**Material Safety Data Sheets (MSDS)**

IDENTIFICATION

**OXYGEN**

Chemical formula: O2

Product Use Description: Medical Applications

**CHEMICAL AND COMMON NAMES**

Synonyms: Oxygen, Oxygen gas, Gaseous Oxygen, GOX

PHYSICAL & CHEMICAL PROPERTIES

Physical State: compressed gas Color: colorless

Odor: odorless Taste: tasteless

Molecular Weight: 32 g/mol Molecular Formula:

Boiling Point: -297 F (-183 C) Freezing Point: -362 F (-118 C)

Decompression Point: Vapor Pressure: Gas@ 70°F (21°C)

Vapor Density (air=1): 1.1 Specific Gravity: 1.11 @ 70°F (21°C)

Density: 0.081 lb. /ft3 Water Solubility: 0.039 g/l

Volatility: 100% Odor Threshold: none

Solvent Solubility: Slight

COMPOSITION/INFORMATION ON INGREDIENTS

Components:Oxygen

CAS Number: 7782-44-7

Concentration (Volume): 100 %

HAZARDS IDENTIFICATION

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

Inhalation: Breathing 75% + oxygen at atmospheric pressure for more than a few hours may cause nasal stuffiness, cough, sore throat, chest pain and breathing difficulty. Breathing pure oxygen under pressure may cause lung damage and also central nervous system effects.

Skin or Eye contact: No adverse effect

FIRST AID

**Inhalation**: Consult a doctor after significant exposure. Move to fresh air. If breathing has stopped or is labored, give assisted respirations.

**Skin:** Wash with soap and water as a precaution.
**Eyes:** Seek medical advice.

FIRE FIGHTING MEASURES

Most cylinders are designed to vent contents when exposed to elevated temperatures. Some materials will burn in the presence of an oxygen enriched atmosphere (greater than 23%). Fire resistant clothing may burn and offer no protection in oxygen rich atmospheres.

ACCIDENTAL RELEASE MEASURES

Clothing exposed to high concentration may retain oxygen 30 minutes or longer and become a potential fire hazard. Stay away from ignition sources. Evacuate personnel to safe areas. Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe. Ventilate the area. Do not discharge into any place where accumulation could be dangerous. Prevent further leakage or spillage if safe to do so.

HANDLING AND STORAGE

All gauges, valves, regulator, piping and equipment to be used in oxygen service must be cleaned for oxygen service. Oxygen is not to be used as a substitute for compressed air. Never use oxygen jet for cleaning purposes as it increases the likelihood of engulfing fire.

Store and handle in accordance with all current regulations and standards. Store and use in cool, dry, well-ventilated area away from sources of heat. Protect from sources of heat and ignition. Use oldest stock first. Protect cylinders against rust and weather. Secure to prevent falling. Full and empty cylinders should be segregated. Separate from other oxidizers by a minimum distance for 20 ft. (6.1 m.) or by a barrier of non-combustible material of at least 5 ft. (1.5 m) high, having a fire resistance rating of at least ½ hour.

 EXPOSURE CONTROLS/PERSONAL PROTECTION

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

**RESPIRATORY PROTECTION:** Use supplied air respiratory protection if oxygen levels are below 19.5%.

**EYE PROTECTION**: Use plash goggles or safety glasses.

**HAND PROTECTION:** Sturdy work gloves free of oil or grease.

**CLOTHING**: Safety shoes recommended. Wear protective clothing appropriate for the task.

STABILITY AND REACTIVITY

Stable under normal conditions. Avoid flammable and organic materials, and oil, grease and all other combustible materials.

TOXICOLOGICAL INFORMATION

Chronic Health Hazard: Premature infants exposed to high oxygen concentration may suffer delayed retinal damage that can progress to retinal detachment and blindness.

In adults, retinal damage may occur when exposed to 100% oxygen for periods of 24-48 hours.

ECOLOGICAL INFORMATION

Fish: no data.

Plants and animals: no data.

DISPOSAL CONSIDERATIONS

Dispose in accordance with all applicable regulations.

TRANSPOSRT INFORMATION

Proper Shipping name: Argon, Compressed

U.S. DOT 49 CFR 172.101

ID NUMBER: UN1001

HAZARD CLASS: 2.1

LABELING REQUIREMENTS: 2.1

REGULATORY INFORMATION

**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 Subpart B): Not regulated

SARA Title III Section 304 Extremely Hazardous Substances (40 CFR 370 Subparts B and C): Not regulated

SARA Title III Section 313 (40 CFR 372.65): Not regulated

OSHA Process Safety (29 CFR 1910.119): Not regulated

**OTHER U.S. FEDERAL REGULATIONS:** Acetylene is subject to the reporting requirement so Section 112® of the Clean Air Act. The Threshold Quantity for this gas is 10,000 lb. Depending on specific operations involving the use of Acetylene, the regulation of the Process Safety management of Highly Hazardous Chemicals may be applicable (29 DFR 1910.119). Under this regulation Acetylene is not listed in Appendix A. ; however, any process that involves a flammable gas on-site, in one location, in quantities of 10,000 lb. (4,553 kg) or greater is covered under this regulation unless it is used as a fuel.

**STATE REGULATIONS**

Alaska: Designated Toxic and Hazardous Substances

California: Permissible Exposure Limits for Chemical Contaminants

Florida: Substance List

Illinois: Toxic Substance List

Massachusetts: Substance List

Minnesota: List of Hazardous Substances

Missouri: Employer Information/Toxic Substance List

New Jersey: Right to Know Hazardous Substance List

Pennsylvania: Hazardous Substance List

Rhode Island: Hazardous Substance List

**CANADIAN REGULATIONS**

WHMIS Classification: A

**NATIONAL INVENTORY STATUS**

U.S. Inventory (TSCA): Listed on inventory

TSCA 12(b) Export Notification: Not listed

Canada inventory (DSL/NDSL): Listed on inventory