Safety Data Sheet

according to Regulation (EC) No 1907/2006 (REACH), as amended according to the requirements of Regulation (EU) 2015/830

OXYGEN

Revised: 04/02/2019
Revision No 02
Prepared: 21/03/2018

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier
Trade name of the substance – *Oxygen Name of the substance - oxygen CAS No 7782-44-7*
EC number: 231-956-9
Identification number: 008-001-00-8
REACH registration number: not registered due to the exemption according to Annex V of Regulation (EC) No 1907/2006.

1.2 Relevant identified uses of the substance or mixture and uses advised against
Gas oxygen used food packaging gas, for welding and cutting ferrous and non-ferrous metals. Liquid oxygen shall be used after its gasification.
1.2.2 Uses advised against: *No*

1.3 Details of the supplier of the safety data sheet:
Manufacturer/supplier: UAB Gaschema
Address: Jonalaukio 1, Jonavos rajono savivaldybė, LT 55296
Country: The Republic of Lithuania
Phone: +370 349 56259
Website of the manufacturer/supplier: www.gachema.lt.
Person responsible for the safety data sheet: Z. Andriulaitienė, z.andriulaitiene@gaschema.lt

1.4 Emergency telephone number
Office on Intoxication Control and Information in (24/7): *+370 52362052, mobile: +370+370 53378, e-mail: aib@essc.sam.lt*
Common emergency phone number: 112.

2. HAZARDS IDENTIFICATION

2.1.1 Classification according to Regulation (EC) No 1272/2008:
Oxidising gas Category 1 (for gas and liquid oxygen) Gas under pressure (for gas oxygen)
Refrigerated liquefied gas (for liquid oxygen)
H270 May cause or intensify fire, oxidiser (for gas and liquid oxygen) H280 Contains gas under pressure; may explode if heated (for gas oxygen),
H281 Contains refrigerated gas, may cause cryogenic burns or injury (for liquid oxygen).

2.1.3 Supplemental information:
See Section 16 for the full text of the R-phrases and H-statements.

2.2 Label elements
Labelling according to Regulation (EC) No 1272/2008:

Signal word 'Danger'
H270 May cause or intensify fire, oxidiser (for gas and liquid oxygen) H280 Contains gas under pressure; may explode if heated (for gas oxygen),
H281 Contains refrigerated gas, may cause cryogenic burns or injury (for liquid oxygen). P244 - Keep reduction valves free from grease and oil (gas and liquid oxygen)
P282 - Wear cold protective gloves/use face shield/eye protection (for liquid oxygen)
P336 - Thaw frosted parts with lukewarm water. Do not rub the affected areas (for liquid oxygen)
P315 - Seek medical advice immediately (for liquid oxygen)
P403 - Protect from sunlight. Store in a well-ventilated place
P250 - Do not subject to shock (for liquid and gas oxygen)

2.3 Other hazards:
The assessment of the PBT and vPvB criteria is not performed for non-organic substances according to Annex XIII of Regulation (EC) No 1907/2006.

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

According to Regulation (EC) No 1907/2006, the product is single substance.

CAS No.	EC No.	REACH registration No.	mass fraction %	Name	Classification according to the requirements of Regulation (EC) No 1272/2008
7782-44-7	231-956-9	not registered due to the exemption according to Regulation (EC) No 1907/2006.	99.5-99.7	Oxygen	Oxidising gas, cat. 1, H270 Pressurized gas (gas), H280 (gas) Refrigerated liquefied gas (liquid), H281 (liquid)

4. FIRST-AID MEASURES

4.1 **Description of first aid measures:**
The route of exposure of the body by a single substance/preparation:
Inhalation: *Remove the victim to a safe place.*
Dermal/Eye contact: *rinse with warm water, seek medical advice (for liquid oxygen).*
In case of frostbite, spray with water for at least 15 minutes. Put on a sterile bandage. Seek medical advice.
If swallowed: *Ingestion is not considered to be a potential route of exposure.*
4.2 **Most important symptoms and effects (acute and delayed)** *considerable concentration (over 75 %) causes oxygen excess in blood that leads to spasms, nausea, sickness, impaired respiratory function, convulsions; seek medical advice.*

