



Multan Chemicals Ltd.

MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Multan Chemicals Ltd.
Plot No. 6,7,8, FIEDMC Industrial Estate, Sahianwala, Faisalabad, Punjab.
Telephone No. 041-8900111
<https://mcl-gases.com/>

SUBSTANCE: OXYGEN, CRYOGENIC LIQUID

TRADE NAMES/SYNONYMS:

LIQUID OXYGEN; LOX; OXYGEN; OXYGEN, PRESSURIZED LIQUID; UN 1073;
O2; OXYGEN (CRYOGENIC LIQUID)
CHEMICAL FAMILY: inorganic, gas
CREATION DATE: JAN 01 2022
REVISION No: 00

2. COMPOSITION, INFORMATION ON INGREDIENTS

COMPONENT: OXYGEN, LIQUID
DOCUMENT NUMBER: MCL-DOC-01
Purity of the product: 99.7%

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 it may ignite combustibles.

POTENTIAL HEALTH EFFECTS:

INHALATION:



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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

4. FIRST AID MEASURES

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.

5. FIRE FIGHTING MEASURES

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).

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.

7. HANDLING AND STORAGE

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. It is stored in vacuumed insulated tanks. During its handling all safety measures of personnel and material should be adopted. Compatible material should be used for the handling and storage of cryogenic liquids.

8. EXPOSURE CONTROLS, PERSONAL PROTECTION

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 face piece 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 face piece and is operated in a pressure-demand or other positive-pressure mode.



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9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: gas

COLOR: blue

PHYSICAL FORM: cryogenic liquid

ODOR: odorless

MOLECULAR WEIGHT: 31.9988

MOLECULAR FORMULA: O₂

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

10. STABILITY AND REACTIVITY

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.

11. TOXICOLOGICAL INFORMATION

OXYGEN, LIQUID:

MUTAGENIC DATA: Available.

REPRODUCTIVE EFFECTS DATA: Available.



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12. ECOLOGICAL INFORMATION

Not available

13. DISPOSAL CONSIDERATIONS

Dispose in accordance with all applicable regulations.

Subject to disposal regulations: U.S. EPA 40 CFR 262. LOX should not be disposed near fire and in closed areas. It should be evaporated through ambient air vaporizer.

14. TRANSPORT INFORMATION

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

It should be transported in vacuumed insulated tankers having all safety provisions. However such small portable containers may can be used.

15. 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 Sub part

B): Not regulated.

SARA TITLE III SECTION 304 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355 Sub part

C): Not regulated.

SARA TITLE III SARA SECTIONS 311/312 HAZARDOUS CATEGORIES (40 CFR 370 Subparts B and C):



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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 (29 CFR 1910.119): Not regulated.

STATE REGULATIONS:

California Proposition 65: Not regulated.

CANADIAN REGULATIONS: