# SAFETY DATA SHEET (SDS)

# OXYGEN

## SECTION 1 – IDENTIFICATION (MATERIAL & SUPPLIER)

**Product Identifier** Oxygen, Compressed

**Chemical Formula** $O_2$

**Other Means of Identification** SDS Number PG10

**Recommended Use (Of The Chemical And Restrictions On Use)**
Oxygen/Acetylene welding.
Aid to respiration for patients.
Steel manufacture.
Accelerated combustion.

**Supplier Name:** OneGas Australia
**Phone:** 1300 663 427
**Address:** 284 Victoria Road MALAGA WA 6090
**Emergency:** 000 (Emergency Services)

**EMERGENCY SERVICES:** DFES Western Australia

**Website:** http://www.dfes.wa.gov.au

**MSDS Dae:** June 2021

## SECTION 2 – HAZARDS IDENTIFICATION

**Classification of the Hazardous Chemical**

**Compressed Oxygen is classified as hazardous.**

**GHS Classification(s)** **Oxidising Gases: Category 1**

**Gases Under Pressure: Compressed gas**

**Label Elements including precautionary statements**
**Labelling Regulation EC 1272/2008 (CLP)**

**Hazard Pictograms**

**Hazard Pictograms Code** GHS03 & GHS04
**Signal Word** Danger
**Hazard Statements** H270 - May cause or intensify fire; oxidizer.
H280 - Contains gas under pressure; may explode if heated.

**Precautionary Statements**
**Storage**
**Prevention** P403 - Store in a well ventilated place.
P244 - Keep valves and fittings free from oil and grease.
P220 - Keep away from combustible materials.
**Response** P370+P376 – **In case of fire** Isolate leak if safe to do so.

**Other Hazards** None.

## SECTION 3 – COMPOSITION AND INFORMATION ON INGREDIENTS

| Material | Abbreviation | Contents | CAS No. | EC NO |
|---|---|---|---|---|
| Oxygen | $O_2$ | 100% | 7782-44-7 | 231-956-9 |

## SECTION 4 – FIRST AID MEASURES

**4.1. Description of First Aid Measures**

**First Aid Measures**

**Inhalation** Sustained inhalation of concentrations in excess of ca 75% are likely to cause nausea, dizziness and respiratory difficulties and possibly convulsions.
Remove victim to uncontaminated area.

**Skin Contact** No adverse effects expected.
**Eye Contact** No adverse effects expected.
**Ingestion** An unlikely route for adverse reactions.

**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 – FIRE-FIGHTING MEASURES

**Extinguishing Media**
**SUITABLE EXTINGUISHING MEDIA**
All known extinguishants can be used.

**SPECIFIC HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE**
Oxygen will accelerate burning of combustible materials.
Oxidant. Strongly supports combustion. May react violently with combustible materials.
Exposure to fire may cause containers to rupture/explode.
Supports combustion.
**Hazardous Combustion Products: None.**
**SPECIAL PROTECTIVE EQUIPMENT AND PRECAUTIONS FOR FIRE FIGHTERS**

Coordinate fire measure to the surrounding fire.
Cool endangered containers with water spray jet from a protected position.
Do not empty contaminated fire water into drains.
If possible, stop flow of product.
Move away from the container and cool with water from a protected position.
**Special Protective Equipment for Fire Fighters: None.**

## SECTION 6 – ACCIDENTAL RELEASE MEASURES

**6.1. Personal Precautions, Protective Equipment and Emergency Procedures**
If possible prevent gas from discharging.

**Personnel Precautions**
Evacuate area.
Check that there are no ignition sources & allow ventilation.

**6.2. Environmental Precautions**
None.
Try to stop release.
Prevent from entering low lying areas such as cellars, basements and work pits, or any such place where Argon accumulation & buildup would prove to be dangerous.

**6.3. Methods and Material for Containment and Cleaning Up**
None.
**Clean Up Procedure**
Ventilate area.

**6.4. Reference to Subsequent Sections**
See also sections 8 & 13.

## SECTION 7 – HANDLING AND STORAGE, INCLUDING HOW THE CHEMICAL MAY BE SAFELY USED

Observe the following requirement of the Australian Code for the Transport of Dangerous Goods by Road and Rail.

