

# Material Safety Data Sheet

## Oxygen

### 1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND SUPPLIER

**Product Name:** Oxygen

**Other Names:** Oxygen (Gas)

**Recommended use:** Industrial gas for use as a fuel in domestic, commercial industrial and automotive applications.

**Supplier:** Irwin Industrial Tool Company Pty Ltd  
**ABN:** 30 005 543 966  
**Address:** 2 National Drive  
Dandenong South VIC 3975  
Australia

**Telephone:** +61 8 9259 8888 (WA) or +61 3 8787 3888 (all other states)

**Facsimile:** +61 8 9259 8800 (WA) or +61 3 8787 3800 (all other states)

**Emergency Phone:** (08) 9259 8888 (WA) or (03) 8787 3888 (all other states) local time 8:30am – 5pm, and Hodson & Associates (03) 9572 1303 outside these times

### 2. HAZARDS IDENTIFICATION

#### NON-HAZARDOUS SUBSTANCE – DANGEROUS GOOD

**DG Class:** 2.2 (Non-flammable, non-toxic gas)

**Subsidiary Risk:** 5.1 (Oxidizing agent)

**Packing Group:** None allocated

**Risk phrases:**  
R8 Contact with combustible material may cause fire.

**Safety phrases:**  
S17 Keep away from combustible material.

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

| Chemical identity | CAS Number | Proportion             |
|-------------------|------------|------------------------|
| Oxygen            | 7782-44-7  | 99.6 – 100 % by volume |

All components in this product are listed on the Australian Inventory of Chemical Substances (AICS).

### 4. FIRST AID MEASURES

Over-exposure to oxygen is not anticipated under normal working conditions. PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES WHERE OXYGEN IS INHALED UNDER PRESSURE (i.e. as in scuba diving). Conscious persons should be assisted to an uncontaminated area and inhale fresh air. Quick removal from the contaminated area is most important. If in doubt, contact a doctor or Poisons Information Centre. In case of frostbite, seek immediate medical attention.

**Swallowed:** Not considered a potential route of exposure. Adverse effects not anticipated.

**Eye:** No specific measures for oxygen gas exposure.

**Skin:** No specific measures for oxygen gas exposure.

**Inhaled:** Oxygen is non-toxic. No specific measures for normal oxygen gas exposure. Continuous inhalation of concentrations higher than 75% may cause nausea, dizziness, respiratory difficulties and convulsion. Remove affected person to uncontaminated area.

**Notes to doctor:** Treat symptoms and reduce overexposure. It is likely the patient could be experiencing hyperoxia.

### 5. FIRE FIGHTING MEASURES

**Specific hazards:** Oxidizing gas. High oxygen concentrations vigorously accelerate combustion. Will support or initiate combustion / explosion of organic matter and other combustible materials. Cylinder may rupture violently from pressure when involved in a fire situation. Gas / vapour is heavier than air. May accumulate in confined spaces, particularly at or below ground level.

**Extinguishing media:** Water spray to keep cylinders cool. Use extinguishing agents appropriate for the combustible material.

**Fire fighting procedures:** Oxidizing gas. If possible, stop the flow of oxygen which is supporting the fire. Heating can cause expansion and pressure build-up leading to violent rupture of containers. If safe to do so, remove containers from path of fire. Continue to cool fire exposed containers with water until well after flames are extinguished. Firefighters must wear self-contained breathing apparatus with full face-mask and protective clothing in fire situations or in confined spaces.

**Hazardous Decomposition Products:** Incomplete combustion may form carbon dioxide.

**Hazchem Code:** 2[S]

### 6. ACCIDENTAL RELEASE MEASURES

Eliminate all sources of ignition – no smoking. Take precautionary measures against static discharges. Evacuate all personnel from the affected area. A leak near combustible or flammable materials may represent a severe fire or explosion hazard. Use appropriate protective equipment. If leak is in user's equipment, ensure purging of piping with inert gas prior to attempting repairs. If leak is in container or container valve, contact the appropriate emergency telephone number listed on page 1. Ventilate area well and ensure adequate personal protection as above.

### 7. HANDLING AND STORAGE

Dry product is non-corrosive and may be used with all materials of construction. Moisture causes metal oxides which are formed with air to be hydrated so that they include volume and lose their protective role (rust formation). Concentrations of SO<sub>2</sub>, Cl<sub>2</sub>, salt, etc in moisture enhances the rusting of metals in air. Carbon steels and low alloy steels are acceptable for use at lower pressures.

**Handling:** Open valve slowly to avoid pressure shock. Don't use oil or grease. Avoid suck back of water into cylinder. Only use with equipment which is suitable for this product, the supply, pressures and temperature – contact the supplier in all cases of doubt. Avoid all ignition sources. Flameproof equipment necessary in area where this chemical is being used. Containers must be earthed to avoid generation of static charges. Before using this product in any new process, a thorough material compatibility and safety study should be carried out. Always check cylinders when first collected, delivered or used, using an approved leak detection fluid.

**Storage:** Store cylinder or container below 50°C in a well ventilated areas away from heat, sources of ignition and incompatibles. Store away from flammable and combustible materials. Keep containers closed at all times – check regularly for leaks. Ensure equipment is electrically bonded and earthed to prevent static accumulation. Segregate from flammable, combustibles and other oxidizing agents in store. Do not smoke in areas of use or storage. Observe State Regulations concerning the storage and handling of Dangerous Goods. Store in accordance with all precautions required for handling oxidizing gases.

**Incompatibilities:** Not to be stored with explosives (Class 1), flammable gases (Class 2.1), toxic gases (Class 2.3), flammable solids (Class 4.1), spontaneously combustible substances (Class 4.2), dangerous when wet substances (Class 4.3), organic peroxides (Class 5.2), radioactive substances (Class 7) and corrosive substances (Class 8). Exemptions may apply.

