SAFETY DATA SHEET
Oxygen, refrigerated liquid

1 IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND NAME OF THE COMPANY

Product name
Oxygen, refrigerated liquid
Chemical formula: O_2
Company identification
Linde Gas Singapore Pte. Ltd.
50 Jurong Island Highway
Singapore 627877
Emergency phone number: 65.6867 8998-850

2 COMPOSITION/INFORMATION ON INGREDIENTS

Substance/Preparation: Substance
Components/Impurities
Contains no other components or impurities which will influence the classification of the product.
CAS No.: 07782-44-7
EEC No. (from EINECS): 231-956-9

3 HAZARDS IDENTIFICATION

Hazards identification
Refrigerated liquefied gas. Contact with product may cause cold burns or frostbite.
Oxidant. Strongly supports combustion.
May react violently with combustible materials.

4 FIRST AID MEASURES

Inhalation
Continuous inhalation of concentrations higher than 75% may cause nausea, dizziness, respiratory difficulty and convulsion. Remove victim to uncontaminated area. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.
Skin/eye contact
Immediately flush eyes thoroughly with water for at least 15 minutes. In case of frostbite spray with water for at least 15 minutes. Apply a sterile dressing. Obtain medical assistance.
Ingestion
Ingestion is not considered a potential route of exposure.

5 FIRE FIGHTING MEASURES

Specific hazards
Supports combustion. Exposure to fire may cause containers to rupture/explode. Non flammable.
Hazardous combustion products
None.
Suitable extinguishing media
All known extinguishants can be used.
Specific methods
If possible, stop flow of product. Move container away or cool with water from a protected position.
Special protective equipment for fire fighters
None.

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 and storage
Use no oil or grease. Segregate from flammable gases and other flammable materials in store. Suck back of water into the container must be prevented. Do not allow backfeed into the container. Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt. Keep away from ignition sources (including static discharges). Refer to supplier's container handling instructions. Keep container below 50°C in a well ventilated place.

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Personal protection
Do not smoke while handling product. Wear suitable hand, body and head protection. Wear goggles with suitable filter lenses when use is cutting/ welding. Avoid oxygen rich (>21%) atmospheres. Ensure adequate ventilation.

9 PHYSICAL AND CHEMICAL PROPERTIES

Molecular weight: 32
Melting point: -219 °C
Boiling point: -183 °C
Critical temperature: -118 °C
Relative density, gas: 1.1 (air=1)
Vapour pressure 20°C: Not applicable.
Solubility mg/l water: 39 mg/l
Appearance/Colour: Colourless gas
Odour: No odour warning properties.
Autoignition temperature: Not applicable
Flammability range: Oxidiser.
Other data
Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below ground level.

10 STABILITY AND REACTIVITY

Stability and reactivity
May react violently with combustible materials May react violently with reducing agents. Violently oxidises organic material. Explosion risk in the case of spillage on organic construction materials such as asphalt or wood. Liquid spillages can cause embrittlement of structural materials.

11 TOXICOLOGICAL INFORMATION

General
No toxicological effects from this product.

12 ECOLOGICAL INFORMATION

General
No ecological damage caused by this product.

13 DISPOSAL CONSIDERATIONS

General
To atmosphere in a well ventilated place. Do not discharge into any place where its accumulation could be dangerous. Contact supplier if guidance is required.
EWC No. 16 05 01

14 TRANSPORT INFORMATION

ADR / RID: Class 2 Code 3O
IMDG: Class 2.2
IATA: Class 2.2
UN number and proper shipping name:
UN 1073 Sauerstoff, tiefgekühlt, flüssig
UN 1073 Oxygen, refrigerated liquid
Packing Instruction: P203
Labelling according to ADR / RID:
Label 2.2: Non flammable, non-toxic gases
Label 5.1: Oxidizing substances
ADR/RID Hazard No.: 225

Other transport information
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 that 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
- compliance with applicable regulations.

15 REGULATORY INFORMATION

Number in Annex I of Dir 67/548
008-001-00-8
EC Classification: O; R8
Labelling of cylinders
-Symbols
O: Oxidising
-Risk phrases
R8 Contact with combustible material may cause fire.
-Safety phrases
S17 Keep away from combustible material

16 OTHER INFORMATION
Ensure all national/local regulations are observed. Ensure operators understand the hazard 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 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.

Further Information:
Linde Safety Instructions
No. 1: Handling of cryogenic liquefied gases
No. 4: Oxygen enrichment
No. 7: Safe handling of gas cylinders and cylinder bundles
No. 11: Transport of gas receptacles in vehicles

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