Dermal: *cover frostbitten parts with a sterile bandage, seek medical advice (liquid oxygen) Delayed effects unknown.*

4.3 Indication of any immediate medical attention and special treatment needed
None.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media
Appropriate fire extinguishing measures: *water, water foam, carbon dioxide (carbonic acid gas) extinguishers.*
Extinguishing media not to be used for safety reasons: *none.*
Unsuitable extinguishing media: *none*

5.2 Special hazards arising from the substance or mixture
Hazardous substances, hazardous combustion products, hazardous gas that form when the substance or mixture burns: *being a strong oxidising agent, oxygen accelerated combustion of other substances, therefore, for contact with oxygen only allowable substance shall be used. Danger is caused by grease.*

5.3 Advice for firefighters
Specific methods*: if possible, stop product leakage; move away from container and cool with water from a protected position; remove containers from fire area if without risk; use the firefighting measures suitable for extinguishing the surrounding fire; flames and heat may cause containers to rupture;*
Cool containers in the danger zone with water spray from a safe area; prevent the water from entering sewers and sewage systems in case of accidents.

Use breathing apparatus, protective clothing for firefighters, protective gloves for firefighters.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures. For non-emergency personnel: wear personal protective equipment referred to in Item 8 and ensure proper ventilation.

For emergency responders: wear personal protective equipment referred to in Item 8 and ensure proper ventilation.

6.2 **Environmental precautions** *try to stop the liquid oxygen leak. Prevent the spillage from entering drains, cellars, mines or other places where accumulation of oxygen would be dangerous*

6.3 **Methods and material for containment and cleaning up:** *Ventilate the place of accident. Cylinders with gas contain pressure, therefore, valves and flaps shall be released slowly.*

6.4 Reference to other sections
Section 8 identifies personal protective equipment; Section 13 identifies waste management methods.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling
Usage requirements and recommendations: *indoors, where the volume of oxygen may increase, keep away from inflammable substances and limit the presence of people. In such areas the exhaust ventilation must be provided in accordance with STR 2.09.02 'Heating, ventilation, air conditioning' requirements. Do not use any lubricants. Release valve slowly to avoid pressure shock. If necessary, thaw valves with dry, warm air or nitrogen.*
Storage requirements: *shall be clean, dry and well-ventilated; they shall contain no inflammable substances. During storage, conditions shall allow storing different gases as well as empty and full cylinders, cryogenic tanks separately. Also, there shall be conditions allowing rotation of cryogenic tanks. Some substances (wood, paper, asphalt, coal, etc.) soaked with liquid oxygen may explode.*

Instructions on the limit quantity of the substance/preparation to be stored under the conditions specified:
not regulated.

7.2 Conditions for safe storage, including any incompatibilities.
Unsuitable (incompatible) substances to be stored separately: *flammable gases, greases, fats, substances that cause sparkle, reducing agents (chemical substances). No more than 500 cylinders in stock. Keep away from ignition sources (including electrostatic dischargers).*

Requirements for the package of the substance/preparation: *cylinders that are in compliance with the requirements of the technical regulation of steel seamless gas cylinders. Residual pressure in the cylinders received from the customers shall not be less than 0.05 MPa (0.5 kg/cm^2). Residual pressure of each cylinder shall be checked.*
Liquid oxygen shall be stored in cryogenic tanks that are compliance with the requirements of LST EN 13458-1 or LST EN 14197-1.
7.3 Specific end use(s).
Used for welding and cutting of ferrous and non-ferrous metals

8. EXPOSURE CONTROL/PERSONAL PROTECTION

8.1 Control parameters
Occupational exposure limit values: *According to Lithuanian Hygiene Norm HN 23 long-term exposure limit value and short-term exposure limit value not specified*
8.2 Exposure controls

8.2.1 **Appropriate engineering controls**: *inlet and exhaust ventilation.*

8.2.2 Individual protection measures:
Eye and face protection: *safety goggles, organic glass visors.*
Skin protection: *work clothes*
Hand protection: *protective gloves (for liquid oxygen), gloves.* EN 388
Other: *dense cotton suit (jacket, trousers), special footwear EN ISO 20345*
Respiratory protection: *Positive pressure airline with mask are to be used in oxygen-deficient atmosphere.*
Thermal hazard protection: not obligatory

