Section 1 - PRODUCT AND COMPANY IDENTIFICATION

Material Name
Oxygen

Synonyms
OXYGEN; DIOXYGEN; MOLECULAR OXYGEN; OXYGEN MOLECULE; PURE OXYGEN; UN 1072; LOX; HYPEROXIA; O2

Chemical Family
inorganic, Gas

Product Use
industrial.

Restrictions on Use
None known.

Details of the supplier of the safety data sheet
WESTERN INTERNATIONAL GAS & CYL. INC.
7173 Hwy 159E
P.O. Box 668
Bellville, TX 77418
Phone: 1-979-413-2100
Emergency Phone #: Outside the US: 703-527-3887 (Call collect)
Fax: 1-800-424-9300 (CHEMTREC)

Section 2 - HAZARDS IDENTIFICATION

Classification in accordance with paragraph (d) of 29 CFR 1910.1200.
Oxidizing Gases - Category 1
Gases Under Pressure - Compressed gas
Specific Target Organ Toxicity - Single Exposure - Category 3

GHS Label Elements
Symbol(s)

Signal Word
Danger
Safety Data Sheet

Material Name: Oxygen

Hazard Statement(s)
May cause or intensify fire; oxidizer.
Contains gas under pressure; may explode if heated.

Precautionary Statement(s)

Prevention
Keep away from clothing and other combustible materials.
Keep reduction valves free from grease and oil.

Response
In case of fire: stop leak if safe to do so.

Storage
Protect from sunlight. Store in a well-ventilated place.

Disposal
Dispose in accordance with all applicable regulations.

Other Hazards
Rapid release of compressed gas may cause frostbite.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>CAS</th>
<th>Component Name</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>7782-44-7</td>
<td>Oxygen, compressed</td>
<td>100</td>
</tr>
</tbody>
</table>

Section 4 - FIRST AID MEASURES

Inhalation
If adverse effects occur, remove to uncontaminated area. Get 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
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
Delayed no information on significant adverse effects.

Note to Physicians
Treat symptomatically and supportively.

Section 5 - FIRE FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media
carbon dioxide, regular dry chemical, Large fires: Use water spray, fog or regular foam.

Unsuitable Extinguishing Media
None known.

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. Do not direct water at source of leak or safety devices; icing may occur. 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. Use extinguishing agents appropriate for surrounding fire. Cool containers with water. Apply water from a protected location or from a safe distance.

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
Avoid contact with combustible materials. Do not touch or walk through spilled material. Stop leak if possible without personal risk. Do not direct water at spill or source of leak. Keep unnecessary people away, isolate hazard area and deny entry. Isolate area until gas has dispersed. Ventilate closed spaces before entering.

Environmental Precautions
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.

Conditions for Safe Storage, Including any Incompatibilities
Protect from sunlight. Store in a well-ventilated place.

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

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.

EU - Occupational Exposure (98/24/EC) - Binding Biological Limit Values and Health Surveillance Measures
There are no biological limit values for any of this product's components.

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
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.

Skin Protection
For the gas: Protective clothing is not required. For the liquid: 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

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>colorless gas</td>
</tr>
<tr>
<td>Odor</td>
<td>odorless</td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>Not available</td>
</tr>
<tr>
<td>Melting Point</td>
<td>-218.4 °C (-361 °F)</td>
</tr>
<tr>
<td>Boiling Point</td>
<td>-182.96 °C (-297 °F)</td>
</tr>
<tr>
<td>Freezing point</td>
<td>Not available</td>
</tr>
<tr>
<td>Boiling Point Range</td>
<td>Not available</td>
</tr>
<tr>
<td>Autoignition</td>
<td>Not available</td>
</tr>
<tr>
<td>Lower Explosive Limit</td>
<td>Not available</td>
</tr>
<tr>
<td>Upper Explosive Limit</td>
<td>Not available</td>
</tr>
<tr>
<td>Vapor Density (air=1)</td>
<td>1.43</td>
</tr>
<tr>
<td>Specific Gravity (water=1)</td>
<td>1.14 at -183 °C</td>
</tr>
<tr>
<td>Water Solubility</td>
<td>3.2 % (@ 25 °C)</td>
</tr>
<tr>
<td>Partition coefficient: n-octanol/water</td>
<td>Not available</td>
</tr>
<tr>
<td>Viscosity</td>
<td>0.02075 cp</td>
</tr>
<tr>
<td>Solubility (Other)</td>
<td>Not available</td>
</tr>
<tr>
<td>Density</td>
<td>1.309 g/L at 25 °C</td>
</tr>
<tr>
<td>Physical Form</td>
<td>gas</td>
</tr>
<tr>
<td>Taste</td>
<td>tasteless</td>
</tr>
<tr>
<td>Molecular Weight</td>
<td>31.9988</td>
</tr>
<tr>
<td>Molecular Formula</td>
<td>O2</td>
</tr>
</tbody>
</table>

**Solvent Solubility**
Soluble in alcohol
Section 10 - STABILITY AND REACTIVITY

Reactivity
No reactivity hazard is expected.

Chemical Stability
Stable at normal temperatures and pressure.

Possibility of Hazardous Reactions
Will not polymerize.

Conditions to Avoid
Avoid contact with combustible materials. Protect from physical damage and heat. 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, changes in body temperature, nausea, difficulty breathing, irregular heartbeat, chest pain, lung damage, dizziness, Disorientation, hallucinations, mood swings, pain in extremities, tremors, lung congestion, convulsions, cough

Skin Contact
Frostbite, blisters

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

Immediate Effects
Frostbite

Delayed Effects
No information on significant adverse effects.
Safety Data Sheet

Material Name: Oxygen

Irritation/Corrosivity Data
No data available.

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
No data available.

Specific Target Organ Toxicity - Repeated Exposure
No data available.

Aspiration hazard
Not expected to be an aspiration hazard.

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, compressed
Hazard Class: 2.2
UN/NA #: UN1072
Required Label(s): 2.2

IMDG Information:
Shipping Name: Oxygen, compressed
Hazard Class: 2.2
UN#: UN1072
Required Label(s): 2.2 5.1

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)
Acute Health: Yes Chronic Health: No Fire: Yes Pressure: Yes Reactivity: No

U.S. State Regulations
The following components appear on one or more of the following state hazardous substances lists:

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS</th>
<th>CA</th>
<th>MA</th>
<th>MN</th>
<th>NJ</th>
<th>PA</th>
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</thead>
<tbody>
<tr>
<td>Oxygen, compressed</td>
<td>7782-44-7</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Not listed under California Proposition 65

Canadian WHMIS Ingredient Disclosure List (IDL)
The components of this product are either not listed on the IDL or are present below the threshold limit listed on the IDL.

WHMIS Classification
A., C.
Section 16 - OTHER INFORMATION

NFPA Ratings
Health: 0 Fire: 0 Reactivity: 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; CAS - Chemical Abstracts Service; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; 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; EEC - European Economic Community; EINECS - European Inventory of Existing Commercial Chemical Substances; EPA - Environmental Protection Agency; EU - European Union; F - Fahrenheit; 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; JP - Japan; Kow - Octanol/water partition coefficient; KR - Korea; 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; NFPA - National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; NJTSR - New Jersey Trade Secret Registry; NTP - National Toxicology Program; NZ - New Zealand; OSHA - Occupational Safety and Health Administration; 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; STEL - Short-term Exposure Limit; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act; TWA - Time Weighted Average; UEL - Upper Explosive Limit; US - United States.

Other Information
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