MSDS FOR OXYGEN (COMPRESSED)

Rev 5(11/2005)

1. Identification of the Substance/ Preparation and of the Company

Product Name: **Oxygen (Compressed)**

Chemical Formula: O_2

Company Identification: Energas Limited
Westmorland Street
Hull HU2 0HX

Emergency Telephone No: 01482 329333

2. Composition/ Information on Ingredients

Substance/ Preparation: Substance
Components/ Impurities: Contains no other impurities which will influence the classification of the product.

CAS Number: 07782-44-7
EEC Number: 2319569 (from EINECS)

3. Hazardous Properties

Compressed gas. Oxidant (O).
Strongly supports combustion.
May react violently with combustible materials.

4. First Aid Measures

Inhalation:
Continuous inhalation of concentrations greater than 75% may cause nausea, dizziness, respiratory difficulty and convulsions.

5. Fire Fighting Measures

Suitable Extinguishing Media:
All known extinguishants can be used.

Specific Hazards:
Exposure to fire may cause containers to rupture/ explode.
Non-flammable.
Supports combustion.

Specific Methods:
If safe to do so, stop flow of product.
Move container away or cool with water from a protected position.

Hazard Combustion Products:
None.

Special Protective Equipment for Fire Fighters:
In confined spaces use self-contained breathing apparatus.

6. Accidental Release Measures

Personal Precautions
Evacuate area.
Ensure adequate air ventilation.
Eliminate ignition sources.

Environmental Precautions
Try to stop release.
Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.

Clean Up Methods
Ventilate area.

7. Handling and Storage

Handling:
Refer to Energas Storage and Handling instructions.
Use no oil or grease.
Use only properly specified equipment which is suitable for this product, its supply pressure and temperature.
Open cylinder valve slowly to avoid pressure shock.
Do not allow backfeed into the container.
Contact Energas Limited if in doubt.

Storage:
Segregate from flammable gases or other flammable materials in store.
Keep away from ignition sources.
Keep container below 50°C in a well-ventilated place.

8. Exposure Controls/ Personal Protection

Personal Protection:
Do not smoke while handling this product.
Wear suitable HAND, BODY and HEAD protection.
Wear suitable EYE protection when use is cutting or welding.
Ensure adequate ventilation.
Avoid oxygen rich (> 21%) atmospheres.

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9. Physical and Chemical Properties

Appearance/ Colour: Colourless gas.
Odour: Odourless

Molecular Weight:	32
Melting Point:	-219ºC
Boiling Point:	-183ºC
Critical Temperature:	118°C
Relative Density (Liquid):	1.1 (water = 1)
Relative Density (Gas):	1.1 (air = 1)
Vapour Pressure @ 20°C:	Not applicable
Solubility (water):	39 mg/l
Flammability Range:	Oxidiser

10. Stability and Reactivity

May react violently with combustible materials.
May react violently with reducing agents.
Violently oxidises organic materials.

11. Toxicological Information

No known toxicological effects from this product.

12. Ecological Information

No known ecological effects from this product.

13. Disposal Considerations

Vent to atmosphere in a well ventilated place.
Do not discharge into any place where its accumulation could be dangerous.
Contact Energas Limited if guidance is required.

14. Transport Information

UN No.	:	1072
Class/ Division	:	2.2
Subsidiary Risk	:	5.1
ADR/RID item	:	1O
Emergency Action Code	:	2S
Hazard Identification No.	:	25
CEFIC Tremcard No.	:	842
Labelling ADR	:	Label 2.2: Non-toxic, non-flammable gas, label 5 : Fire intensifying risk.

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 emergency.

Ensure all cylinder valves are closed and not leaking and the load is firmly secured and complies with the applicable regulations.

15. Regulatory Information

EC Classification: O; R8

- Symbols - road transport symbols are used and selected to the most stringent product classification.

  EC or ADR - Label 2.2 : Non-toxic, non-flammable gas, label 5 : Fire intensifying risk.

- **Risk Phrases**
  R8 Strongly supports combustion.

- **Safety Phrases**
  S9 Keep container in a well ventilated place.
  S17 Keep away from combustible material. Use no oil or grease.

16. Other Information

Valve Connection: BS 341 No. 3

Ensure all users of this product understand the hazards of oxygen enrichment.

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 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.

Refer to Energas Limited General Safety and Handling Data Sheet for further details.

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CYLINDER IDENTIFICATION TO BS EN 1089-3
GROUND COLOUR: JET BLACK (RAL 9005), SHOULDER COLOUR : WHITE (RAL 9010)

ENERGAS GENERAL SAFETY AND HANDLING DATA

1. GENERAL

Only trained persons should handle compressed gases.
Observe all regulations and local requirements regarding the storage of containers.
Do not remove or deface labels provided by the supplier for the identification of the container contents.
Ascertain the identity of the gas before using it.
Know and understand the properties and hazards associated with each gas before using it.
When doubt exists as to the correct handling procedure for a particular gas contact the supplier.

2 HANDLING AND USE

Wear stout gloves.
Never lift a container by the cap or guard unless the supplier states it is designed for that purpose.
Use a trolley or other suitable device or technique for transporting heavy containers, even for a short distance.
Where necessary wear suitable eye and face protection. The choice between safety glasses, chemical goggles, or full-face shield will depend on the pressure and nature of the gas being used.

Where necessary for toxic gases see that self-contained positive pressure breathing apparatus or full face air line respirator is available in the vicinity of the working area.
Employ suitable pressure regulating devices on all containers when the gas is being emitted to systems with a lower pressure rating than that of the container.
Ascertain that all electrical systems in the area are suitable for service with each gas.

Never use direct flame or electrical heating devices to raise the pressure of a container. Containers should not be subjected to temperatures above 45°C.
Never re-compress a gas mixture without consulting the supplier. Never attempt to transfer gases from one container to another.
Do not use containers as rollers or supports, or for any other purpose than to contain the gas as supplied.
Never permit oil, grease or other readily combustible substances to come into contact with valves of containers containing oxygen or other oxidants.
Keep container valve outlets clean and free from contaminants, particularly oil and water.
Do not subject containers to abnormal mechanical shocks which may cause damage to their valves or safety devices.

Never attempt to repair or modify container valves or safety relief devices. Damaged valves should be reported immediately to the supplier.
Close the container valve whenever gas is not required even if the container is still connected to the equipment.

3 STORAGE

Containers should be stored in a well-ventilated area. Some gases will require a purpose built area.
Store containers in a location free from fire risk and away from sources of heat and ignition. Designation as a no smoking area may be desirable.

Gas containers should be segregated in the storage area according to the various categories.

The storage area should be kept clear and access should be restricted to authorised persons only, the area should be clearly marked as a storage area and appropriate hazard warning signs displayed (Flammable Toxic etc,).
The amount of flammable or toxic gases should be kept to a minimum.
Flammable gases should be stored away from other combustible materials.

Containers held in storage should be periodically checked for general condition and leakage.
Containers in storage should be properly secured to prevent toppling or rolling.
Vertical storage is recommended where the container is designed for this.
Container valves should be tightly closed and where appropriate, valve outlets should be capped or plugged. Protect containers stored in the open against rusting and extremes of weather.
Containers should not be stored in conditions likely to encourage corrosion.
Store full and empty containers separately and arrange full containers so that the oldest stock is used first.

PRODUCTION SITE ADDRESSES

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FOR FURTHER INFORMATION CONTACT YOUR NEAREST DISTRIBUTION CENTRE