8.2.3 Environmental exposure controls: Avoid oxygen saturation (>23,5%)

Personal hygiene measures: *during work, wear clean work clothing; after completion of work, wash hands with soap, change clothes. Keep work clothing separately. In oxygen-enriched atmosphere*

do not smoke, do not use open flame and keep away from fire. Ventilate clothing some 30 min

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information about physical and chemical properties

Appearance:	*odourless, colourless gas, liquid*
pH	*not applicable for gas*
Melting/freezing temperature:	*–218 ^{0}C;*
Initial boiling temperature and boiling temperature range:	*-182.87 ^{0}C;*
Flash point:	*none*
Vaporisation rate:	*not applicable*
Flammability:	*supports combustion*
Upper (lower) explosion/flammability limits:	*no data*
Vapour pressure:	*not applicable*
Vapour density:	*not available*
Relative density, gas (air = 1):	*1.1*
Relative density, gas (water = 1):	*1.1*
Brittleness:	*not applicable*
Partition coefficient: n-octanol/water:	*not determined for inorganic gas substances*
Autoignition temperature:	*not applicable*
Decomposition temperature:	*not applicable*
Viscosity:	*not applicable*
Explosive properties:	*not applicable*
Oxidising properties:	*oxidizer*

9.2 Other information
No

10. STABILITY AND REACTIVITY

10.1 Reactivity
Chemical stability and hazardous chemical reactions: *stable under normal conditions.*

10.2 **Chemical stability:** *stable under normal conditions.*

10.3 Hazardous reactions possibility
Need for stabilisers: *not required.*
Exothermic reaction possibility: *none.*

10.4 Conditions to be avoided
high ambient temperature.

10.5 **Incompatible Materials:** *combustible and inflammable substances, reducing agents, greases, fats.*

10.6 **Dangerous decomposition products**: *none.*

11. TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects (of the substance): *non-toxic.*

11.1.1. **Acute toxicity:** *non-toxic.*
11.1.2. **Skin corrosion and (or) irritation:** *does not irritate*
11.1.3. **Respiratory or skin sensitisation:** *none*
11.1.4. **Germ cell mutagenicity:** *none*
11.1.5. **Carcinogenicity:** *no effect determined by IARC (International Agency for Research on Cancer).*
11.1.6. **Toxicity for reproduction:** *none*
11.1.7. **Specific target organ toxicity (STOT) (single exposure):** *not typical*
11.1.8. **Specific target organ toxicity (STOT) (repeated exposure):** *not typical*
11.1.9. **Aspiration hazard:** *none*

12. ECOLOGICAL INFORMATION

12.1 Toxicity: non-toxic.

12.2 Stability and degradability: no data

12.3 Bioaccumulative potential: none

12.4 Mobility in soil: no data available

12.5 Results of PBT and vPvB assessment: The assessment of the PBT and vPvB criteria is not performed for non-organic substances according to Annex XIII of Regulation (EC) No 1907/2006.

