1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MANUFACTURED/SUPPLIED FOR:
ADDRESS: 9101 LBJ Freeway – Suite 800
Dallas, TX 75243-1920
EMERGENCY PHONE: CHEMTREC: 1-800-424-9300
BUSINESS PHONE: General MSDS Information 1-972-301-5200
Fax on Demand: 1-800/231-1366

SUBSTANCE: 2 COMP. MIX OXYGEN >23% BAL. INERT GAS

CREATION DATE: Sep 28 1990
REVISION DATE: Mar 18 2004

2. COMPOSITION, INFORMATION ON INGREDIENTS

COMPONENT: OXYGEN, COMPRESSED GAS
CAS NUMBER: 7782-44-7
EC NUMBER (EINECS): 231-956-9
PERCENTAGE: >23.0

COMPONENT: ARGON, COMPRESSED
CAS NUMBER: 7440-37-1
EC NUMBER (EINECS): 231-147-0
PERCENTAGE: 0-77.0

COMPONENT: HELIUM
CAS NUMBER: 7440-59-7
EC NUMBER (EINECS): 231-168-5
PERCENTAGE: 0-77.0

COMPONENT: NITROGEN, COMPRESSED GAS
CAS NUMBER: 7727-37-9
EC NUMBER (EINECS): 231-783-9
PERCENTAGE: 0-77.0

COMPONENT: NEON
CAS NUMBER: 7440-01-9
EC NUMBER (EINECS): 231-110-9
PERCENTAGE: 0-77.0
3. HAZARDS IDENTIFICATION

NFPA RATINGS (SCALE 0-4): HEALTH=2  FIRE=0  REACTIVITY=0

EMERGENCY OVERVIEW:
PHYSICAL DESCRIPTION: Gas.
MAJOR HEALTH HAZARDS: difficulty breathing
PHYSICAL HAZARDS: Containers may rupture or explode if exposed to heat. May ignite combustibles.

POTENTIAL HEALTH EFFECTS:
INHALATION:
SHORT TERM EXPOSURE: irritation, changes in body temperature, nausea, vomiting, difficulty breathing, irregular heartbeat, headache, drowsiness, fatigue, dizziness, disorientation, emotional disturbances, hallucinations, mood swings, tingling sensation, pain in extremities, tremors, loss of coordination, suffocation, lung congestion, convulsions, unconsciousness, coma
LONG TERM EXPOSURE: irritation, chest pain, lung damage

SKIN CONTACT:
SHORT TERM EXPOSURE: frostbite
LONG TERM EXPOSURE: no information on significant adverse effects

EYE CONTACT:
SHORT TERM EXPOSURE: irritation, blurred vision
LONG TERM EXPOSURE: no information on significant adverse effects

INGESTION:
SHORT TERM EXPOSURE: ingestion of a gas is unlikely, ingestion of harmful amounts is unlikely
LONG TERM EXPOSURE: ingestion of a gas is unlikely, ingestion of harmful amounts is unlikely

CARCINOGEN STATUS:
OSHA: No
NTP: No
IARC: No

4. FIRST AID MEASURES

INHALATION: If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate 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: Flush eyes with plenty of water.

INGESTION: If a large amount is swallowed, get medical attention.

NOTE TO PHYSICIAN: For inhalation, consider oxygen.
5. FIRE FIGHTING MEASURES

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

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. Use extinguishing agents appropriate for surrounding fire. Cool containers with water. Apply water from a protected location or from a safe distance.

6. ACCIDENTAL RELEASE MEASURES

OCCUPATIONAL RELEASE:
Stop leak if possible without personal risk. Avoid contact with combustible materials. Keep unnecessary people away, isolate hazard area and deny entry. Ventilate closed spaces before entering.

7. HANDLING AND STORAGE


8. EXPOSURE CONTROLS, PERSONAL PROTECTION

EXPOSURE LIMITS:
ARGON, COMPRESSED:
  ARGON:
    ACGIH (simple asphyxiant)
    UK OES (simple asphyxiant)
  HELIUM:
    ACGIH (simple asphyxiant)
    UK OES (simple asphyxiant)
NITROGEN, COMPRESSED GAS:
  NITROGEN:
    ACGIH (simple asphyxiant)
    UK OES (simple asphyxiant)
NEON:
- ACGIH (simple asphyxiant)
- UK OES (simple asphyxiant)

VENTILATION: Based on available information, additional ventilation is not required. 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.

