MATERIAL SAFETY DATA SHEET

L-4637-A

UNION CARBIDE

(Essentially similar to U.S. Department of Labor Form OSHA-20)

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MAY 28 1982

I. PRODUCT IDENTIFICATION

PRODUCT	Oxygen (Cryogenic Liquid) DPM 155-1		
CHEMICAL NAME	Oxygen	SYNONYMS	---
FORMULA	O_2	CHEMICAL FAMILY	---
TRADE NAME	---	MOLECULAR WEIGHT	32.00

II. HAZARDOUS INGREDIENTS

Refer to Section V for TLV information. For mixtures of this product request the respective component Material Safety Data Sheets.

III. PHYSICAL DATA

BOILING POINT, 760 mm. Hg	−183°C (−297.4°F)	FREEZING POINT	−218.4°C (−361.1°F)
SPECIFIC GRAVITY (H_2O = 1)	1.141 at −183°C	VAPOR PRESSURE AT 20°C.	Gas
VAPOR DENSITY (air = 1)	1.1	SOLUBILITY IN WATER, % by wt.	Negligible
PER CENT VOLATILES BY VOLUME	100	EVAPORATION RATE (Butyl Acetate = 1)	High

APPEARANCE AND ODOR Blue liquid, odorless.

IV. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (test method)	N/A	AUTOIGNITION TEMPERATURE	N/A

FLAMMABLE LIMITS IN AIR, % by volume	LOWER	N/A	UPPER	N/A

EXTINGUISHING MEDIA

Oxidizing agent. Vigorously accelerates combustion. Use media appropriate for surrounding fire.

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.
Do not discharge water sprays into liquid oxygen.

UNUSUAL 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 V).

EMERGENCY PHONE NUMBER

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

304: 744-3487

For routine information contact your local Linde Supplier.

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V. HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE N A

EFFECTS OF OVEREXPOSURE AND EMERGENCY AND FIRST AID PROCEDURES

Irritation to mucous membranes is likely if 100% oxygen is inhaled continuously for more than a few hours. Contact with liquid can cause cryogenic "burns" (frostbite-like injury).

Remove victim to fresh air. Remove contaminated clothes and air them out for at least thirty minutes (see Section IX). Keep warm and at rest. If exposed to liquid, restore tissue to normal body temperature (98.6°F) — as rapidly as possible followed by protection of the injured tissue from further damage and infection. Remove or loosen clothing that may constrict blood circulation to the frozen area. Call a physician. Rapid warming of the affected part is best achieved by using water at 108°F. Under no circumstances should the water be over 112°F, nor should the frozen part be rubbed either before or after rewarming. The patient should neither smoke, nor drink alcohol.

VI. REACTIVITY DATA

STABILITY		CONDITIONS TO AVOID
Unstable	Stable	Heat (see Section IX).
	X	

INCOMPATIBILITY (materials to avoid) Combustible materials especially oils and greases.

HAZARDOUS DECOMPOSITION PRODUCTS

None

HAZARDOUS POLYMERIZATION		CONDITIONS TO AVOID
May Occur	Will not Occur	---
	X	

VII. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED—Immediately evacuate all personnel from danger area.
CAUTION: Extremely cold oxidizing liquid and gas. Allow spilled liquid to evaporate. Do not walk on or roll equipment over spill as this could cause explosion. Contact with flammable materials may cause fire or explosion. Shut off leak if without risk. Ventilate area of leak or move leaking container to ventilated area.

WASTE DISPOSAL METHOD

Keep personnel away. Liquid oxygen should be dumped into an outdoor pit filled with clean, grease-free and oil free gravel, where it will evaporate safely.

VIII. SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (specify type)

Not required.

VENTILATION	LOCAL EXHAUST	SPECIAL
	---	---
	MECHANICAL (general) Acceptable	OTHER ---

PROTECTIVE GLOVES Loose fitting cryogenic gloves

EYE PROTECTION Full face shield & safety glasses.

OTHER PROTECTIVE EQUIPMENT Metatarsal shoes for cylinder handling. Protective clothing where needed. Cuffless trousers should be worn **outside** the shoes. High-top shoes are preferred.

IX. SPECIAL PRECAUTIONS

WARNING: Extremely cold oxidizing liquid and gas. Vigorously accelerates combustion. May cause low temperature "burns" (frostbite-like injury). Combustibles with liquid oxygen may explode on ignition or impact. Keep oil, grease and combustibles away. Use only with equipment conditioned for oxygen service. Use piping and equipment adequately designed to withstand the pressures and temperatures to be encountered. Do not get liquid in eyes, on skin or clothing. Store and use with adequate ventilation at all times. Close valve when not in use and when empty. Clothing exposed to oxygen should be removed immediately and aired out to reduce the likelihood of an engulfing fire. Ignition sources, such as static electricity generated in clothing by walking, etc., should be prevented.

OTHER HANDLING AND STORAGE CONDITIONS

Never lubricate oxygen valves, regulators, etc., with any combustible substance.