### 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

#### National occupational exposure standards

An exposure standard has not been assigned for this substance.

**Engineering controls:** Local exhaust ventilation and/or mechanical (general) exhaust is recommended, provided these are fitted with flame and explosion proof electrical fittings. Keep containers tightly closed when not in use.

#### Personal Protection

**Skin:** Avoid skin contact by the use of chemical resistant gloves when using this gas mixture. Wear mechanically resistant gloves when handling cylinders of this gas mixture.

**Eye:** Avoid eye contact by wearing eye protection, e.g. goggles with suitable filter lenses when use is cutting / welding.

**Respiratory:** None should be needed under normal circumstances. However, under conditions of frequent use or heavy exposure, respiratory protection may be needed.

Do not smoke while handling product. Ensure adequate ventilation. Keep escape type self-contained breathing apparatus readily available for emergency use. Avoid oxygen rich (> 21 %) atmospheres.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

|                                  |                                                                        |
|----------------------------------|------------------------------------------------------------------------|
| <b>Appearance:</b>               | colourless gas with no odour                                           |
| <b>Boiling Point:</b>            | -182.9°C                                                               |
| <b>Melting Point:</b>            | -218.8°C                                                               |
| <b>Vapour pressure:</b>          | not applicable                                                         |
| <b>Specific gravity:</b>         | 1.1049 (21°C)                                                          |
| <b>Flash Point:</b>              | non-flammable                                                          |
| <b>pH:</b>                       | not applicable                                                         |
| <b>Flammability Limits:</b>      | % by volume lower: not applicable<br>% by volume upper: not applicable |
| <b>Autoignition temperature:</b> | not applicable                                                         |
| <b>Solubility in water:</b>      | 39 mg/L                                                                |
| <b>Vapour Density:</b>           | 1.11 (air = 1.0)                                                       |
| <b>Bulk Density:</b>             | 1.33 kg/m <sup>3</sup> (21°C)                                          |
| <b>Critical temperature:</b>     | -118°C                                                                 |

**10. STABILITY AND REACTIVITY**

|                                          |                                                                        |
|------------------------------------------|------------------------------------------------------------------------|
| <b>Chemical stability:</b>               | Stable.                                                                |
| <b>Hazardous polymerization:</b>         | Will not occur.                                                        |
| <b>Incompatible materials:</b>           | May react violently with flammable, organic and combustible materials. |
| <b>Conditions to avoid:</b>              | Heat, sparks, flame and build-up of static electricity.                |
| <b>Hazardous decomposition products:</b> | Incomplete combustion can produce carbon dioxide.                      |

**11. TOXICOLOGICAL INFORMATION**

**Swallowed:** Not considered a likely route of exposure. Adverse effects are not expected.

**Eye:** Contact with liquid oxygen will cause serious damage (frostbite) and likely loss of sight.

**Skin:** Contact with liquid oxygen will cause cold burns and frostbite.

**Inhaled:** May cause drowsiness, headache, blurred vision and irritation of the eyes, nose and throat. High concentrations may have a narcotic effect. Prolonged inhalation of high oxygen concentrations (> 75 %) may affect coordination, attention and cause tiredness or respiratory irritation. Oxygen is more toxic when inhaled at elevated pressures. Depending upon pressure and duration of exposure, pure oxygen at elevated pressures (i.e. divers) may cause cramps, dizziness, difficulty breathing, convulsions, oedema and death.

**Chronic:** No chronic systemic effects reported for industrial exposures.

**12. ECOLOGICAL INFORMATION**

No ecological damage caused by this product.

**13. DISPOSAL CONSIDERATIONS**

Do not dispose of any non-empty oxygen containers. Cylinders should be emptied and returned to an approved hazardous waste collection point or to supplier for rechecking and refilling. Do not discharge into any area where there is a risk of forming an explosive mixture. Empty cylinders will still contain vapour. Contact supplier if guidance is required.

**14. TRANSPORT INFORMATION****Road and Rail Transport (Australian Dangerous Goods Code):**

**UN Number:** 1072  
**Proper Shipping Name:** OXYGEN, COMPRESSED  
**Class:** 2.2 Non-flammable, non-toxic gas  
**Subsidiary Risk:** 5.1 Oxidizing agent  
**Hazchem Code:** 2[S]  
**Packing Group:** None allocated

**Marine Transport (International Maritime Dangerous Goods Code):**

**UN Number:** 1072  
**Proper Shipping Name:** OXYGEN, COMPRESSED  
**Class:** 2.2 Non-flammable, non-toxic gas  
**Subsidiary Risk:** 5.1 Oxidizing agent  
**Packing Group:** None allocated  
**Marine Pollutant:** No

**Air Transport (International Air Transport Association Dangerous Goods Regulations):**

**UN Number:** 1072  
**Proper Shipping Name:** OXYGEN, COMPRESSED  
**Class:** 2.2 Non-flammable, non-toxic gas  
**Subsidiary Risk:** 5.1 Oxidizing agent  
**Packing Group:** None allocated  
**Limitations:** None

**Further transport advice:**

Avoid transport on vehicles where load space is not separated from the driver's compartment. Ensure that the 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 they are firmly secured and:

- Cylinder valve is closed and not leaking
- Valve outlet cap nut or plug (where provided) is correctly fitted
- Valve protection device (where provided) is correctly fitted
- There is adequate ventilation
- There is compliance with applicable regulations

**15. REGULATORY INFORMATION**

**Classification:** Not hazardous according to criteria of NOHSC.  
Dangerous Good according to criteria of the Australian Dangerous Goods Code.

**Poisons Schedule:** Not Scheduled