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 full facepiece and operated in a pressure-demand or other positive-pressure mode in combination with a separate escape supply.
- Any self-contained breathing apparatus with a full facepiece.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL DESCRIPTION: Gas.
BOILING POINT: Not available
FREEZING POINT: Not available
VAPOR PRESSURE: Not available
VAPOR DENSITY: Not available
DENSITY: Not available
WATER SOLUBILITY: Not available
PH: Not applicable
VOLATILITY: Not applicable
ODOR THRESHOLD: Not available
EVAPORATION RATE: Not applicable
COEFFICIENT OF WATER/OIL DISTRIBUTION: Not applicable

10. STABILITY AND REACTIVITY

REACTIVITY: Stable at normal temperatures and pressure.

CONDITIONS TO AVOID: Avoid contact with combustible materials. Protect from physical damage and heat. Containers may rupture or explode if exposed to heat.

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

OXYGEN:
ACETALDEHYDE: Rapid oxidation progressing to explosion.
ACETYLENE: Mixtures of the gases may explode on heating or compression; the
liquids form a powerful explosive.
POLY(ACRYLONITRILE-BUTADIENE): Forms impact-sensitive mixture with the
liquid.
SEC-ALCOHOLS: Forms explosive peroxides.
ALKALI METALS: Ignition.
ALKALINE-EARTH METALS: Ignition.
ALKALINE-EARTH PHOSPHIDES: Incandescence on heating.
ALLYLIC COMPOUNDS: May form explosive peroxides.
ALUMINUM BOROHYDRIDE: Explosive reaction.
AMMONIA: Possible explosion.
BERYLLIUM BOROHYDRIDE: Explosive reaction.
BORON ARSENOTRIBROMIDE: Ignites on contact with the gas.
BORON TRICHLORIDE: Vigorous reaction on sparking.
BUTEN-3-YNE: Forms explosive peroxides.
CARBON: May ignite in the gas; forms explosive mixtures with the liquid.
CARBON DISULFIDE: Possible ignition.
CARBON MONOXIDE (LIQUID): Forms explosive mixture with the liquid.
CHLOROTRIFLUOROETHYLENE: Forms explosive peroxides.
COMBUSTIBLE MATERIALS: The flammability of combustible compounds greatly
increases with an increase in oxygen concentration; some materials may
become spontaneously combustible or explosive. Contact of combustible
compounds with liquid oxygen is likely to result in a dangerous explosion.
CYANURE (LIQUID): Forms explosive mixture with the liquid.
CYCLOHEXANE-1,2-DIONE BIS( PHENYLHYDRAZONE): Forms explosive compound.
CYCLOOCTATETRAENE: May form explosive peroxides.
DIBORANE: Explosive mixture on heating.
DIBORON TETRAFLUORIDE: Explosive mixture.
DIMETHYL KETENE: Forms explosive peroxide.
DIMETHYL SULFIDE: Explosive reaction above 210 C.
DIOXANE: May form explosive peroxides.
ETHERS: May form explosive peroxides.
FLAMMABLE MATERIALS: The flammability of materials greatly increases as the
oxygen concentration increases; some compounds may become spontaneously
combustible or explosive. Contact with liquid oxygen is likely to result
in
dangerous explosions.
FLUORINE + HYDROGEN: Explosive mixture.
HALOGENATED HYDROCARBONS: Many halogenated hydrocarbons ignite or explode
with
the gas under pressure; contact with the liquid may result in a dangerous
explosion.
HYDRAZINE: Forms explosive mixtures.
HYDROCARBONS: Mixtures with the gas may ignite or explode particularly under
pressure or when heated; contact with the liquid is likely to result in a
dangerous explosion.
HYDROGEN: Explosive mixture, particularly in the presence of a catalyst.
HYDROGEN SULFIDE: Explosive mixture.
LITHIATED DIALKYL NITROSAMINES: May form explosive compounds.
LITHIUM HYDRIDE (POWDER): Very powerful explosive with the liquid.
METALS: Many metals ignite or explode in the gas, particularly if heated or
in
powder form. Contact of metal powders with the liquid is likely to result
in a dangerous explosion.
METAL HALIDES: Ignition.
METAL HYDRIDES: Ignition or explosion.
METHANE (LIQUID): Forms explosive mixture with the liquid.
METHOXYCYCLOOCTATETRAENE: Forms explosive compound.
NICHEL CARBONYL: Ignites or explodes at low pressure.
NITROGEN (LIQUID): Explosive if subjected to radiation.
NON-METAL HYDRIDES: May ignite or explode.
OXYGEN DIFLUORIDE: Explosive mixture.
PHENYLDICHLOROAMINE: Explosive reaction.
PHOSPHINE: Forms explosive mixture.
PHOSPHOROUS: Vigorous reaction.
PHOSPHORUS TRIBROMIDE: Explosive reaction.
PHOSPHOROUS TRIFLUORIDE: Explosive reaction.
PHOSPHOROUS TRIOXIDE: Ignition.
POLY(CYANOETHYLSILOXANE): Forms impact sensitive mixture with the liquid.
POLY(DIMETHYLSILOXANE): Forms impact sensitive mixture with the liquid.
POLYSTYRENE: Forms impact-sensitive mixture with the liquid.
POLYMERS: Contact with the liquid may result in rapid, hazardous oxidation
with possible explosions.
POTASSIUM CARBONYL: Violent reaction.
POTASSIUM PEROXIDE: Violent reaction.
PROPYLENE OXIDE: Explosive mixture.
SILANE + CHLORINE: Explosive mixture.
SILANES: Ignition or explosion.
STYRENE: Forms explosive peroxide.
TEFLON (POLYTETRAFLUOROETHYLENE): Ignites at high temperature and reduced
pressure.
TETRABORON DECAHYDRIDE: Explosive mixture.
TETRAFLUOROETHYLENE: Forms explosive peroxides.
TETRAFLUOROHYDRAZINE: Explosion in the presence of organic matter.
TETRAHYDROFURAN: Forms explosive peroxides.
TETRAPHOSPHORUS HEXAOXIDE: Ignition.
TRIRHENIUM CHLORIDE: May form explosive chlorine oxides on heating.
VINYL COMPOUNDS: May form explosive peroxides.

