

# Safety Data Sheet

## Mixture >23.5% O<sub>2</sub> in N<sub>2</sub>

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

SDS Reference Number: O2-N2-325

Issue date: 2/28/2018 Revision date: 6/16/2025 Supersedes version of: 2/28/2018 Version: 2.0

### Danger



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

#### 1.1. Product identifier

Trade name :  
SDS no : O2-N2-325  
UFI : 4140-Y088-8005-WSRG

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

Relevant identified uses : Medical applications.  
For professional use only.  
Industrial and professional use for chemical analysis, calibration, (routine) quality control, laboratory use, under controlled conditions.  
Perform risk assessment prior to use.

Uses advised against : Consumer use.  
Uses other than those listed above are not supported, contact your supplier for more information on other uses.

#### 1.3. Details of the supplier of the safety data sheet

Elme Messer Gaas AS  
Kopli 103  
11712 Tallinn  
Estonia  
T +372 6102001  
[info@elmemesser.ee](mailto:info@elmemesser.ee), [www.elmemesser.ee](http://www.elmemesser.ee)

#### 1.4. Emergency telephone number

Emergency telephone number : Mürgistusteabekeskus, Terviseamet: tel. 16662, (24h)

### 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) :



Signal word (CLP) : Danger

Hazard statements (CLP) : H270 - May cause or intensify fire; oxidiser.  
H280 - Contains gas under pressure; may explode if heated.

Precautionary statements (CLP)

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

Mixture does not contain substance (s) classified as PBT or vPvB in concentrations above 0,1 weight %.

The substance/mixture has no endocrine disrupting properties.

The mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Mixture does not contain substance(s) classified as PMT or vPvM in concentrations above 0.1 weight %.

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## 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] ATE, EUH-statements, M-Factors
Nitrogen	CAS-No.: 7727-37-9 EC-No.: 231-783-9 EC Index-No.: --- REACH-no: *1	rest	Press. Gas (Comp.), H280
oxygen	CAS-No.: 7782-44-7 EC-No.: 231-956-9 EC Index-No.: 008-001-00-8 REACH-no: *1	32.5	Ox. Gas 1, H270 Press. Gas (Comp.), 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.
- 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.  
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 that are more hazardous than the product itself.

### 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.  
Stay upwind.  
See section 8 of the SDS for more information on personal protective equipment.

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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

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

- : 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.
- 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.
- Use only oxygen approved lubricants and oxygen approved sealings.
- Avoid suck back of water, acid and alkalis.
- Do not breathe gas.
- Avoid release of product into work area.

Safe handling of the gas receptacle

- : 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, when provided, 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.

### 7.2. 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, when provided, 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)

: None available.

DNEL (Derived-No Effect Level)

: None available.

PNEC (Predicted No-Effect Concentration)

: None available.

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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.  
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.  
Standard EN ISO 16321-1 - Eye and face protection for occupational use Part 1: General requirements.

##### • Skin protection

###### - Hand protection

- : Wear working gloves when handling gas containers.  
Standard EN 388 - Protective gloves against mechanical risks, performance level 1 or higher.  
Recommended types include wrist gloves from leather or synthetic material with equivalent performance, fabric gloves, fabric gloves with leather palms.

###### - Other

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

When indicated by a risk assessment, Respiratory Protective Equipment must be used. The selection of the Respiratory Protective Device (RPD) must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected RPD.

#### 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
- Colour

- : Gas.
- : Colourless.
- : Odourless.

#### Odour

#### Melting point / Freezing point

#### Boiling point

- : Not applicable for gases and 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: Nitrogen -196 °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)

#### Particle characteristics

- : Non flammable.
- : Not applicable.
- : Not applicable.
- : Not applicable for gases and gas mixtures.
- : Non flammable.
- : Not applicable.
- : Not applicable for gases and gas mixtures.
- : Not applicable for gases and gas mixtures.
- : No reliable data available.
- : Not applicable for gas mixtures.
- : Not applicable for compressed gases and gas mixtures.
- : Not applicable for compressed gases and gas mixtures.
- : Not applicable for gases and gas mixtures.
- : Lighter or similar to air.
- : Not applicable for gases and gas mixtures.
- Nanoforms are not relevant for gases and gas mixtures.

