

Safety Data Sheet

Material Name: OXYGEN, LIQUID

SDS ID: 00225011

Section 1 - PRODUCT AND COMPANY IDENTIFICATION

Material Name

OXYGEN, LIQUID

Synonyms

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

Chemical Family

inorganic, Gas

Product Use

industrial.

Restrictions on Use

None known.

Details of the supplier of the safety data sheet

MATHESON TRI-GAS, INC.

909 Lake Carolyn Parkway

Suite 1300

Irving, TX 75039

General Information: 1-800-416-2505

Emergency #: 1-800-424-9300 (CHEMTREC)

Outside the US: 703-527-3887 (Call collect)

Section 2 - HAZARDS IDENTIFICATION

Classification in accordance with paragraph (d) of 29 CFR 1910.1200.

Oxidizing Gases - Category 1

Gases Under Pressure - Refrigerated liquefied gas

Serious Eye Damage/Eye Irritation - Category 2A

Specific target organ toxicity - Single exposure - Category 3

GHS Label Elements

Symbol(s)



Signal Word

Danger

Hazard Statement(s)

May cause or intensify fire; oxidizer.

Contains refrigerated gas; may cause cryogenic burns or injury.

Causes serious eye irritation.

May cause respiratory irritation.

Precautionary Statement(s)

Prevention

Keep away from clothing and other combustible materials.

Keep reduction valves free from grease and oil.

Wear cold insulating gloves/face shield/eye protection.

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Avoid breathing gas.
 Wash thoroughly after handling.
 Use only outdoors or in a well-ventilated area.

Response

In case of fire: stop leak if safe to do so.
 Thaw frosted parts with lukewarm water.
 Do not rub affected area.
 Get immediate medical advice/attention.
 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
 Call a POISON CENTER or doctor/physician if you feel unwell.
 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.
 Continue rinsing.
 If eye irritation persists: Get medical advice/attention.

Storage

Store in a well-ventilated area.
 Keep container tightly closed.
 Store locked up.

Disposal

Dispose in accordance with all applicable regulations.

Other Hazards

May cause frostbite upon sudden release of liquefied gas.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS		
CAS	Component Name	Percent
7782-44-7	OXYGEN, LIQUID	100

Section 4 - FIRST AID MEASURES

Inhalation

If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. Get immediate medical attention.

Skin

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.

Eyes

Immediately flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

Ingestion

If swallowed, get medical attention.

Most Important Symptoms/Effects

Acute

frostbite, respiratory tract irritation, eye irritation

Delayed

no information on significant adverse effects.

Indication of any immediate medical attention and special treatment needed

Treat symptomatically and supportively.

Section 5 - FIRE FIGHTING MEASURES

Extinguishing Media

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Suitable Extinguishing Media

Use regular dry chemical and/or carbon dioxide. Large fires: water spray or fog, regular foam

Unsuitable Extinguishing Media

Do not direct water at source of leak or safety devices; icing may occur.

Special Hazards Arising from the Chemical

Negligible fire hazard. Oxidizer. May ignite or explode on contact with combustible materials. Containers may rupture or explode if exposed to heat.

Hazardous Combustion Products

miscellaneous decomposition products

Fire Fighting Measures

Move container from fire area if it can be done without risk. Damaged cylinders should be handled only by specialists. Do not direct water at source of leak or safety devices; icing may occur. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire. 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).

Special Protective Equipment and Precautions for Firefighters

Wear full protective fire fighting gear including self contained breathing apparatus (SCBA) for protection against possible exposure.

Section 6 - ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures

Wear personal protective clothing and equipment, see Section 8.

Methods and Materials for Containment and Cleaning Up

Keep away from clothing and other combustible materials. Do not touch or walk through spilled material. Stop leak if possible without personal risk. Keep unnecessary people away, isolate hazard area and deny entry. If possible, turn leaking containers so that gas escapes rather than liquid. Do not direct water at spill or source of leak. Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material. Prevent entry into sewers, drains, ditches, underground or confined spaces and waterways. Damaged cylinders should be handled only by specialists.

Environmental Precautions

Avoid release to the environment.

Section 7 - HANDLING AND STORAGE

Precautions for Safe Handling

Keep away from clothing and other combustible materials. Keep reduction valves free from grease and oil. Wear cold insulating gloves/face shield/eye protection. Avoid breathing dust/fume/gas/mist/vapors/spray. Wash hands thoroughly after handling. Use only outdoors or in a well-ventilated area.

Conditions for Safe Storage, Including any Incompatibilities

Store in a well-ventilated area.

Keep container tightly closed.

Store locked up.

