

# MATERIAL SAFETY DATA SHEET

## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**POLAR CRYOGENICS**

2734 SE Raymond

Portland, OR 97202

Information: 1-800-426-0689

**Emergency Contact:**

**CHEMTREC 1-800-424-9300**

**Calls Originating Outside the US:**

**703-527-3887 (Collect Calls Accepted)**

**SUBSTANCE: OXYGEN, LIQUID**

**TRADE NAMES/SYNONYMS:**

MTG MSDS 242; LIQUID OXYGEN; LOX; OXYGEN; OXYGEN, PRESSURIZED LIQUID; UN 1073; O2; OXYGEN (CRYOGENIC LIQUID); 00232585; RTECS RS206000

**CHEMICAL FAMILY:** inorganic, gas

**CREATION DATE:** May 22 2007

**REVISION DATE:** Sep 13 2007

## 2. COMPOSITION, INFORMATION ON INGREDIENTS

**COMPONENT:** OXYGEN, LIQUID

**CAS NUMBER:** 7782-44-7

**PERCENTAGE:** 100.0

## 3. HAZARDS IDENTIFICATION

**NFPA RATINGS (SCALE 0-4):** HEALTH=3 FIRE=0 REACTIVITY=0



**EMERGENCY OVERVIEW:**

**COLOR:** blue

**PHYSICAL FORM:** cryogenic liquid

**ODOR:** odorless

**MAJOR HEALTH HAZARDS:** No significant target effects reported.

**PHYSICAL HAZARDS:** Containers may rupture or explode if exposed to heat. May ignite combustibles.

**POTENTIAL HEALTH EFFECTS:**

**INHALATION:**

**SHORT TERM EXPOSURE:** irritation, changes in body temperature, nausea, difficulty breathing, irregular heartbeat, dizziness, disorientation, hallucinations, mood swings, pain in extremities, tremors, lung

congestion, convulsions

**LONG TERM EXPOSURE:** chest pain, lung damage

**SKIN CONTACT:**

**SHORT TERM EXPOSURE:** blisters, frostbite

**LONG TERM EXPOSURE:** no information on significant adverse effects

**EYE CONTACT:**

**SHORT TERM EXPOSURE:** frostbite, blurred vision

**LONG TERM EXPOSURE:** no information on significant adverse effects

**INGESTION:**

**SHORT TERM EXPOSURE:** ingestion of harmful amounts is unlikely, frostbite

**LONG TERM EXPOSURE:** ingestion of harmful amounts is unlikely

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#### 4. FIRST AID MEASURES

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**INHALATION:** If adverse effects occur, remove to uncontaminated area. Get medical attention.

**SKIN CONTACT:** If frostbite or freezing occur, immediately flush with plenty of lukewarm water (105-115 F; 41-46 C). DO NOT USE HOT WATER. If warm water is not available, gently wrap affected parts in blankets. Get immediate medical attention.

**EYE CONTACT:** Contact with liquid: Immediately flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

**INGESTION:** If a large amount is swallowed, get medical attention.

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#### 5. FIRE FIGHTING MEASURES

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**FIRE AND EXPLOSION HAZARDS:** Negligible fire hazard. Oxidizer. May ignite or explode on contact with combustible materials. Containers may rupture or explode if exposed to heat.

**EXTINGUISHING MEDIA:** carbon dioxide, regular dry chemical

Large fires: Use regular foam or flood with fine water spray.

**FIRE FIGHTING:** Move container from fire area if it can be done without risk. Cool containers with water spray until well after the fire is out. Stay away from the ends of tanks. For fires in cargo or storage area: Cool containers with water from unmanned hose holder or monitor nozzles until well after fire is out. If this is impossible then take the following precautions: Keep unnecessary people away, isolate hazard area and deny entry. Let the fire burn. For tank, rail car or tank truck, evacuation radius: 800 meters (1/2 mile).

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#### 6. ACCIDENTAL RELEASE MEASURES

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**OCCUPATIONAL RELEASE:**

Avoid contact with combustible materials. Do not touch spilled material. Stop leak if possible without personal risk. Keep unnecessary people away, isolate hazard area and deny entry.

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**7. HANDLING AND STORAGE**

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**STORAGE:** Store and handle in accordance with all current regulations and standards. Subject to storage regulations: U.S. OSHA 29 CFR 1910.104. Protect from physical damage. Keep separated from incompatible substances. Store in a cool, dry place. Store outside or in a detached building.

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**8. EXPOSURE CONTROLS, PERSONAL PROTECTION**

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**EXPOSURE LIMITS:**

**OXYGEN, LIQUID:**

No occupational exposure limits established.

