

Asiatic Gases Limited

MATERIAL SAFETY DATA SHEET

I. PRODUCT IDENTIFICATION

PRODUCT GAS Oxygen

CHEMICAL NAME	Oxygen	SYNONYMS	Not Applicable	Not applicable
FORMULA	O ₂	CHEMICAL FAMILY		Not applicable
		MOLECULAR WEIGHT		32

TRADE NAME Oxygen

II. HAZARDOUS INGREDIENTS

For mixtures of this product request the respective component Material Safety Data sheets.
See Section 1X.

MATERIAL (CAS NO.)	Wt.(%)	1992 - 1993 ACGIH ILV -TWA (OSHA - PEL)
Oxygen (7782-44-7)	100	None currently established (None currently established)

III. PHYSICAL DATA

BOILING POINT, 760mm. Hg.	-1830C(-297.40F)	FREEZING POINT	-218.40c(-361.10F)
SPECIFIC GRAVITY (H ₂ O =1)	1.141 @ - 1830C	VAPOR PRESSURE AT 200C.	Gas
VAPOR DENSITY (air = 1)	1.105 @ 250C	SOLUBILITY IN WATER % by wt.	Not applicable
PERCENT VOLATILES BY VOLUME	100	EVAPORATION RATE (Buty / aceate = 1)	High

APPEARANCE AND ODOR Light blue cryogenic liquid, odorless.

EMERGENCY PHONE Number – 25203743/4

IN CASE OF EMERGENCIES involving this material, further information is available at all times :

IV. HEALTH HAZARD DATA

THRESHOLD LIMITS VALUE: See Section if.

EFFECTS OF SINGLE (ACUTE) OVEREXPOSURE:

SWALLOWING - Severe frostbite may result from contact with liquid. No harmful effects expected from vapor

SKIN ABSORPTION - No evidence of adverse effects from available information.

INHALATION - Breathing 80% or more oxygen at atmospheric pressure for more than a few hours may cause stuffiness, cough, sore throat, chest pain and breathing difficulty. Breathing oxygen at higher pressure increases the likelihood of adverse effects within a shorter time period. Breathing pure oxygen under pressure may cause lung damage and also central nervous system effects resulting in dizziness, poor co-ordination, tingling sensation, visual and hearing disturbances, muscular twitching, unconsciousness and convulsions. Breathing oxygen under prearate may cause prolongation of adaptation to darkness and reduced peripheral vision.

SKIN CONTACT- Liquid may cause severe frostbite. no harmful effects expected from vapor.

EYE CONTACT – Liquid may cause severe frostbite. no harmful effects expected from vapor.

EFFECTS OF REPEATED (CHRONIC) OVEREXPOSURE: No evidence of adverse effects from available information

OTHER EFFECTS OF OVEREXPOSURE: See “Notes to Physician”.

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE: See “Notes to Physician

SIGNIFICANT LABORATORY DATA WITH POSSIBLE RELEVANCE TO HUMAN HEALTH HAZARD EVALUATION :
Nor currently known.

EMERGENCY AND FIRST AID PROCEDURES:

SWALLOWIING – This product is a gas at normal temperature and pressure.

SKIN – For exposure to liquid immediately warm frostbite area with warm water (not to exceed 1050F). Remove and thoroughly air contaminated clothing. In case of massive exposure, remove clothing while showering with warm water. Call a physician.

INHALATION – Remove to fresh air. Give artificial respiration if not breathing. Keep victim warm and at rest. Call physician.

EYES – In the case of splash contamination, immediately flush eyes with warm water for at least 15 minutes. See physician, preferably an ophthalmologist, immediately.

NOTES TO PHYSICIAN: Supportive treatment should include immediate sedation, anti –anti convulsive therapy if needed and rest. Animal studies suggest that the administration of certain drugs, including phenothen and increases the susceptibility to toxicity from oxygen at high concentrations or pressures. Animal studies also indicate that vitamin E deficiency may increase susceptibility to oxygen toxicity.

Airway obstruction during high oxygen tension may cause alveolar collapse following absorption of the oxygen similarly occlusion of the eustachian tubes may cause retraction of the eardrum and obstruction of the paranad struses may produce ‘vacuum-type’ headache.

Newborn premature infants exposed to high oxygen concentrations may suffer delayed retinal damage which progress to retinal detachment and blindness (retiolethal fibroplasia). Retinal damage can also occur in adults ex.oser to 100% oxygen under greater than atmospheric pressure. Particularly in individuals whose retinal circulation has been previously compromised.

All individuals exposed for long periods to oxygen at high pressure and all who exhibit over oxygen toxicity should have ophthalmologic examinations.

