

MATERIAL SAFETY DATA SHEET



OXYGEN (LIQUID, REFRIGERATED)

SSI/MSDS/LOX/1
Issue No. : 2; Rev. No. 1
Date : 10.12.2018

Danger



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

1.1. Product identifier

Trade name : OXYGEN, REFRIGERATED LIQUID
 SDS no SSI/MSDS/LOX/1
 Chemical description OXYGEN
 CAS-No. : 7782-44-7
 EC-No. : 231-956-9
 EC Index-No. : 008-001-00-8
 Registration-No. Listed in Annex IV / V REACH, exempted from registration.
 Chemical formula O₂

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

Relevant identified uses : Industrial and professional. Perform risk assessment prior to use., Test gas/Calibration gas. Laboratory use. Medical applications. Contact supplier for more information on uses.
 Uses advised against : Consumer use.

1.3. Details of the supplier of the safety data sheet

Company identification : SICGILSOL India Pvt Ltd
 Plot S-2, Phase III, Sipcot industrial complex,
 Nellikuppam, Walajapet Taluk, Ranipet-632405
 Mob.No : 09677237866
<http://www.sicgilsol.com/>

1.4. Emergency telephone number

Emergency telephone number : Mob.No : 09677237866

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Physical hazards Oxidising Gases, Category 1 : H270
 Gases under pressure : Refrigerated liquefied gas : H281

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP) :



Signal word (CLP) : Danger
 Hazard statements (CLP) : H270 - May cause or intensify fire; oxidizer
 H281 - Contains refrigerated gas; may cause cryogenic burns or injury.

Precautionary statements (CLP)

Prevention : P220 - Keep away from combustible materials.
 P244 - Keep valves and fittings free from oil and grease.
 P282 - Wear cold insulating gloves and either face shield or eye protection cold insulating gloves, face shield, eye protection
 Response : P336+P315 - Thaw frosted parts with lukewarm water. Do not rub affected area. Get immediate medical advice / attention, P370+P376 - In case of fire: stop leak if safe to do so.
 Storage : P403 - Store in a well-ventilated place.

2.3. Other hazards : Contact with liquid may cause cold burns/frostbite.

SECTION 3: Composition/information on ingredients

3.1. Substances : Not applicable

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
OXYGEN, REFRIGERATED LIQUID	(CAS-No.) 7782-44-7 (EC-No.) 231-956-9 (EC Index-No.) 008-001-00-8 (Registration-No.) *1	100	Ox. Gas 1, H270 Press. Gas (Ref. Liq.), H281

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Contains no other components or impurities which will influence the classification of the product.

*1: Listed in Annex IV / V REACH, exempted from registration.

*2: Registration deadline not expired.

*3: Registration not required: Substance manufactured or imported < 1t/y. Full text of H-statements see section 16.

3.2. Mixtures : Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

- Inhalation : Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.
- Skin contact : In case of frostbite spray with water for at least 15 minutes. Apply a sterile dressing. Obtain medical assistance.
- Eye contact : Immediately flush eyes thoroughly with water for at least 15 minutes.
- Ingestion : Ingestion is not considered a potential route of exposure.

4.2. Most important symptoms and effects, both acute and delayed

- : Continuous inhalation of concentrations higher than 75% may cause nausea, dizziness, respiratory difficulty and convulsion. Refer to section 11.

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

- : 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

- Specific hazards : Supports combustion., Exposure to fire may cause containers to rupture/explode.
- Hazardous combustion products : None.

5.3. Advice 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.
- Special protective equipment for fire fighters : Standard protective clothing and equipment (Self Contained Breathing Apparatus) for firefighters. Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with fullface mask. Standard EN 469 - Protective clothing for firefighters. Standard - EN 659: Protective gloves for firefighters.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

- : 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. Ensure adequate air ventilation. Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous. Act in accordance with local emergency plan. Stay upwind.

6.2. Environmental precautions

- : Try to stop release.

6.3. Methods and material for containment and cleaning up

- : Ventilate area.

6.4. Reference to other sections

- : See also sections 8 and 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

- Safe use of the product : 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 regularly) checked for leaks before use. Do not smoke while handling product. 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 breathe gas. Avoid release of product into atmosphere.