12.6 Other adverse effects: No

13. DISPOSAL CONSIDERATIONS

13.1. Waste residues: Oxygen waste according to Regulation (EU) No 1357/2014 are classified as hazardous waste by assigning the code HP 2 'Oxidizing', hazard statement code H270 'May cause or intensify fire; oxidiser', HP 15 'Waste capable by any means, after disposal, of yielding another substance, e.g. a leachate, which possesses any of the characteristics listed above', the hazard statement EUH044 'Risk of explosion if heated under confinement', the hazard statement code H280 'Contains gas under pressure; may explode if heated'. H281 'Contains refrigerated gas, may cause cryogenic burns or injury (for liquid oxygen).'
Can only be released in a well-ventilated area. When discharging into the environment, adjust the discharge speed and avoid oil and other flammable materials. Do not dispose of in a place where substance accumulation can be dangerous. Follow the EIGA Practice Code Doc.30 'Disposal of Gases' (download fromhttp://www.eiga.org) for recommendations on appropriate disposal methods. If in doubt, contact the supplier.
When using cylinders, it is forbidden to fully use the gas contained therein, the pressure in the cylinder must be at least 0.5 bar.
Oxygen waste in Lithuania must be handled in accordance with the Law on Waste Management of the Republic of Lithuania, in other countries – in accordance with the requirements of national legislation.
13.2 Packaging waste: Oxygen waste of inner packaging/cylinders, tanks, containers according to Regulation (EU) No 1357/2014 are classified as hazardous waste. The codes assigned to them depend on the amount of oxygen remaining in the packaging waste. Inner packaging/cylinders, tanks, containers containing 20% oxygen are assigned the code HP 2 'Oxidizing', hazard statement code H270 'May cause or intensify fire, oxidiser', HP 15 'Waste capable of exhibiting a hazardous property listed above not directly displayed by the original waste',

the hazard statement EUH044 'Risk of explosion if heated under confinement', the hazard statement code H280 'Contains gas under pressure; may explode if heated' (for gas oxygen), H281 'Contains refrigerated gas, may cause cryogenic burns or injury' (for liquid oxygen).
Empty cylinders with faulty taps (valves) must be returned to the BPS Filling station. It is necessary to follow the manual approved by the company manager when discharging gas from such cylinders. Users of gas supplied in cylinders must protect the cylinders against temperature exposure, mechanical, chemical and other damage. When the cylinder is completely emptied, there is no compressed oxygen left in the cylinder when the valve is turned off. According to Regulation (EU) No 1357/2014 a cylinder is classified as non-hazardous waste.
Packaging waste must be handed over to waste management companies. Waste gas mixtures in Lithuania must be handled in accordance with the Law on Packaging and Packaging Waste Management of the Republic of Lithuania, applicable waste management regulations; in other countries - in accordance with the requirements of national legislation.
The labelling according to Regulation (EC) No 1272/2008 must not be removed until packages are completely emptied.

14. TRANSPORT INFORMATION

14.1 UN number (gas)
1073 (liquid)

14.2 UN proper shipping name
Oxygen, compressed
Oxygen, refrigerated liquid
14.3 Transport hazard class (-es) Road / rail transport (ADR / RID) Class: 2 Classification code: 3 O
P.N. nr.: 225
Tunnel restrictions: C/E: Do not drive in category C and D tunnels, during tank transport. Do not drive in category E tunnels.
Air transport (ICAO-TI / IATA-DGR)
Class / Section (Additional risk (s)): 2.2 (5.1)
Maritime transport (IMDG)
Class / Section (Additional risk (s)): 2.2 (5.1)
Emergency Plan (EmS) - In case of fire: F-C
Emergency Plan (EmS) - In case of leakage: S- W

14.4 Package group
No

14.5 Hazardous shipment code:
25 (oxygen, compressed)
225 (oxygen, refrigerated liquid)

14.6 Environmental hazards:
Packing instruction: P203
Road / Rail Transport (ADR / RID): P203 Air transport (ICAO-TI / JATA-DGR)
Transportation by Passenger and Cargo Aircraft: DO NOT LOAD IN PASSENGER AIRCRAFT

Packing instruction: Passenger and Cargo Aircrafts: FORBIDDEN (prohibited)
Maritime transport (IMDG): P203
Special precautions for user
Avoid transport in vehicles where the cargo compartment is not separated from the cab. For users: ensure that the driver of the vehicle is aware of the potential dangers of the cargo and knows what to do in the event of an accident.
Before shipment of product containers:
- Ensure adequate ventilation. – Ensure that the containers are properly secured.
- Ensure that the reservoir valve is closed and there is no leakage.
- Ensure that the drain valve cover or plug (if fitted) is properly secured.
- Ensure that the valve safety device (if fitted) is properly secured.
Other transportation information: Avoid transport in vehicles where the cargo compartment is not separated from the cab. Ensure that the driver of the vehicle is aware of the potential dangers of the cargo and knows what to do in the event of an accident. Before shipment of product containers:
- Ensure that the containers are properly secured.
- Ensure that the reservoir valve is closed and there is no leakage.
- Ensure that the drain valve cover or plug (if fitted) is properly secured.
- Ensure that the valve safety device (if fitted) is properly secured.
- Ensure adequate ventilation. - Follow applicable rules