Observe the requirements of State Dangerous Goods (Storage and Handling) Regulations.

**7.1 Storage and Handling**

**Storage Temperature** Room Temperature
**UN Class** 2.2 Non-Flammable, Non-toxic gas
**Packaging Group** Not assigned
**UN Number** 1072 Oxygen, compressed
**EPG Number** 2C6
**Correct Shipping Name** Oxygen, compressed

**7.2 Storage Conditions (See Also AS4332 For Details)**

Cylinders (Containers) are to be stored upright with their valve protective cap fitted., ideally outside of buildings or in a well ventilated area.
Keep cylinders cool to minimize the pressure build up inside the cylinder (Container). i.e. Do not store the Cylinders (Containers) in direct sunlight.
Oxygen Cylinders (Containers) should be stored in areas not exceeding 45°C.
Observe safe manual handling of Cylinders (Containers) to avoid back or other injuries. Always move Cylinders (Containers) with cylinder dollies or portable racks; never roll or drag a bottle.
Store Oxygen Cylinders (Containers) Cylinders in a dry well ventilated areas. Construction needs to be of non-combustible material. Storage areas need to have level flooring (preferably concrete) for cylinder stability. Also make sure that they are secured to say a wall bracket with

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a strap or chain. Areas need to be out of the way of heavy traffic to reduce the risk of accidental damage or impact.
For indoors, use a well-ventilated storage area.
For outdoors, use a storage area that's protected from weather and equipped with a lock to prevent theft or tampering.

**7.3 Spills, Leaks and Disposal**

**CAUTION:** In the event of a cylinder (Container) rupture or uncontrolled release, Evacuate all non-essential personnel from the immediate vicinity until the cylinder (Container) gas release has subsided & dissipated.
Use the necessary protective measures (i.e. Wear gloves and goggles) when approaching the discharged cylinder (Container). If in a confined or non ventilated space use a self-contained breathing apparatus.
Do not attempt to repair leaking BD's or cylinder valves but simply fit a secure tag & print whether the valve and/or BD are defective and leaking. If possible date and print your name & contact details.
Oxygen gas is non-flammable and does not support combustion.
Exposing the cylinder (Container) to intense heat or flame (e.g. a fire.) may cause the cylinder to vent rapidly and/or rupture violently.
To prevent the above happening, all Oxygen cylinder valves are fitted with a BD (Burst disc.)
This should in most cases prevent the Cylinder (Container) from rupturing.
The BD's act as a safety valve and are designed to vent the Oxygen gas when exposed to an elevated temperature of 65 degrees Centigrade.
If the cylinders have simply become hot and the BDs have not released any gas cool/spray with water from a hose until cooled to the ambient air temperature.
If the Cylinders (Containers) are in a fire call the emergency services or fire brigade to deal with the situation as they are trained & have the equipment to deal with the matter.

**7.4 Decomposition Products**

| | |
|---|---|
| **Oxygen** | None (Remains as Oxygen.) |
| **In case of Small Fire/Explosion use:** | Water |
| **In case of Major Emergency Hazchem Code:** | 2S |
| **Extinguishing Medium:** | Water fog or fine water spray |
| **Danger of Violent Reaction or Explosion:** | Not from the Oxygen gas decomposition or some chemical reaction. |
| **Protective Clothing:** | For Cylinder handling & when using with gas regulators: Wear appropriate protective work gloves, safety shoes and safety glasses. For rescue operations of people affected by Oxygen build up in a confined space, ensure rescuers are wearing & using self contained breathing apparatus (SCBA) to ensure that they to do not suffer the risk of asphyxiation. |
| **Appropriate Measures:** | Isolate the Oxygen leak & dilute the effect of the presence of Oxygen by increased ventilation by opening all doors & windows or by forced ventilation if available. |
| **Evacuate** | All other personnel in the immediate vicinity of the incident area. |

