



Safety Data Sheet

Carbogen

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878
Reference number: 1329
Revision date: 24/01/2024
Supersedes version of: 10/06/2021
Version: 2.0

Danger



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

1.1. Product identifier

Trade name : Carbogen
SDS no : 1329
UFI : M3P3-S0UM-D00D-XEYW

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.
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 : Irish Oxygen Co Ltd
Waterfall Road
T12 PP40 Cork - Ireland
T 021-4541821 (Mon-Fri 08:30-17:30)
www.solgroup.com
sds@irishoxygen.com

E-Mail address (competent person) : msds@sol.it

1.4. Emergency telephone number

Emergency telephone number : 021-4541821 (Mon-Fri 08:30-17:30)

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 : Compressed gas	H280

2.2. Label elements

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

Hazard pictograms (CLP) :



GHS03

GHS04

Signal word (CLP) :

Danger

Hazard statements (CLP) :

H270 - May cause or intensify fire; oxidiser.

H280 - Contains gas under pressure; may explode if heated.



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Precautionary statements (CLP)

- Prevention : P244 - Keep valves and fittings free from oil and grease.
P220 - Keep away from clothing and other combustible materials.
- 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

None.

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
Oxygen	CAS-No.: 7782-44-7 EC-No.: 231-956-9 EC Index-No.: 008-001-00-8 REACH-no: *1	95	Ox. Gas 1, H270 Press. Gas (Comp.), H280
Carbon dioxide	CAS-No.: 124-38-9 EC-No.: 204-696-9 EC Index-No.: --- REACH-no: *1	5	Press. Gas (Liq.), H280

Full text of H- and EUH-statements: see section 16

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.

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. Perform cardiopulmonary resuscitation if breathing stopped.
- 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

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



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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 137 - Self-contained open-circuit compressed air breathing apparatus with full face 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.
Eliminate ignition sources.
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.
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.
Do not breathe gas.
Avoid release of product into work area.



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Safe handling of the gas receptacle

- : Open valve slowly to avoid pressure shock.
- 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.
- 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.
- 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.

7.3. Specific end use(s)

None.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Carbon dioxide (124-38-9)	
EU - Indicative Occupational Exposure Limit (IOEL)	
Local name	Carbon dioxide
IOEL TWA	9000 mg/m ³
IOEL TWA [ppm]	5000 ppm
Regulatory reference	COMMISSION DIRECTIVE 2006/15/EC
Ireland - Occupational Exposure Limits	
Local name	Carbon dioxide
OEL TWA [1]	9000 mg/m ³
OEL TWA [2]	5000 ppm
Remark	IOELV (Indicative Occupational Exposure Limit Values)
Regulatory reference	Chemical Agents Code of Practice 2021



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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).
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

- 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.
 - 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 risks, performance level 1 or higher.
 - 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
 - : Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask.
 - Self contained breathing apparatus (SCBA) or positive pressure airline with mask are to be used in oxygen-deficient atmospheres.
 - Thermal hazards
 - : None necessary.

8.2.3. 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

9.1. Information on basic physical and chemical properties

Appearance

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

Odour

- : Odourless.
- Odour threshold is subjective and inadequate to warn of overexposure.
- Odour threshold is subjective and inadequate to warn of overexposure.

Melting point / Freezing point

Boiling point

- : Not applicable for gas mixtures.
- : Not applicable for gas mixtures.
- It is technically not possible to determine the boiling point or range of this mixture.
- Component with lowest boiling point: Oxygen -183 °C

Flammability

Lower explosion limit

Upper explosion limit

Flash point

Auto-ignition temperature

Decomposition temperature

pH

Viscosity, kinematic

Water solubility [20°C]

Partition coefficient n-octanol/water (Log Kow)

Vapour pressure [20°C]

Vapour pressure [50°C]

Density and/or relative density

Relative vapour density (air=1)

- : Not available
- : Not available
- : Not available
- : Not applicable for gas mixtures.
- : Non flammable.
- : Not available
- : Not applicable for gas mixtures.
- : Not applicable.
- Mixture is partially soluble in water
- : Not applicable for gas mixtures.
- : Not applicable.
- : Not applicable.
- : Not applicable.
- : Heavier than air.



