

# MATERIAL SAFETY DATA SHEET

|                        |  |                        |                          |
|------------------------|--|------------------------|--------------------------|
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## 1. CHEMICAL PRODUCT

PRODUCT NAME: **OXYGEN** SYNONYMS: Cryogenic Oxygen/Refrigerated Oxygen/LOX

## 2. COMPOSITION, INFORMATION ON INGREDIENTS

| <u>Ingredient Name</u> | <u>Formula</u> | <u>CAS #</u> | <u>Concentration</u> | <u>ACGIH TLV</u> | <u>OSHA PEL</u> | <u>Exposure Limits (PPM)</u> |                   |
|------------------------|----------------|--------------|----------------------|------------------|-----------------|------------------------------|-------------------|
|                        |                |              |                      |                  |                 | <u>MAC</u>                   | <u>Other STEL</u> |
| <b>OXYGEN</b>          | O2             | 7782-44-7    | 99+%                 | NE               | NE              | NE                           | NE                |

Note: NE = NONE ESTABLISHED

## 3. HAZARD IDENTIFICATION

\*\*\* EMERGENCY OVERVIEW \*\*\*

High pressure oxidizing liquid.  
Vigorously accelerates combustion.

### POTENTIAL HEALTH EFFECTS

ROUTES OF ENTRY: Inhalation

ACUTE EFFECTS: Extended exposures to **oxygen** at higher pressures may be hazardous. A variety of central nervous system disorders may result from breathing **oxygen** greater than 2 atm. Symptoms include dizziness, impaired coordination, visual and hearing disturbances and seizures.

CHRONIC EFFECTS: None known

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE: None known

OTHER EFFECTS OF OVEREXPOSURE: None

CARCINOGENICITY (US ONLY):

NTP - No

IARC MONOGRAPHS - No

OSHA REGULATED – No

### 4. FIRST AID MEASURES

INHALATION: Immediately remove victim to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give **oxygen**.

EYE CONTACT: Remove victim from source of contact. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

SKIN CONTACT: Do not apply direct heat. Do not rub frozen area. Flush affected area with tepid water.

INGESTION: None

IN EVENT OF EXPOSURE, CONSULT A PHYSICIAN

NOTE TO PHYSICIAN: None

### 5. FIRE FIGHTING MEASURES

FLASH POINT: Nonflammable

AUTOIGNITION TEMPERATURE: N/Av

FLAMMABLE LIMITS: Nonflammable

LOWER:

UPPER:

EXTINGUISHING MEDIA: Use extinguish media appropriate for surrounding fire.

SPECIAL FIRE FIGHTING INSTRUCTION AND EQUIPMENT: Wear self-contained breathing apparatus and full protective clothing. Keep fire exposed cylinders cool with water spray. If possible, stop the product flow. Move container from fire area if possible.

HAZARDOUS COMBUSTION PRODUCTS: None

UNUSUAL FIRE AND EXPLOSION HAZARDS: Cylinder rupture may occur under fire conditions. High oxidizing atmosphere increases the likelihood of fires. Oxygen vigorously supports combustion.

### 6. ACCIDENTAL RELEASE MEASURES

CLEAN UP PROCEDURES: Evacuate and ventilate area. Shut off source if possible and remove source of heat.

SPECIALIZED EQUIPMENT: None

### 7. HANDLING AND STORAGE

PRECAUTIONS TO BE TAKEN IN HANDLING: Secure cylinder when using to protect from falling. Use suitable hand truck to move cylinders. Use only **oxygen** cleaned equipment. Avoid oils and greases. Oxygen reacts violently with hydrocarbons particularly at high pressure.

PRECAUTIONS TO BE TAKEN IN STORAGE: Store in well ventilated areas away from combustibles. Keep valve protection cap on cylinders when not in use.

