5.0 x) Oxygen free Nitrogen xi) CONOXIA (7782-44-7)	
Persistence and degradability	No data available.

12.3. Bioaccumulative potential

i) Oxygen, Compressed (Medical) ii) Oxygen, Compressed (Purified) iii) Oxygen, Compressed (UHP) iv) Oxygen, Compressed (5.0 Grade) v) Oxygen, Compressed (5.5 Grade) vi) Oxygen, Compressed (Industrial) vii) Oxygen, Compressed (Aviation) Viii) Oxygen, Compressed 99.999% ix) Oxygen 5.0 x) Oxygen free Nitrogen xi) CONOXIA (7782-44-7)	
Partition coefficient n-octanol/water (Log Pow)	See section 12.1 on ecotoxicology
Partition coefficient n-octanol/water (Log Kow)	See section 12.1 on ecotoxicology
Bioaccumulative potential	No data available.

12.4. Mobility in soil

i) Oxygen, Compressed (Medical) ii) Oxygen, Compressed (Purified) iii) Oxygen, Compressed (UHP) iv) Oxygen, Compressed (5.0 Grade) v) Oxygen, Compressed (5.5 Grade) vi) Oxygen, Compressed (Industrial) vii) Oxygen, Compressed (Aviation) Viii) Oxygen, Compressed 99.999% ix) Oxygen 5.0 x) Oxygen free Nitrogen xi) CONOXIA (7782-44-7)	
Mobility in soil	No additional information available
Partition coefficient n-octanol/water (Log Pow)	See section 12.1 on ecotoxicology
Partition coefficient n-octanol/water (Log Kow)	See section 12.1 on ecotoxicology
Ecology - soil	Because of its high volatility, the product is unlikely to cause ground or water pollution. Partition into soil is unlikely.

12.5. Other adverse effects

Ozone : Not classified

Effect on global warming : None.

Effect on the ozone layer : None.

Other adverse effects : No known effects from this product.

SECTION 13: Disposal information

13.1. Disposal methods

Waste treatment methods : 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. May be vented to atmosphere in a well ventilated place. 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.

{ Refer to the EIGA code of practice (Doc.30 "Disposal of Gases", downloadable at http://www.eiga.org) for more guidance on suitable disposal methods. Dispose of container via supplier only. Discharge, treatment, or disposal may be subject to national, state, or local laws.

SECTION 14: Transportation information

14.1. UN number

UN-No.(UN RTDG) : 1072

UN-No. (IMDG) : 1072

UN-No. (IATA) : 1072

14.2. Proper Shipping Name

Proper Shipping Name (UN RTDG) : OXYGEN, COMPRESSED

Proper Shipping Name (IMDG) : OXYGEN, COMPRESSED

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

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. Special precautions for user

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

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).
MFAG-No	:	122

- 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
ERG code (IATA)	:	2X

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

14.8. 14.8. Hazchem or Emergency Action Code

EAC code	:	2S.

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

Occupational Safety and Health Act 1994 and relevant regulations:

Occupational Safety and Health (Classification, Labeling and Safety Data Sheet of Hazardous Chemicals) Regulations 2013.
Occupational Safety and Health (Use and Standards of Exposure of Chemicals Hazardous to Health) Regulations 2000.

Environment Quality Act 1974 & regulations:

Environment Quality (Clean Air) Regulations 2014.
Environmental Quality (Scheduled Wastes) Regulations 2005.

15.2. 15.2. Chemical safety assessment

SECTION 16: Other information

Version	:	3.1
Issue date	:	30/03/2018
Revision date	:	13/07/2023
Supersedes	:	17/04/2023
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
Training advice	:	None.

This information is provided without warranty. The information is believed to be correct. This information should be used to make an independent determination of the methods to safeguard workers and the environment.