

Danger**SECTION 1: Identification of the substance/mixture and of the company/undertaking****1.1. Product identifier**

Trade name : Oxygen
SDS no : RS-O2 - 097A
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
Welding, cutting, heating and brazing
Laboratory use
Shield gas for welding processes
Use for manufacture of electronic/photovoltaic components
Water treatment
Laser gas
Contact supplier for more information on uses

1.3. Details of the supplier of the safety data sheet

Company identification : Messer Tehnogas AD
Banjicki put 62
11090 Beograd Serbia
+38 111 353 7210

1.4. Emergency telephone number

Emergency telephone number : +381(0) 11 360 8440 (24h)
Emergency telephone number

SECTION 2: Hazards identification**2.1. Classification of the substance or mixture****Classification according to Regulation (EC) No. 1272/2008 [CLP]**

Physical hazards Ox. Gas 1 H270
Press. Gas (Comp.) H280

Full text of H-statements see section 16.

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
 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

: None

SECTION 3: Composition/information on ingredients
3.1. Substances

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 (Registration-No.) *1	100	Ox. Gas 1, H270 Press. Gas (Comp.), H280

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
- 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

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 : Exposure to fire may cause containers to rupture/explode
Supports combustion
- 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
Consult supplier for specific recommendations
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 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 cylinder pressure
Do not breathe gas
Avoid release of product into atmosphere.
- 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
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

- : 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

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
- 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

- : 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:
- Wear suitable hand, body and head protection. Wear goggles with suitable filter lenses when use is cutting/welding
- 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 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 : 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 : Odour threshold is subjective and inadequate to warn of overexposure.

pH value : Not applicable.

Molar mass : 32 g/mol

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
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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

: Violently oxidises organic material

10.4. Conditions to avoid

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

10.5. Incompatible materials

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

10.6. Hazardous decomposition products

: None

SECTION 11: Toxicological information**11.1. Information on toxicological effects**

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

SECTION 12: Ecological information**12.1. Toxicity**

Assessment : No ecological damage caused by this product.

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. Other adverse effects

Effect on the ozone layer : None

Effect on global warming : None

SECTION 13: Disposal considerations**13.1. Waste treatment methods**

May be vented to atmosphere in a well ventilated place
Do not discharge into any place where its accumulation could be dangerous
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 04 *: Gases in pressure containers (including halons) containing dangerous substances

13.2. Additional information

: None

SECTION 14: Transport information**14.1. UN number**

UN-No. : 1072

14.2. UN proper shipping name

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

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

Transport by sea (IMDG) : OXYGEN, COMPRESSED

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)

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:
- 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 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

National regulations

National legislation : Ensure all national/local regulations are observed.
Water hazard class (WGK) : nwg - Non-hazardous to water
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 : Ensure operators understand the hazard of oxygen enrichment.
Further information : This Safety Data Sheet has been established in accordance with the applicable European Union legislation.

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; oxidizer
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

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