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Particle characteristics : Not applicable.

9.2. Other information

9.2.1. Information with regard to physical hazard classes

Explosive properties : Not applicable.
Explosion limits : Non flammable.
Oxidising properties : Oxidiser.
Oxidising power (OP) : Oxidising power, based on ISO10156 calculation : 92.68 %

9.2.2. Other safety characteristics

Molar mass : Not applicable for gas mixtures.
Evaporation rate : Not applicable for gas mixtures.
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.
This mixture contains components with the following reactivity : Violently oxidises organic material.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

Violently oxidises organic material.

10.4. Conditions to avoid

Keep away from heat/sparks/open flames/hot surfaces. – No smoking.

10.5. Incompatible materials

May react violently with combustible materials.
May react violently with reducing agents.

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

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

Acute toxicity : No 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

No additional information available



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SECTION 12: Ecological information

12.1. Toxicity

Assessment : Classification criteria are not met.
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 data available.

12.3. Bioaccumulative potential

Assessment : No data available.

12.4. Mobility in soil

Assessment : No data available.

12.5. Results of PBT and vPvB assessment

Assessment : Not classified as PBT or vPvB.

12.6. Endocrine disrupting properties

Assessment :

12.7. Other adverse effects

Effect on the ozone layer : None.
Effect on global warming : Contains greenhouse gas(es).

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Contact supplier if guidance is required.
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 2000/532/EC as amended) : 16 05 04 *: Gases in pressure containers (including halons) containing hazardous substances.

13.2. Additional information

None.

SECTION 14: Transport information

14.1. UN number or ID number

In accordance with ADR / RID / IMDG / IATA / ADN
UN-No. : 3156



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14.2. UN proper shipping name

Transport by road/rail (ADR/RID)	: COMPRESSED GAS, OXIDIZING, N.O.S. (oxygen, Carbon dioxide)
Transport by air (ICAO-TI / IATA-DGR)	: Compressed gas, oxidizing, n.o.s. (oxygen, Carbon dioxide)
Transport by sea (IMDG)	: COMPRESSED GAS, OXIDIZING, N.O.S. (oxygen, Carbon dioxide)

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	: 10
Hazard identification number	: 25
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)
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Transport by sea (IMDG)

Class / Div. (Sub. risk(s))	: 2.2 (5.1)
Emergency Schedule (EmS) - Fire	: F-C
Emergency 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)	: P200.
Transport by air (ICAO-TI / IATA-DGR)	
Passenger and Cargo Aircraft	: 200.
Cargo Aircraft only	: 200.
Transport by sea (IMDG)	: P200.

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: <ul style="list-style-type: none">- 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.
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14.7. Maritime transport in bulk according to IMO instruments

Not applicable.



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SECTION 15: Regulatory information

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

EU-Regulations

Restrictions on use : Contains no substance(s) listed on the REACH Candidate List.
Other information, restriction and prohibition regulations : Ensure all national/local regulations are observed.
Contains no substance(s) listed on the PIC list (Regulation EU 649/2012 concerning the export and import of hazardous chemicals).
Seveso Directive : 2012/18/EU (Seveso III) : Covered.

National regulations

No additional information available

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 procedures and calculation methods of Regulation (EC) 1272/2008 (CLP).

Full text of H- and EUH-statements	
H270	May cause or intensify fire; oxidiser.
H280	Contains gas under pressure; may explode if heated.
Ox. Gas 1	Oxidising Gases, Category 1
Press. Gas (Comp.)	Gases under pressure : Compressed gas
Press. Gas (Liq.)	Gases under pressure : Liquefied gas

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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