Keep container tightly closed. Store in a well-ventilated area. Keep locked up. 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.

Incompatible Materials

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

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Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

Component Exposure Limits

The following constituents are the only constituents of the product which have a PEL, TLV or other recommended exposure limit. At this time, the other constituents have no known exposure limits.

ACGIH - Threshold Limit Values - Biological Exposure Indices (BEI)

There are no biological limit values for any of this product's components.

Engineering Controls

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

Individual Protection Measures, such as Personal Protective Equipment

Eye/face protection

Wear splash resistant safety goggles with a faceshield. Contact lenses should not be worn. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

Skin Protection

Wear appropriate protective, cold insulating clothing.

Respiratory Protection

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. 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.

Glove Recommendations

Wear insulated gloves.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES
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Appearance	blue liquefied gas	Physical State	gas
Odor	odorless	Color	blue
Odor Threshold	Not available	pH	Not available
Melting Point	-218 °C (-360 °F)	Boiling Point	-183 °C (-297 °F)
Boiling Point Range	Not available	Freezing point	Not available
Evaporation Rate	Not available	Flammability (solid, gas)	Not available
Autoignition Temperature	Not available	Flash Point	(Not flammable)
Lower Explosive Limit	Not available	Decomposition temperature	Not available
Upper Explosive Limit	Not available	Vapor Pressure	760 mmHg @ -183 °C
Vapor Density (air=1)	1.1	Specific Gravity (water=1)	1.1407 at -183 °C
Water Solubility	3.2 % (@ 25 °C)	Partition coefficient: n-octanol/water	Not available
Viscosity	0.156 cp	Kinematic viscosity	Not available

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Solubility (Other)	Not available	Density	Not available
Log KOW	0.65	Physical Form	cryogenic liquid
Taste	tasteless	Molecular Formula	O ₂
Molecular Weight	31.9988	triple point	-218.6 °C

Solvent Solubility
Soluble
alcohol

Section 10 - STABILITY AND REACTIVITY

Reactivity

Containers may rupture or explode if exposed to heat.

Chemical Stability

Stable at normal temperatures and pressure.

Possibility of Hazardous Reactions

Will not polymerize.

Conditions to Avoid

Avoid contact with combustible materials. Containers may rupture or explode if exposed to heat.

Incompatible Materials

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

Hazardous decomposition products

miscellaneous decomposition products

Section 11 - TOXICOLOGICAL INFORMATION

Information on Likely Routes of Exposure

Inhalation

irritation, cough, sensitivity to light, changes in body temperature, nausea, difficulty breathing, irregular heartbeat, dizziness, Disorientation, hallucinations, mood swings, tingling sensation, pain in extremities, tremors, visual disturbances, blindness, lung congestion, lung damage, convulsions, Unconsciousness

Skin Contact

blisters, frostbite

Eye Contact

irritation, frostbite, blurred vision

Ingestion

ingestion of a gas is unlikely

Acute and Chronic Toxicity

Component Analysis - LD50/LC50

The components of this material have been reviewed in various sources and no selected endpoints have been identified.

Product Toxicity Data

Acute Toxicity Estimate

No data available.

Immediate Effects

frostbite, respiratory tract irritation, eye irritation

Delayed Effects

no information on significant adverse effects.

Irritation/Corrosivity Data

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eye irritation, respiratory tract irritation

Respiratory Sensitization

No data available.

Dermal Sensitization

No data available.

Component Carcinogenicity

None of this product's components are listed by ACGIH, IARC, NTP, DFG or OSHA.

Germ Cell Mutagenicity

No data available.

Tumorigenic Data

No data available

Reproductive Toxicity

No data available.

Specific Target Organ Toxicity - Single Exposure

Respiratory system

Specific Target Organ Toxicity - Repeated Exposure

No data available.

Aspiration hazard

Not applicable.

Medical Conditions Aggravated by Exposure

No data available.

Section 12 - ECOLOGICAL INFORMATION

Component Analysis - Aquatic Toxicity

No LOLI ecotoxicity data are available for this product's components.

Persistence and Degradability

No data available.

Bioaccumulative Potential

No data available.

Mobility

No data available.

Section 13 - DISPOSAL CONSIDERATIONS

Disposal Methods

Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262.

Hazardous Waste Number(s): D001.

Component Waste Numbers

The U.S. EPA has not published waste numbers for this product's components.

Section 14 - TRANSPORT INFORMATION

US DOT Information:

Shipping Name: OXYGEN, REFRIGERATED LIQUID

Hazard Class: 2.2

UN/NA #: UN1073

Required Label(s): 2.2

IMDG Information:

Shipping Name: OXYGEN, REFRIGERATED LIQUID

Hazard Class: 2.2

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UN#: UN1073

Required Label(s): 2.2 5.1

International Bulk Chemical Code

This material does not contain any chemicals required by the IBC Code to be identified as dangerous chemicals in bulk.