HELIUM:
No data available.

NITROGEN:
LITHIUM: May ignite in the gas.
MAGNESIUM: Violent reaction with the liquid on ignition.
NEODYMIUM: Vigorous reaction.
OZONE: Mixtures of the gases may be explosive.
TITANIUM: Will burn in nitrogen atmosphere.

NEON:
No data available.

ARGON:
No data available.

HAZARDOUS DECOMPOSITION:
Thermal decomposition products: miscellaneous decomposition products

POLYMERIZATION: Will not polymerize.

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11. TOXICOLOGICAL INFORMATION
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OXYGEN, COMPRESSED GAS:
TOXICITY DATA:
100 pph/14 hour(s) inhalation-human TCLo; 80 pph inhalation-rat TCLo; 80 pph
inhalation-guinea pig LCLo; 90 pph inhalation-dog LCLo; 80 pph
inhalation-monkey LCLo; 100 pph/24 hour(s) inhalation-mouse LCLo; 70 pph/55 hour(s) inhalation-human TCLo; 90 pph/24 hour(s) inhalation-human TCLo; 90 pph/60 hour(s) inhalation-human TCLo; 100 pph/15 minute(s) inhalation-human TCLo; 100 pph/6 hour(s) inhalation-human TCLo; 30 pph inhalation-human TCLo; 100 pph/24 hour(s)-3 day(s) continuous inhalation-rat TCLo; 95 pph/24 hour(s)-2 day(s) continuous inhalation-rat TCLo; 70 pph/24 hour(s)-20 day(s) continuous inhalation-rat TCLo; 90 pph/8 hour(s)-90 day(s) intermittent inhalation-guinea pig TCLo; 85 pph/24 hour(s)-5 day(s) continuous inhalation-rat TCLo; 95 pph/8 day(s) continuous inhalation-rat TCLo; 95 pph/7 day(s) continuous inhalation-rat TCLo; 95 pph/2 day(s) continuous inhalation-mouse TCLo; 95 pph/3 day(s) continuous inhalation-mouse TCLo; 95 pph/4 day(s) continuous inhalation-mouse TCLo; 95 pph/3 day(s) continuous inhalation-mouse TCLo