### 9.2. Other information

#### 9.2.1. Information with regard to physical hazard classes

##### Oxidising properties

##### Oxidising power (OP)

- : Oxidiser.
- : Oxidising power, based on ISO10156 calculation : 32.5 %

#### 9.2.2. Other safety characteristics

##### Other data

- : None.

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### SECTION 10: Stability and reactivity

#### 10.1. Reactivity

Data for mixtures are not available.  
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

Avoid moisture in installation systems.

#### 10.5. 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.

#### 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

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

oxygen (7782-44-7)	
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.

Nitrogen (7727-37-9)	
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.
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#### 12.4. Mobility in soil

Assessment	: No ecological damage caused by this product.
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#### 12.5. Results of PBT and vPvB assessment

Assessment	: Not classified as PBT or vPvB.
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### 12.6. Endocrine disrupting properties

Assessment : The substance/mixture has no endocrine disrupting properties.

### 12.7. Other adverse effects

Other adverse effects : Not classified as PMT or vPvM.

Effect on the ozone layer : No effect on the ozone layer.

Effect on global warming : No known effects from this product.

## SECTION 13: Disposal considerations

### 13.1. 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.

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

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. : 3156

### 14.2. UN proper shipping name

Transport by road/rail/inland waterways (ADR/RID/ADN) : COMPRESSED GAS, OXIDIZING, N.O.S. (oxygen, Nitrogen)

Transport by air (ICAO-TI / IATA-DGR) : Compressed gas, oxidizing, n.o.s. (oxygen, Nitrogen)

Transport by sea (IMDG) : COMPRESSED GAS, OXIDIZING, N.O.S. (oxygen, Nitrogen)

### 14.3. Transport hazard class(es)

### Labelling



2.2 : Non flammable, non-toxic gases.

5.1 : Oxidizing substances.

### Transport by road/rail/inland waterways (ADR/RID/ADN)

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)

### 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/inland waterways (ADR/RID/ADN) : 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/inland waterways (ADR/RID/ADN) : 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/inland waterways (ADR/RID/ADN) : P200.

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

Passenger and Cargo Aircraft : 200.

Cargo Aircraft only : 200.

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- 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:  
- 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 : Contains no substance(s) listed on the REACH Candidate List.
- Other information, restriction and prohibition regulations : Contains no substance(s) listed on the PIC list (Regulation EU 649/2012 concerning the export and import of hazardous chemicals).  
Contains no substance(s) listed on the POP list (Regulation EU 2019/1021 on persistent organic pollutants).
- Seveso Directive : 2012/18/EU (Seveso III) : Covered.

Seveso III Part I (Categories of dangerous substances)	Qualifying quantity (tonnes)	
	Lower-tier	Upper-tier
P4 OXIDISING GASES Oxidising gases, Category 1	50	200

#### National regulations

- Regulatory reference : Ensure all national/local regulations are observed.

### 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 - 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.  
ADN - International Carriage of Dangerous Goods by Inland Waterways.  
PROC - Process category  
.  
ERC - Environmental release category.  
PMT - Persistent, Mobile and Toxic.  
vPvM - very Persistent and very Mobile.
- Training advice : Ensure operators understand the hazard of oxygen enrichment.

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### Further information

: Classification in accordance with the procedures and calculation methods of Regulation (EC) 1272/2008 (CLP).  
Classification using data from databases maintained by the European Industrial Gases Association (EIGA). Data is maintained in EIGA doc 169 : 'Classification and Labelling Guide', downloadable at : <http://www.eiga.eu>.

### Full text of H- and EUH-statements

Ox. Gas 1	Oxidising Gases, Category 1
Press. Gas (Comp.)	Gases under pressure : Compressed gas
H270	May cause or intensify fire; oxidiser.
H280	Contains gas under pressure; may explode if heated.

### 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.

**End of document**