**7.5 Other Information**

Store and use compressed Oxygen in well ventilated areas.
Do not drop, tip, or roll Cylinders (Containers) on their sides.
Do not use oil and grease on Cylinders (Containers), cylinder valves or the threaded valve caps.
Connect the Equipment or Materials properly as detailed in the Manufacturer's instructions.
Only use regulators, interconnecting piping and equipment with the correct mating connections and that are designed to withstand the high pressures to be encountered

## SECTION 8 – EXPOSURE CONTROLS AND PERSONAL PROTECTION

**8.1. Control Parameters**

| | |
|---|---|
| **DNEL: Derived No Effect Level** | None available. |
| **PNEC: Predicted No Effect Concentration** | None available. |

**8.2. Exposure Controls**

| | |
|---|---|
| **8.2.1. Appropriate Engineering - Controls** | Systems under pressure are to be regularly checked for leakages. Provide adequate general and local exhaust ventilation. Consider work permit system e.g. for maintenance activities. |
| **8.2.2. Individual Protection** | A risk assessment should be such measures as PPE 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 safety glasses with side shields, leather safety gloves, safety shoes when manually handling cylinders. |
| **Personal Protection** | Ensure adequate ventilation. |
| **8.2.3. Environmental Exposure Controls** | Refer to local regulations for restriction of emissions to the atmosphere. See also section 13 for controls 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 | Nil |
| Odour threshold | Odour threshold is subjective and inadequate to warn for overexposure. |
| pH value | N/A for gas-mixtures. |
| Molar mass [g/mol] | N/A for gases and gas-mixtures. |
| Melting point [°C] | -219 |
| Boiling point [°C] | -183 |
| Critical temperature [°C] | -118 |
| Flash point [°C] | N/A. |
| Evaporation rate (ether=1) | N/A. |
| Flammability range [vol% in air] | Oxidiser - Non flammable. |
| Vapour pressure [20°C] | N/A. |
| Relative density, gas (air=1) | 1.1 |
| Relative density, liquid (water=1) | 1.1 |
| Solubility in water [mg/l] | 39 |
| Partition coefficient n-octanol/water | N/A. |
| Viscosity at 20°C [mPa.s] | N/A. |
| Explosive Properties | N/A. |

## SECTION 10 – STABILITY AND REACTIVITY

**Reactivity**
No reactivity hazard other than the effects described in sub-sections below.
Stability and reactivity : Stable.
**Chemical Stability**
Stable under recommended storage & specified temperature range.
**Possibility of Hazardous Reactions**
Do not use oxygen as a substitute for air, nitrogen or any other gas.
Use only with equipment cleaned for oxygen service and rated for the cylinder pressure.
Use only oxygen approved lubricants and oxygen approved seals cleaned & packaged for Oxygen service.
Oxygen accelerates combustion of materials..
**Conditions to Avoid**
Avoid sparks, flames and any other sources of ignition.
Vigorously accelerates combustion of combustible materials.
**Incompatible Materials**
Combustible materials such as oil and grease can spontaneously ignite at low temperatures when exposed to oxygen enriched air.
Materials which burn in air, will burn more vigorously in oxygen enriched atmospheres.
**Metals can be ignited and continue to burn in pure oxygen atmospheres under certain conditions.**
**Oxygen accelerates combustion but does not produce hazardous products other than that already present when burning in air.**
**Hazardous Decomposition Products**
**Accelerated combustion of materials in Oxygen will not form hazardous combustion products other than that already present if combusted in air.**

## SECTION 11 – TOXICOLOGICAL INFORMATION

| | |
|---|---|
| **Summary** | Oxygen in air that we breathe is ca 21%. Higher concentrations (particularly as they exceed say 75% could cause hyperoxia. Pressures greater than atmospheric conditions will only exacerbate any issues. Chronic exposure to elevated Oxygen concentration is to be avoided. |
| **Toxicity Information** | No known toxicological effects from this product. |
| **Acute Toxicity** | No known toxicological effects from this product. |

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| | |
|---|---|
| **Rat Inhalation LC50 [ppm/4h]** | No data available. |
| **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. |
| **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

| | |
|---|---|
| Toxicity | No data available. |
| Persistence degradability | No data available. |
| Bioaccumulative potential | No data available. |
| Mobility in soil | No data available. |
| Results of PBT and vPvB assessment | No data available. |

**Other Adverse Effects**
**Ecological Effects Information**
No known ecological damage caused by this product.

### SECTION 13 – DISPOSAL CONSIDERATIONS

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 code of practice of EIGA (Doc. 30/10 "Disposal of Gases, downloadable at http://www.eiga.org) for more guidance on suitable disposal methods.
Contact supplier if guidance is required.
General: Do not discharge into any place where its accumulation could be dangerous.
May be vented to atmosphere in a well ventilated place.
Contact supplier if guidance is required.