### 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS: Provide adequate general and local exhaust ventilation.

EYE / FACE PROTECTION: Safety glasses

SKIN PROTECTION: None

RESPIRATORY PROTECTION: In case of leakage, use self-contained breathing apparatus.

OTHER PROTECTIVE EQUIPMENT: Safety shoes when handling cylinders.

### 9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Colorless  
ODOR: Odorless  
PHYSICAL PRESSURE: Cryogenic liquid.  
VAPOR PRESSURE: N/Ap  
VAPOR DENSITY (AIR=1): @25 deg.C: 1.105  
BOILING POINT (C): -183  
SOLUBILITY IN WATER: 4.89 cm<sup>3</sup>/100 cm<sup>3</sup>  
SPECIFIC GRAVITY (H<sub>2</sub>O=1): Gas  
EVAPORATION RATE: Gas  
ODOR THRESHOLD: None

### 10. STABILITY AND REACTIVITY

STABILITY: Stable under normal storage conditions.  
CONDITIONS TO AVOID: Storage in poorly ventilated areas. Storage near a heat source.  
MATERIALS TO AVOID: Reacts violently with phosphine, hydrazine, ethers, alcohols, hydrogen sulfide, and hydrocarbons.  
HAZARDOUS POLYMERIZATION: Will not occur.  
HAZARDOUS DECOMPOSITION: None

### 11. TOXICOLOGICAL INFORMATION

LETHAL CONCENTRATION (LC<sub>50</sub>): None established  
LETHAL DOSE 50 (LD<sub>50</sub>): N/Ap  
TERATOGENICITY: N/Ap  
  
REPRODUCTIVE EFFECTS: N/Ap  
MUTAGENICITY: N/ap

### 12. ECOLOGICAL INFORMATION

No adverse ecological effects are expected.

### 13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD: Non-returnable cylinders must not be refilled. Dispose of non-refillable cylinders in accordance with federal, state, and local regulations. Allow gas to discharge at a moderate rate. Return cylinders to supplier with any valve outlet plugs or caps secured and valve protection cap in place.

### 14. TRANSPORT INFORMATION

CONCENTRATION: 99+%  
DOT DESCRIPTION (US ONLY):

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PROPER SHIPPING NAME: **Oxygen**, Liquid

HAZARD CLASS: 2.2 (nonflammable)

IDENTIFICATION NUMBER: UN1073

REPORTABLE QUANTITIES: None

LABELING: Oxygen Refrigerated Liquid.

ADR / RID (EU Only): Class 2

SPECIAL PRECAUTIONS: Cylinders should be transported in a secure upright position in a well ventilated truck.

### 15. REGULATORY INFORMATION

OSHA: Process Safety Management: Materials are not listed in appendix A of 29 CFR 1910.119 as highly hazardous chemicals.

TSCA: Material is listed in TSCA inventory.

SARA: The threshold planning quantity for material is 10,000 lbs.

EU NUMBER: 231-956-9

NUMBER IN ANNEX 1 OF DIR 67/548: Not listed in annex 1.

EU CLASSIFICATION: N/Av

R: 8

S: 9,17

### 16. OTHER INFORMATION

OTHER PRECAUTIONS: Protect containers from physical damage. Do not deface cylinders or labels. Cylinders should be refilled by qualified producers of compressed gas. Shipment of a compressed gas cylinder which has not been filled by the owner or with his written consent is a violation of federal law (49 CFR).

ABBREVIATIONS: N/Av - Not Applicable, N/Av - Not Available, NE - None Established

**Use proper connections; do not use adapters. Do not force fit!!**

#### **DISCLAIMER**

The information and recommendations in this Material Safety Data Sheet relate only to the specific material mentioned herein and do not relate to use otherwise ie.in combination with any other material or in any process.

The information and recommendations herein are taken from our extensive experiences and the data contained in recognized references and believed by us to be true. Refrigeration group of companies make no warranties either expressed or implied with respect there to and assume no liability in connection with the use of such information and recommendation.