Safety Data Sheet

Oxygen (CANgas)

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878
Reference number: D-O2-097A-DD
Issue date: 6/2/2015 Revision date: 1/6/2023 Supersedes version of: 1/25/2017 Version: 0.4

Warning

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

1.1. Product identifier

Trade name : Oxygen (CANgas)
SDS no : D-O2-097A-DD
Other means of identification : Oxygen (CANgas)
CAS-No. : 7782-44-7
EC-No. : 231-956-9
EC Index-No. : 008-001-00-8

REACH 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 uses. Perform risk assessment prior to use.
Test gas/Calibration gas.
Contact supplier for more information on uses.

Uses advised against : Consumer use.
Uses other than those listed above are not supported, contact your supplier for more information on other uses.
Attention: These products must not be applied to humans or animals unless they are expressly designated as medical or medicinal gases!.

1.3. Details of the supplier of the safety data sheet

Messer Industriegase GmbH GmbH
Messer- Platz 1
D - 65812 Bad Soden am Taunus
Germany
T 0049-(0)-6196 7760-200 - F 0049-(0)-6196 7760-280
SDB.de@messergroup.com - www.messer.de

1.4. Emergency telephone number

Emergency telephone number : Messer Produktionsgesellschaft Salzgitter GmbH +49 (0) 5341 21-9333, erreichbar Montags 0:00 bis Sonntags 24:00

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

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

Physical hazards	Aerosol, Category 3	H229
	Oxidising Gases, Category 1	H270

2.2. Label elements

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

Hazard pictograms (CLP) :

GHS03

Signal word (CLP) : Warning

Hazard statements (CLP) : H270 - May cause or intensify fire; oxidiser.
H229 - Pressurised container: May burst if heated.

Precautionary statements (CLP)

- General : P102 - Keep out of reach of children.
- Prevention : P220 - Keep away from combustible materials.
P244 - Keep valves and fittings free from oil and grease.
P210 - Keep away from heat, hot surfaces, open flames. No smoking.
P251 - Do not pierce or burn, even after use.
- Response : P370+P376 - In case of fire: Stop leak if safe to do so.
- Storage : P410+P412 - Protect from sunlight. Do not expose to temperatures exceeding 50°C/122°F.
P403 - Store in a well-ventilated place.

2.3. Other hazards

None.
The substance/mixture has no endocrine disrupting properties.

SECTION 3: Composition/information on ingredients

3.1. Substances

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
Oxygen (CANgas)	CAS-No.: 7782-44-7 EC-No.: 231-956-9 EC Index-No.: 008-001-00-8 REACH registration No: *1	100	Aerosol 3, H229 Ox. Gas 1, H270

Contains no other components or impurities which will influence the classification of the product.
**1: Listed in Annex IV / V REACH, exempted from registration.*
**3: Registration not required: Substance manufactured or imported < 1t/y.*

3.2. Mixtures

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

- Inhalation : Remove victim to uncontaminated area.
- Skin contact : Adverse effects not expected from this product.
- Eye contact : Adverse effects not expected from this product.
- 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.
See section 11.

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

None.

SECTION 5: Firefighting measures

5.1. 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. 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 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.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : 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

For emergency responders : 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

None.
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.
Consult supplier for specific recommendations.
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.
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.
Do not breathe gas.
Avoid release of product into work area.
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.
Avoid suck back of water, acid and alkalis.

Safe handling of the gas receptacle : Protect containers from physical damage; do not drag, roll, slide or drop.
If user experiences any difficulty operating valve discontinue use and contact supplier.
Replace valve outlet caps or plugs and container caps where supplied as soon as container is disconnected from equipment.
Keep container valve outlets clean and free from contaminants particularly oil and water.
Do not remove or deface labels provided by the supplier for the identification of the content of the container.
Refer to supplier's container handling instructions.
Do not allow backfeed into the container.
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.
Never attempt to repair or modify container valves or safety relief devices.
Damaged valves should be reported immediately to the supplier.
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.
Suck back of water into the container must be prevented.
Open valve slowly to avoid pressure shock.

7.2. Conditions for safe storage, including any incompatibilities

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.
Segregate from flammable gases and other flammable materials in store.
Store containers in location free from fire risk and away from sources of heat and ignition.
Keep away from combustible materials.
Observe all regulations and local requirements regarding storage of containers.
Containers should not be stored in conditions likely to encourage corrosion.
Druckdose an einem gut gelüfteten Ort lagern.

7.3. Specific end use(s)

None.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

OEL (Occupational Exposure Limits) : None available.

DNEL (Derived-No Effect Level) : None available.

PNEC (Predicted No-Effect Concentration) : None 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.
Avoid oxygen rich (>23,5%) atmospheres.
Gas detectors should be used when oxidising 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

PPE compliant to the recommended EN/ISO standards should be selected.
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:
Ensure adequate ventilation.

• Eye/face protection : Wear safety glasses with side shields.
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, performance level 1 or higher.

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

• 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.

• Thermal hazards : None necessary.

8.2.3. Environmental exposure controls

None necessary.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance

- Physical state at 20°C / 101.3kPa : Gas
- Colour : Colourless.

Odour : No odour warning properties.
Odour threshold is subjective and inadequate to warn of overexposure.

pH : Not applicable.

Melting point / Freezing point : -219 °C
-219 °C

Boiling point : -183 °C

Flash point : Not applicable for gases and gas mixtures.

Flammability : Non flammable.

Lower explosion limit : Not available

Upper explosion limit : Not available

Vapour pressure [20°C] : Not applicable.

Vapour pressure [50°C] : Not applicable.

Density : Not applicable

Vapour density	:	Not applicable for gases and gas mixtures.
Relative density, liquid (water=1)	:	1.1
Relative density, gas (air=1)	:	1.1
Water solubility	:	39 mg/l
Partition coefficient n-octanol/water (Log Kow)	:	Not applicable for inorganic products.
Auto-ignition temperature	:	Not applicable.
Decomposition temperature	:	Not applicable.
Viscosity, kinematic	:	Not applicable.
Particle characteristics	:	Not applicable for gases and gas mixtures.

9.2. Other information

9.2.1. Information with regard to physical hazard classes

Explosive properties	:	Not applicable.
Oxidising properties	:	Oxidiser.
- Coefficient of oxygen equivalency (Ci)	:	1
Critical temperature [°C]	:	-118 °C

9.2.2. Other safety characteristics

Molar mass	:	32 g/mol
Evaporation rate	:	Not applicable for gases and gas mixtures.
Gas group	:	Compressed gas
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

May intensify fire; oxidiser.
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

Violently oxidises organic material.

10.4. Conditions to avoid

None under recommended storage and handling conditions (see section 7).
Avoid moisture in installation systems.

10.5. Incompatible materials

May react violently with reducing agents.
May react violently with combustible 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.
For additional information on compatibility refer to ISO 11114.

10.6. Hazardous decomposition products

None.

SECTION 11: Toxicological information

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

Acute toxicity	:	No known toxicological effects from this product.
Skin corrosion/irritation	:	No known effects from this product.
Serious eye damage/irritation	:	No known effects from this product.

Respiratory or skin sensitisation	:	No known effects from this product.
Germ cell mutagenicity	:	No known effects from this product.
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.

11.2. Information on other hazards

Other information	:	The substance/mixture has no endocrine disrupting properties.

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.

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. Endocrine disrupting properties

The substance/mixture has no endocrine disrupting properties.

12.7. Other adverse effects

Other adverse effects	:	No known effects from this product.
Effect on the ozone layer	:	None.
Effect on global warming	:	None.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

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.
Contact supplier if guidance is required.
Ensure that the emission levels from local regulations or operating permits are not exceeded.
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.

List of hazardous waste codes (from Commission Decision 2000/532/EC as amended)	:	16 05 04 *: Gases in pressure containers (including halons) containing hazardous substances.

13.2. Additional information

None.
External treatment and disposal of waste should comply with applicable local and/or national regulations.

SECTION 14: Transport information

14.1. UN number or ID number

In accordance with ADR / RID / IMDG / IATA / ADN

UN-No. : 1950

14.2. UN proper shipping name

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

Transport by air (ICAO-TI / IATA-DGR) : Aerosols, non-flammable, oxidizing

Transport by sea (IMDG) : AEROSOLS

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 : 5O

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

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

Class / Div. (Sub. risk(s)) : 2.2 (5.1)

Transport by sea (IMDG)

Class / Div. (Sub. risk(s)) : 2.2 (5.1)

Emergency Schedule (EmS) - Fire : F-D

Emergency Schedule (EmS) - Spillage : S-U

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) : P207.
LP02

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

Passenger and Cargo Aircraft : 203.

Cargo Aircraft only : 203.

Transport by sea (IMDG) : P207.
LP02

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.

14.7. Maritime transport in bulk according to IMO instruments

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.
Other information, restriction and prohibition regulations	:	Ensure all national/local regulations are observed. None.
Seveso Directive : 2012/18/EU (Seveso III)	:	Listed.

National regulations

Water hazard class (WGK)	:	nwg - Non-hazardous to water
Kenn-Nr.	:	743
Regulatory reference	:	National / local legislations : Sec15 DE General. . Classification for storage according to TRGS 510 : 2B Aerosolpackungen und Feuerzeuge.

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 2020/878.

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.

Further 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 .

Full text of H- and EUH-statements	
Aerosol 3	Aerosol, Category 3
H229	Pressurised container: May burst if heated.
H270	May cause or intensify fire; oxidiser.
Ox. Gas 1	Oxidising Gases, Category 1

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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