**VENTILATION:** Provide local exhaust ventilation system. Ensure compliance with applicable exposure limits.

**EYE PROTECTION:** For the gas: Eye protection not required, but recommended. For the liquid: Wear splash resistant safety goggles. Contact lenses should not be worn. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

**CLOTHING:** For the gas: Protective clothing is not required. For the liquid: Wear appropriate protective, cold insulating clothing.

**GLOVES:** Wear insulated gloves.

**PROTECTIVE MATERIAL TYPES:** leather

**RESPIRATOR:** Under conditions of frequent use or heavy exposure, respiratory protection may be needed. Respiratory protection is ranked in order from minimum to maximum. Consider warning properties before use.

**For Unknown Concentrations or Immediately Dangerous to Life or Health -**

Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.

Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.

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**9. PHYSICAL AND CHEMICAL PROPERTIES**

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**PHYSICAL STATE:** gas  
**COLOR:** blue  
**PHYSICAL FORM:** cryogenic liquid  
**ODOR:** odorless  
**MOLECULAR WEIGHT:** 31.9988  
**MOLECULAR FORMULA:** O<sub>2</sub>  
**BOILING POINT:** -297 F (-183 C)  
**FREEZING POINT:** -360 F (-218 C)  
**VAPOR PRESSURE:** 760 mmHg @ -183 C  
**VAPOR DENSITY (air=1):** 1.1  
**SPECIFIC GRAVITY (water=1):** 1.1407 @ -183 C  
**WATER SOLUBILITY:** 3.2% @ 25 C  
**PH:** Not applicable  
**VOLATILITY:** Not applicable  
**ODOR THRESHOLD:** Not available  
**EVAPORATION RATE:** Not applicable  
**VISCOSITY:** 0.156 cP @ -173 C  
**COEFFICIENT OF WATER/OIL DISTRIBUTION:** Not applicable  
**SOLVENT SOLUBILITY:**  
**Soluble:** alcohol

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## 10. STABILITY AND REACTIVITY

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**REACTIVITY:** Stable at normal temperatures and pressure.

**CONDITIONS TO AVOID:** Avoid contact with combustible materials. Containers may rupture or explode if exposed to heat.

**INCOMPATIBILITIES:** combustible materials, halo carbons, metals, bases, reducing agents, amines, metal salts, oxidizing materials

**HAZARDOUS DECOMPOSITION:**  
Thermal decomposition products: miscellaneous decomposition products

**POLYMERIZATION:** Will not polymerize.

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## 11. TOXICOLOGICAL INFORMATION

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**OXYGEN, LIQUID:**  
**MUTAGENIC DATA:** Available.  
**REPRODUCTIVE EFFECTS DATA:** Available.

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## 12. ECOLOGICAL INFORMATION

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Not available

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## 13. DISPOSAL CONSIDERATIONS

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Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D001.

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## 14. TRANSPORT INFORMATION

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**U.S. DOT 49 CFR 172.101:**  
**PROPER SHIPPING NAME:** Oxygen, refrigerated liquid  
**ID NUMBER:** UN1073  
**HAZARD CLASS OR DIVISION:** 2.2  
**LABELING REQUIREMENTS:** 2.2; 5.1  
**QUANTITY LIMITATIONS:**  
**PASSENGER AIRCRAFT OR RAILCAR:** Forbidden  
**CARGO AIRCRAFT ONLY:** Forbidden



**CANADIAN TRANSPORTATION OF DANGEROUS GOODS:**  
**SHIPPING NAME:** Oxygen, refrigerated liquid  
**UN NUMBER:** UN1073  
**CLASS:** 2.2; 5.1

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## 15. REGULATORY INFORMATION

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**U.S. REGULATIONS:**  
**CERCLA SECTIONS 102a/103 HAZARDOUS SUBSTANCES (40 CFR 302.4):** Not regulated.

**SARA TITLE III SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355.30):** Not regulated.

**SARA TITLE III SECTION 304 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355.40):** Not regulated.

**SARA TITLE III SARA SECTIONS 311/312 HAZARDOUS CATEGORIES (40 CFR 370.21):**  
ACUTE: No  
CHRONIC: No  
FIRE: Yes  
REACTIVE: No

SUDDEN RELEASE: Yes

SARA TITLE III SECTION 313 (40 CFR 372.65): Not regulated.

OSHA PROCESS SAFETY (29CFR1910.119): Not regulated.

**STATE REGULATIONS:**

**California Proposition 65:** Not regulated.

**CANADIAN REGULATIONS:**

**WHMIS CLASSIFICATION:** Not determined.

**NATIONAL INVENTORY STATUS:**

**U.S. INVENTORY (TSCA):** Listed on inventory.

**TSCA 12(b) EXPORT NOTIFICATION:** Not listed.

**CANADA INVENTORY (DSL/NDSL):** Not determined.

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**16. OTHER INFORMATION**

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**MSDS SUMMARY OF CHANGES**

8. EXPOSURE CONTROLS, PERSONAL PROTECTION

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