MATERIALS SAFETY DATA SHEET (MSDS)

OXYGEN

SECTION 1 – IDENTIFICATION (MATERIAL & SUPPLIER)
Product Identifier: Oxygen, Compressed
Chemical Formula: O2
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.

SECTION 2 – HAZARDS IDENTIFICATION
Classification of the Hazardous Chemical
Compressed Oxygen is classified as hazardous.

GHS Classification(s):
- Oxidising Gases: Category 1
- 2.2: Non flammable, non toxic gas.
- 5.1: Oxidizing substances

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

SECTION 3 – COMPOSITION AND INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Material</th>
<th>Abbreviation</th>
<th>Contents</th>
<th>CAS No.</th>
<th>EC NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oxygen</td>
<td>O2</td>
<td>100%</td>
<td>7782-44-7</td>
<td>231-956-9</td>
</tr>
</tbody>
</table>

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 un contaminated 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.

2.2: Non flammable, non toxic gas. Vigorously accelerates combustion of combustible materials.

Oxidant. Strongly supports combustion. May react violently with combustible materials.

Exposure to fire may cause containers to rupture/explode.

Supports combustion.

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.

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
**SECTION 1 – IDENTIFICATION (MATERIAL & SUPPLIER)**

**MATERIAL**
- **Chemical Name:** Oxygen
- **Synonym(s):** Also as Inert Gas Atmosphere for the Shielding gas for welding.

**SUPPLIER**
- **Website:** www.puregas.com.au
- **Email:** sales@puregas.com.au

**EMERGENCY SERVICES:**
- **BUSINESS HOURS TELEPHONE**
- **Fax:**
- **Phone:**
- **Address:**

**SECTION 2 – HAZARDS IDENTIFICATION**

**7.1. GHS Classification**
- **Conclusion:** Oxygen is classified as hazardous.

**7.2. GHS Pictograms**

**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.) |
| Fire/Explosion | Water |
| 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 clothes, 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 do not suffer the risk of asphyxiation. |
| Appropriate Measures | Ensure valve protective device (where provided) is correctly fitted. Ensure valve outlet cap nut or plug (where applicable) is correctly fitted. Ensure cylinder valve is closed and not leaking. Ensure there is adequate ventilation. Before transporting product containers: Keep container in a well-ventilated place.

**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 2 – STABILITY AND REACTIVITY**

**Reactivity**
- No reactivity hazard other than the effects described in sub-sections below.

**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 3 – 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.
Sustained inhalation of concentrations in excess of 75% O₂ can be dangerous. Oxygen will accelerate burning of combustible materials.

**Preparation and Storage**
- Store in a well-ventilated area.
- Keep valves and fittings free from oil and grease.
- Store cylinders in a well-ventilated area.
- Ensure cylinders are not stored in direct sunlight.
- Use the necessary protective measures (i.e., wear gloves and goggles).

**Transport Information**
- UN Number: 1072
- Proper shipping name: OXYGEN COMPRESSED
- Class: 2.2
- Guidance on the transport of dangerous goods (TDG) or IATA packing instructions:
  - P200
- Packaging: Non-flammable, non-toxic gas.

**Exposure Controls**
- Use only with equipment cleaned for oxygen service and rated for the cylinder pressure.
- Use only with equipment cleaned for oxygen service and rated for the cylinder pressure.
- Do not use oil and grease.
- Do not attempt to repair leaking BD's or cylinder valves but simply fit a new valve or BD.
- Use the necessary protective measures (i.e., wear gloves and goggles).

**Disposal Considerations**
- May be vented to atmosphere in a well-ventilated place.
- 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.

**Emergency Action Code**
- 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 expanding.

**Regulatory Information**
- Safety, Health, and Environmental Regulations/Legislation specific for the Substance or Mixture: Not covered.
- EU Legislation: Seveso Directive 96/82/EC
- National Legislation: Ensure all national/local regulations are observed.
- A CSA does not need to be carried out for this product.

**Toxicological Information**
- Rat Inhalation LC50 [ppm/h]: 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.

**Stability and Reactivity**
- Relative density, gas (air=1): 1.1
- Odour threshold: Odour threshold is subjective and inadequate to give specific methods for waste gas treatment.
- Molar mass [g/mol]: N/A for gases and gas-mixtures.

**Decomposition Products**
- Results of PBT and vPvB assessment: No data available.
- Information on Inorganic Reactions: N/A
- Information on Organic Reactions: N/A
- Information on Reactions with Water: N/A
- Information on Reactions with Other Chemicals: N/A

**Concentration Limits**
- Threshold Limit Value/Permissible Exposure Limit: No data available.
- Recommended Limit: No data available.

**Precautions for Use**
- 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.

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

**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.

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**Oxygen continued**

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**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.

**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.
- May be vented to atmosphere in a well-ventilated place.
- Contact supplier if guidance is required.

**Section 14 – Transport Information**
- Un Number: 1072
- Labelling ADR, IMDG, IATA: OXYGEN COMPRESSED
- 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: 25
  - 2 = Fine water spray.
  - 5 = Risk of violent reaction or explosion.
  - T = Full fire kit and breathing apparatus.
  - F = Fire extinguisher.
  - C = Use chemical extinguisher.

**Section 15 – Regulatory Information**
- Safety, Health and Environmental Regulations/Legislation specific for the Substance or Mixture:
  - EU Legislation: Seveso Directive 96/82/EC
  - National Legislation: Not covered.
  - Chemical Safety Assessment: A CSA does not need to be carried out for this product.

**Section 16 – Any Other Relevant Information**
- Training Advice: Receptacle under pressure.
- Strongly oxidizing 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 expanding.

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