ACUTE TOXICITY LEVEL: Insufficient Data.

MUTAGENIC DATA:
- cytogenetic analysis - human lymphocyte 40 pph 4 day(s);
- cytogenetic analysis - hamster ovary 20 pph 3 day(s)-continuous;
- cytogenetic analysis - hamster lung 80 pph;
- sister chromatid exchange - hamster ovary 20 pph;
- mutation in mammalian somatic cells - hamster lung 95 pph 24 hour(s);
- cytogenetic analysis - chicken embryo 80 pph

REPRODUCTIVE EFFECTS DATA:
- 12 pph inhalation-woman TCLo/10 minute(s) 26-39 week(s) pregnant female continuous;
- 10 pph inhalation-rat TCLo/12 hour(s) 22 day(s) pregnant female continuous;
- 10 pph inhalation-rat TCLo/9 hour(s) 22 day(s) pregnant female continuous;
- 10 pph inhalation-mouse TCLo/24 hour(s) 8 day(s) pregnant female continuous

ADDITIONAL DATA: Toxic action is greatly enhanced by exercise or by presence of moderate amounts of carbon dioxide.

HEALTH EFFECTS:

INHALATION:
- 2 COMP. MIX OXYGEN >23% BAL. INERT GAS: For health effects of argon, helium, nitrogen, and neon, see health information on simple asphyxiants.

NITROGEN: Nitrogen inhaled under increased atmospheric pressure, (>1.5 atmospheres), may dissolve in the fat-containing brain cells, and act as an anesthetic, causing narcosis. Persons who have been exposed to increased pressure for a time and who are suddenly released from the pressure may develop decompression sickness. Repeated exposure, without complete decompression, may result in decompression sickness. See information on simple asphyxiants.

ACUTE EXPOSURE:
- OXYGEN: Pure oxygen, especially if not properly humidified, may cause mucous membrane irritation and pulmonary edema after 24 hours. Air normally contains 20-21% oxygen. As exposure to higher concentrations and/or greater than atmospheric pressure continues symptoms of toxicity may develop and increase in severity. Respiratory system effects may include a progressive decrease in vital capacity, tightness in the chest and discomfort, coughing, congestion, tracheobronchitis, pneumonia, edema, atelectasis and increased depth of respiration, rapid panting or asthma-like attacks, apnea in inspiratory position, fibroblastic proliferation, and hyperplasia of alveolar cells. Cardiovascular system effects may include bradycardia, hyperthermia or hypothermia and peripheral vasoconstriction. The nervous system may be affected with mood changes, nausea, dizziness, slowing of mental processes, malaise, hilarity, apprehension, paresthesias including tingling of fingers and toes, fasciculation of the lips and face, muscular twitching, visual and auditory hallucinations, general convulsions and epileptic seizures, loss of consciousness and collapse. At increased atmospheric pressures, vision
may be affected. Symptoms may include photophobia, amblyopia, mydriasis, bilateral progressive constriction of visual field, impaired central vision, constriction of retinal vasculature, and possible loss of vision. However, no change in the visual fields or visual acuity was found after breathing pure oxygen for four and one-half hours at normal atmospheric pressures. Animal studies indicate exposure to oxygen under high pressure has caused hemolytic anemia. In pregnant women exposed to 100% oxygen for 20 minutes, the response was a fetal cardiac rate which decreased and became variable.