Section 15 - REGULATORY INFORMATION

U.S. Federal Regulations

None of this product's components are listed under SARA Sections 302/304 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), or require an OSHA process safety plan.

SARA Section 311/312 (40 CFR 370 Subparts B and C) reporting categories

Gas Under Pressure; Oxidizer; Serious Eye Damage/Eye Irritation; Specific Target Organ Toxicity

U.S. State Regulations

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS	CA	MA	MN	NJ	PA
OXYGEN, LIQUID	7782-44-7	No	Yes	No	Yes	Yes

California Safe Drinking Water and Toxic Enforcement Act (Proposition 65)

Not listed under California Proposition 65.

Component Analysis - Inventory

OXYGEN, LIQUID (7782-44-7)

US	CA	AU	CN	EU	JP - ENCS	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2
Yes	DSL	Yes	Yes	EIN	Yes	No	Yes	No

KR - REACH CCA	MX	NZ	PH	TH-TECI	TW, CN	VN (Draft)
No	Yes	Yes	Yes	Yes	Yes	Yes

Section 16 - OTHER INFORMATION

NFPA Ratings

Health: 3 Fire: 0 Instability: 0 Other:

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

Summary of Changes

Updated: 05/01/2015

Key / Legend

ACGIH - American Conference of Governmental Industrial Hygienists; ADR - European Road Transport; AU - Australia; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CA/MA/MN/NJ/PA - California/Massachusetts/Minnesota/New Jersey/Pennsylvania*; CAS - Chemical Abstracts Service; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CFR - Code of Federal Regulations (US); CLP - Classification, Labelling, and Packaging; CN - China; CPR - Controlled Products Regulations; DFG - Deutsche Forschungsgemeinschaft; DOT - Department of Transportation; DSD - Dangerous Substance Directive; DSL - Domestic Substances List; EC - European Commission; EEC - European Economic Community; EIN - European Inventory of (Existing Commercial Chemical Substances); EINECS - European Inventory of Existing Commercial Chemical Substances; ENCS - Japan Existing and New Chemical Substance Inventory; EPA - Environmental Protection Agency; EU - European Union; F - Fahrenheit; F - Background (for Venezuela Biological

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Exposure Indices); IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; ICAO - International Civil Aviation Organization; IDL - Ingredient Disclosure List; IDLH - Immediately Dangerous to Life and Health; IMDG - International Maritime Dangerous Goods; ISHL - Japan Industrial Safety and Health Law; IUCLID - International Uniform Chemical Information Database; JP - Japan; Kow - Octanol/water partition coefficient; KR KECI Annex 1 - Korea Existing Chemicals Inventory (KECI) / Korea Existing Chemicals List (KECL); KR KECI Annex 2 - Korea Existing Chemicals Inventory (KECI) / Korea Existing Chemicals List (KECL) , KR - Korea; LD50/LC50 - Lethal Dose/ Lethal Concentration; KR REACH CCA - Korea Registration and Evaluation of Chemical Substances Chemical Control Act; LEL - Lower Explosive Limit; LLV - Level Limit Value; LOLI - List Of Lists™ - ChemADVISOR's Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; MX – Mexico; Ne- Non-specific; NFPA - National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; NJTSR - New Jersey Trade Secret Registry; Nq - Non-quantitative; NSL – Non-Domestic Substance List (Canada); NTP - National Toxicology Program; NZ - New Zealand; OSHA - Occupational Safety and Health Administration; PEL- Permissible Exposure Limit; PH - Philippines; RCRA - Resource Conservation and Recovery Act; REACH- Registration, Evaluation, Authorisation, and restriction of Chemicals; RID - European Rail Transport; SARA - Superfund Amendments and Reauthorization Act; Sc - Semi-quantitative; STEL - Short-term Exposure Limit; TCCA – Korea Toxic Chemicals Control Act; TDG - Transportation of Dangerous Goods; TH-TECI - Thailand - FDA Existing Chemicals Inventory (TECI); TLV - Threshold Limit Value; TSCA - Toxic Substances Control Act; TW – Taiwan; TWA - Time Weighted Average; UEL - Upper Explosive Limit; UN/NA - United Nations /North American; US - United States; VLE - Exposure Limit Value (Mexico); VN (Draft) - Vietnam (Draft); WHMIS - Workplace Hazardous Materials Information System (Canada).

Other Information

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