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Safe handling of the gas receptacle : Refer to supplier's container handling instructions Do not allow backfeed into the container. Protect cylinders 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 cylinder 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 cylinder contents. Containers should be stored in the vertical position and properly secured to prevent them from falling over.

7.2. Conditions for safe storage, including any incompatibilities

: 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.

7.3. Specific end use(s)

: None

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

OEL (Occupational Exposure Limits) : No data available.

DNEL (Derived-No Effect Level) : No data available.

PNEC (Predicted No-Effect Concentration) : No data available.

8.2. Exposure controls

8.2.1. Appropriate engineering controls

: Provide adequate general and local exhaust ventilation. Systems under pressure should be regularly checked for leakages. Ensure exposure is below occupational exposure limits (where available). Oxygen detectors should be used when asphyxiating gases may be released. Consider the use of a work permit system e.g. for maintenance activities.

8.2.2. Individual protection measures, e.g. personal protective equipment

: A risk assessment should be conducted and documented in each work area to assess the risks related to the use of the product and to select the PPE that matches the relevant risk. The following recommendations should be considered: PPE compliant to the recommended EN/ISO standards should be selected.

• Eye/face protection

: Wear safety glasses with side shields. Wear goggles and a face shield when transfilling or breaking transfer connections. Standard EN 166 - Personal eye-protection - specifications

• Skin protection

- Hand protection

: Wear working gloves when handling gas containers.
Standard EN 388 - Protective gloves against mechanical risk.

- Other

: Consider the use of flame resistant safety clothing. Standard EN ISO 14116 - Limited flame spread materials. Wear safety shoes while handling containers. Standard EN ISO 20345 - Personal protective equipment - Safety footwear.

• Respiratory protection

: None necessary.

• Thermal hazards

: Wear cold insulating gloves when transfilling or breaking transfer connections. Wear cold insulating gloves. Standard EN 511 - Cold insulating gloves.

8.2.3. Environmental exposure controls

: None necessary.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state at 20°C / 101.3kPa

: Gas.

Colour

: Bluish liquid.

Odour

: No odour warning properties.

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Odour threshold	: Odour threshold is subjective and inadequate to warn of overexposure.
pH value	: Not applicable.
Molar mass	: 31.99
Melting point	-219 °C
Boiling point	-183 °C
Flash point	Not applicable for gases and gas mixtures.
Critical temperature [°C]	-118 °C
Evaporation rate (ether=1)	Not applicable for gases and gas mixtures.
Flammability range	Non flammable.
Vapour pressure [20°C]	Not applicable.
Vapour pressure [50°C]	Not applicable.
Relative density, gas (air=1)	1.1
Relative density, liquid (water=1)	1.1
Solubility in water	39 mg/l
Partition coefficient n-octanol/water [log Kow]	Not applicable for inorganic gases.
Auto-ignition temperature	Not applicable.
Viscosity [20°C]	Not applicable.
Explosive Properties	Not applicable.
Oxidising Properties	Oxidiser.
- Coefficient of oxygen equivalency (Ci)	1

9.2. Other information

Other data : Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below ground level.

SECTION 10: Stability and reactivity

10.1. Reactivity

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

10.2. Chemical stability

: Stable under normal conditions.

10.3. Possibility of hazardous reactions

: Risk of explosion if spilt on organic structural materials (e.g. wood or asphalt). Violently oxidises organic material.

10.4. Conditions to avoid

: None under recommended storage and handling conditions (see section 7).

10.5. Incompatible materials

: 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. Keep equipment free from oil and grease. May react violently with combustible materials. May react violently with reducing agents. For additional information on compatibility refer to ISO 11114. Consult supplier for specific recommendations.

10.6. Hazardous decomposition products

None

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity	: No toxicological effects from this product.
Skin corrosion/irritation Serious	: No known effects from this product.
eye damage/irritation	: No known effects from this product.
Respiratory or skin	: No known effects from this product.
sensitisation Germ cell	: No known effects from this product.
mutagenicity Carcinogenicity	: No known effects from this product.
Toxic for reproduction : Fertility	: No known effects from this product.
Toxic for reproduction : unborn child	: No known effects from this product.
STOT-single exposure	: No known effects from this product.
STOT-repeated exposure	: No known effects from this product.
Aspiration hazard	: Not applicable for gases and gas mixtures.

SECTION 12: Ecological information

12.1. Toxicity

Assessment : No ecological damage caused by this product

EC50 48h - Daphnia magna [mg/l]	No data available.
EC50 72h - Algae [mg/l]	No data available.
LC50 96 h - Fish [mg/l]	No data available.

12.2. Persistence and degradability

Assessment : No ecological damage caused by this product

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12.3. Bioaccumulative potential

Assessment : No ecological damage caused by this product

12.4. Mobility in soil

Assessment : No ecological damage caused by this product

12.5. Results of PBT and vPvB assessment

Assessment : Not classified as PBT or vPvB.

12.6. Other adverse effects

Effect on the ozone layer : None.

Effect on global warming : None.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Contact supplier if guidance is required. May be vented to atmosphere in a well ventilated place. Do not discharge into any place where its accumulation could be dangerous. 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.org> for more guidance on suitable disposal methods.

List of hazardous waste codes (from Commission Decision 2001/118/EC) : 16 05 05 : Gases in pressure containers other than those mentioned in 16 05 04.

13.2. Additional information

: None.

SECTION 14: Transport information

14.1. UN number

: 1073

14.2. UN proper shipping name

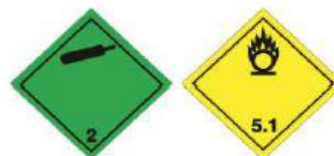
Transport by road/rail (ADR/RID) : OXYGEN, REFRIGERATED LIQUID

Transport by air (ICAO-TI / IATA-DGR) : OXYGEN, REFRIGERATED LIQUID

Transport by sea (IMDG) : OXYGEN, REFRIGERATED LIQUID

14.3. Transport hazard class(es)

Labelling :



2.2 : Non-flammable, non-toxic gases
5.1 : Oxidizing substances

Transport by road/rail (ADR/RID)

Class : 2

Classification code : 30

Hazard identification number : 225

Tunnel Restriction : E - Passage forbidden through tunnels of category E

Transport by air (ICAO-TI / IATA-DGR)

Class / Div. (Su) : 2.2 (5.1)

Transport by sea (IMDG)

Class / Div. (Su) : 2.2 (5.1)

Schedule (EmS) - Fire Emergency : F-C

Schedule (EmS) - Spillage : S-W

14.4. Packing group

Transport by road/rail (ADR/RID) : Not applicable

Transport by air (ICAO-TI / IATA-DGR) : Not applicable

Transport by sea (IMDG) : Not applicable

14.5. Environmental hazards

Transport by road/rail (ADR/RID) : None.

Transport by air (ICAO-TI / IATA-DGR) : None.

Transport by sea (IMDG) : None.

14.6. Special precautions for user

Packing Instruction(s)

Transport by road/rail (ADR/RID) : P203

Transport by air (ICAO-TI / IATA-DGR)

Passenger and Cargo Aircraft : Forbidden

Cargo Aircraft only : Forbidden

Transport by sea (IMDG) : P203

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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 cylinder 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.

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

: Not applicable.

SECTION 15: Regulatory information

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

EU-Regulations

Restrictions on use : None

Seveso Directive : 2012/18/EU (Seveso III) : Listed, Covered.

National regulations

National legislation : Ensure all national/local regulations are observed.

Water hazard cl : -

Kenn- Nr : 743

15.2. Chemical safety assessment

: A CSA does not need to be carried out for this product.

SECTION 16: Other information

Indication of changes : Revised safety data sheet in accordance with commission regulation (EU) No 2015/830.

Training advice : Receptacle under pressure.

Further information : This Safety Data Sheet has been established in accordance with the applicable European Union legislation. Classification in accordance with the calculation methods of Regulation (EC) 1272/2008 CLP.

Full text of H- and EUH-statements

Ox. Gas 1	Oxidising Gases, Category 1
Press. Gas (Ref. Liq.)	Gases under pressure : Refrigerated liquefied gas
H270	May cause or intensify fire; oxidizer
H281	Contains refrigerated gas; may cause cryogenic burns or injury

DISCLAIMER OF LIABILITY

: Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out. Details given in this document are believed to be correct at the time of going to press. Whilst proper care has been taken in the preparation of this document, no liability for injury or damage resulting from its use can be accepted.

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