V. FIRE AND EXPLOSION HAZARD DATA				
FLASH POINT (test method)	Not applicable		AUTOIGNITION TEMPERATURE	Not applicable
FLAMMABLE LIMITS IN AIR, % by volume	LOWER	Not applicable		UPPER Not applicable

EXTINGUISHING MEDIA: Oxidizing agent. Vigorously accelerates combustion. Use media appropriate for surrounding fire. Water (i.e. safety shower) is the preferred extinguishing media for clothing fires.

SPECIAL FIRE FIGHTING PROCEDURES: Evacuate all personnel from danger area. Immediately cool containers with water spray from maximum distance until cool then move containers away from fire if without risk.

USUAL FIRE AND EXPLOSION HAZARDS: Oxidizing agent vigorously accelerates combustion. Contact with flammable materials may cause fire or explosion. Closed container may rupture due to heat of fire. Liquid oxygen will freeze water rapidly. Containers are provided with pressure relief devices that are designed to vent the contents when they are exposed to elevated temperatures. Do not walk on or roll equipment over spill as this could cause explosion. Liquid causes cryogenic "burns" (frostbite-like injury ; see section (IV)). Smoking, flames and electric sparks in the presence of enriched oxygen atmospheres are potential explosion hazards.

VI. REACTIVITY DATA		
STABILITY		CONDITIONS TO AVOID: See Section IX)
UNSTABLE	STABLE	
	X	

INCOMPATIBILITY (materials to avoid) : Combustible materials, asphalt, flammable materials, especially oils and grease

HAZARDOUS DECOMPOSITION PRODUCTS : None.

HAZARDOUS POLYMERIZATION		CONDITIONS TO AVOID: None currently known.
May Occur	Will not occur	
	X	

VII. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN MATERIAL IF RELEASED OR SPILLED: Shut off leak if without risk. Ventilate area of leaks move leaking container to well-ventilated area. Remove all flammable materials from vicinity. Oxygen must never be permitted to strike an oily surface, greasy clothes, or other combustible material.

WASTE DISPOSAL METHOD: Slowly release into atmosphere, in an open, outdoors area. Remove all flammable materials from vicinity.

VIII. SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (specify type): none required under normal use. However, air-supplied respirators are required while working in confined spaces with this product. The respiratory protection use must confirm with OSHA RULES AS SPECIFIED IN 29 CFR 1910.134.

VENTILATION	LOCAL EXHAUST - Use local exhaust system, if necessary, to prevent the building up of Oxygen concentration.
	MECHANICAL (general) – Acceptable
	Special -- Not applicable
	OTHETR -- Not applicable

PROTECTIVE GLOVES: Preferred for cylinder handling.

EYE PROTECTION: Select in accordance with OSHA 29 CFR 1910.133.

OTHER PROTECTIVE EQUIPMENTS: Metatarsai shoes for cylinder handling. Select OSHA 29 CFR 1910.132 AND 1910.133.

IX. SPECIAL PRECAUTIONS

WARNING: High pressure gas. Vigorously accelerates combustion. Avoid contact with oils, greases and other flammable materials. Never use manifolds for oxygen cylinders unless specifically designed for such use. Use only with equipment conditioned for oxygen service. Use piping and equipment adequately designed to withstand pressures to be encountered. Protect container against physical damage. Isolate from combustible materials by adequate distance or by gas-tight, fire resistive barriers. Protect against over – heating. Never use an oxygen jet for cleaning purposes of any sort, especially clothing, as it increases the likelihood of an engulfing fire. Note: Reverse flow into cylinder may cause rupture. Use a check valve or other protective apparatus in any line or piping from the cylinder to prevent reverse flow.

MIXTURES: When two or more gases or liquefied gases are mixed, their hazardous properties may combine to create additional unexpected hazards. Obtain and evaluate the safety information for each component before you produce the mixture. Consult an Industrial Hygenist, or other trained person when you make your safety evaluation of the end product. Remember, gases and liquid have properties which can cause serious injury or death. Be sure to read and understand tables and other instructions supplied with all containers of this product.

NOTE: Compatibility with plastics should be confirmed prior to use. For safety information on general handling of compressed gas cylinders, obtain a copy of pamphlet P – 1 , “Safe Handling of Compressed Gas in Containers” from the Compressor Association, Inc. 1725 Jefferson Davis Highway, Suite 1004, Arlington, VA 22202.

OTHER HANDLING AND STORAGE CONDITIONS: Never work on a pressurized system. If there is a leak, close the cylinder valve, blow down the system by venting to a safe place, then repair the leak. Never lubricate oxygen valves, regulators with any combustible substance.