Oxygen shall be transported in cylinders with covers. The cylinders shall be transported in horizontal position with partitions between cylinders or in special containers in vertical position (necessarily with a guard protecting against possible falling over).
When the quantity of the buyable oxygen in the cylinders does not exceed 1000 l for a transport unit, the ADR requirements stipulated in subsection 1.1.3.6.3 of the restructured ADR edition as of 2001 shall be applied partially.
Liquid oxygen shall be transported by motor transport in cryogenic tanks and containers (tankers) that are in compliance with
Clause 6.7.4 of ADR.

14.7 Special precautions for user No
14.8 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code. Not applicable.

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
Legal acts regulating the classification and labelling of the substance/preparation, restriction on its usage, requirements on personnel safety and health, limit values in work area, waste handling, etc.:
According to Regulation (EC) No 1272/2008 of the European Parliament and of the Council on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006;
- Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH);
- - Commission Regulation (EU) No 453/2010 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH);
- Commission Regulation (EU) No 1357/2014 replacing Annex III to Directive 2008/98/EC of the European Parliament and of the Council on waste and repealing certain Directives;
- Hygiene Norm HN 23. Limit Values of Professional Exposure for Substances/Preparations. General Requirements for Measurement and Exposure Assessment;
- Applicable "Regulations on Personnel Protection Against Chemical Factors at Work" and "Regulations on Personnel Protection Against Carcinogenic Effects at Work";
- Hygiene Norm HN 2002. Forbidden and Restricted Substances/Preparations;

- Applicable Law on Waste Handling of the Republic of Lithuania;
- Applicable Waste Management Rules;
- Applicable Regulations for Labelling and Price Indication of the Items (Goods) Sold of the Republic of Lithuania;
- Company Standard ĮST
- Hygiene Norm HN 24. Drinking Water Safety and Quality Requirements;
- Valid standard LST EN 1089-3. Transportable gas cylinders. Gas cylinder identification (excluding LPG). Part 3. Colour coding;
- Applicable Rules for temporary use of seamless gas cylinders;
- European Agreement Concerning the International Carriage of Dangerous Goods by Road (ADR);
- European Agreement Concerning the International Carriage of Dangerous Goods by Rail (RID);
- International Maritime Dangerous Goods (IMDG) code;
Additional information indicated on the label of the substance/preparation package (container):
Visual symbol No. 4 ("Keep away from sunlight") as per LST EN ISO 780;

15.2 Chemical safety assessment
not registered due to the exemption according to Annex V of Regulation (EC) No 1907/2006, and therefore chemical safety assessment was not performed.

16. OTHER INFORMATION

Explanation of the abbreviations used:
H270 -May cause or intensify fire, oxidiser, H280 - Contains gas under pressure; may explode if heated;
H281 - Contains refrigerated gas, may cause cryogenic burns or injury; P244 - Keep reduction valves free from grease and oil;
P282 - Wear cold insulating gloves/use face shield / eye protection; P336 - Defrost affected parts with lukewarm water. Do not rub affected areas;
P315 - Seek medical advice immediately;
P403 - Protect from sunlight. Store in a well-ventilated place;
P250: 'Do not subject to shock';
ADR - Agreement on the Transportation of Dangerous Goods by Road;
RID – European Agreement Concerning the International Carriage of Dangerous Goods by Rail.

Information contained in this Material Safety Data Sheet shall be available for all persons work whereof is relevant to the substance/preparation. Data provided herein is in line with knowledge available for us and is intended to define the substance/preparation in terms of safety and health protection at work as well as in terms of environmental issues. Information contained in this Material Safety Data Sheet will be supplemented in case new data about the effect of the substance/preparation on health and environment as well as new data about prevention measures in order to decrease risk or to eliminate risk completely become available. Information contained herein reveals no other features of the substance/preparation.

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The end of the Safety Data Sheet.

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