Additional Information: None.

### SECTION 14 – TRANSPORT INFORMATION

**Un Number**: 1072
**Labelling ADR, IMDG, IATA**



2.2: Non flammable, non toxic gas. 5.1 Oxidizing substances

**Land Transport (Adr/rid)**

| | |
|---|---|
| **H.I. nr** | 25 |
| **UN Proper Shipping Name** | OXYGEN COMPRESSED |
| **Transport Hazard Class(es)** | 2.2 |
| **Classification Code** | 1 O |
| **Packing Instruction(s)** | P200 |
| **Tunnel Restriction** | E Passage forbidden through tunnels of category E. |
| **HAZCHEM - Emergency Action Code** | 2S<br>2 = Fine water spray.<br>T = Risk of violent reaction or explosion.<br>Recommended personal protective equipment<br>Full fire kit and breathing apparatus.<br>Appropriate measures: Dilute. |

**Sea Transport (IMDG)**

| | |
|---|---|
| **Proper Shipping Name** | OXYGEN, COMPRESSED |
| **Class** | 2.2 |
| **Emergency Schedule (EmS) - Fire** | F-C |
| **Emergency Schedule (EmS) - Spillage** | S-W |
| **Packing instruction** | P200 |

**Air Transport (ICAO-TI / IATA-DGR)**

| | |
|---|---|
| **Proper shipping name (IATA)** | OXYGEN COMPRESSED |
| **Class** | 2.2 |
| **Passenger and Cargo Aircraft** | Allowed. |
| **Packing instruction - Passenger & Cargo Aircraft** | 200 |
| **Cargo Aircraft Only** | Allowed. |
| **Packing instruction - Cargo Aircraft Only** | 200 |

**Special Precautions for User**
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.

**Labelling ADR**: 2.2: Non flammable, non toxic gas.
**Other Transport Information**
Before transporting product containers:
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.
Ensure there is adequate ventilation.
Compliance with applicable regulations.

### SECTION 15 – REGULATORY INFORMATION

**Safety, Health and Environmental Regulations/Legislation specific for the Substance or Mixture.**
EU Legislation

| | |
|---|---|
| Seveso Directive 96/82/EC | Not covered. |
| National Legislation | Ensure all national/local regulations are observed. |
| Chemical Safety Assessment | A CSA does not need to be carried out for this product. |

### SECTION 16 – ANY OTHER RELEVANT INFORMATION

**Indication of Changes**: Revised safety data sheet in accordance with commisssion regulation (EU) No 453/2010

**Training Advice**
Receptacle under pressure.
Strongly oxidising in high concentrations.
Keep container in a well-ventilated place.
Do not breathe the gas.
Ensure all national/local regulations are observed.
Customers need to understand the extreme hazard of oxygen enrichment and accelerated fires.

**List of Full Text of H-Statements in Section 3**
H270 - May cause or intensify fire; oxidizer.
H280 - Contains gas under pressure; may explode if heated.
H281 - Contains compressed gas; may cause cold burns when gas is expanding or injury.

**Further Information**: Classification in accordance with calculation methods of regulation (EC) 1272/2008 CLP/ (EC) 1999/45 DPD.

**Note:** This Safety Data Sheet has been established in accordance with "Preparation of safety data sheets for hazardous chemicals" - code of practice.

### DISCLAIMER OF LIABILITY

Details given in this document are believed to be correct at the time of issue. Although proper care has been taken in the preparation of this document, no liability for injury or damage resulting from its use can be accepted.

Before using this product in ***any new process or experiment,*** a thorough material compatibility and safety study should be carried out.