SIMPLE ASPHYXIANTS: The symptoms of asphyxia depend on the rapidity with which the oxygen deficiency develops and how long it continues. In sudden acute asphyxia, unconsciousness may be immediate. With slow development there may be rapid respiration and pulse, air hunger, dizziness, reduced awareness, tightness in the head, tingling sensations, incoordination, faulty judgement, emotional instability, and rapid fatigue. As the asphyxia progresses, nausea, vomiting, collapse, unconsciousness, convulsions, deep coma and death are possible.

CHRONIC EXPOSURE:
OXYGEN: Inhalation of pure oxygen for periods up to 16 hours per day for many days at atmospheric pressure has caused no observed injury to man. Administration at atmospheric pressures at concentrations of 60% and 80% may be followed by adverse effects, including severe cough, acute chest pain associated with a decrease in vital capacity, intra-alveolar edema and atelectasis. It is possible that prolonged low-level injury may produce severe fibrotic changes in the lungs. However, after a human was exposed to high concentrations of oxygen for 150 days, severe irreversible retinal atrophy occurred. Dogs exposed to pure oxygen for 48 hours were found to develop retinal and choroidal detachments. Reproductive effects have been reported in animal studies.
SIMPLE ASPHYXIANTS: No data available.

SKIN CONTACT:
ACUTE EXPOSURE:
2 COMP. MIX OXYGEN >23% BAL. INERT GAS: No adverse effects have been reported from the gas. Due to rapid evaporation, the liquid may cause frostbite with redness, tingling and pain or numbness. In more severe cases, the skin may become hard and white and develop blisters.

CHRONIC EXPOSURE:
2 COMP. MIX OXYGEN >23% BAL. INERT GAS: No data available.

EYE CONTACT:
ACUTE EXPOSURE:
2 COMP. MIX OXYGEN >23% BAL. INERT GAS: No adverse effects have been reported from the gas. Due to evaporation, the liquid may cause frostbite with redness, pain, and blurred vision.

CHRONIC EXPOSURE:
2 COMP. MIX OXYGEN >23% BAL. INERT GAS: No data available.

INGESTION:
ACUTE EXPOSURE:
2 COMP. MIX OXYGEN >23% BAL. INERT GAS: Ingestion of a gas is unlikely. If liquid is swallowed, frostbite damage to the lips, mouth and mucous membranes may occur.

CHRONIC EXPOSURE:
2 COMP. MIX OXYGEN >23% BAL. INERT GAS: No data available.

MSDS#15092 EFFECTIVE DATE: JANUARY 1, 2005
12. ECOLOGICAL INFORMATION

Not available

13. DISPOSAL CONCIDERATIONS

Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D001. Dispose in accordance with all applicable regulations.

14. TRANSPORT INFORMATION

U.S. DOT 49 CFR 172.101:
   PROPER SHIPPING NAME: Rare gases and oxygen mixtures, compressed
   ID NUMBER: UN1980
   HAZARD CLASS OR DIVISION: 2.2
   LABELING REQUIREMENTS: 2.2

CANADIAN TRANSPORTATION OF DANGEROUS GOODS: No classification assigned.

LAND TRANSPORT ADR: No classification assigned.

LAND TRANSPORT RID:
   PROPER SHIPPING NAME: Rare gases and oxygen mixtures, compressed
   UN NUMBER: UN1980
   CLASS: 2
   CLASSIFICATION CODE: 1A
   LABELS: 2.2; (+13)

AIR TRANSPORT IATA:
   PROPER SHIPPING NAME: Rare gases and oxygen mixture, compressed
   UN/ID NUMBER: UN1980
   CLASS OR DIVISION: 2.2
   HAZARD LABELS: 2.2

AIR TRANSPORT ICAO:
   PROPER SHIPPING NAME: Rare gases and oxygen mixture
   UN NUMBER: UN1980
   CLASS OR DIVISION: 2.2
   LABELS: 2.2

MARITIME TRANSPORT IMDG:
   PROPER SHIPPING NAME: Rare gases and oxygen mixture, compressed
   UN NUMBER: UN1980
   CLASS OR DIVISION: 2.2
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 355.30):
Not regulated.

SARA TITLE III SECTION 304 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355.40):
Not regulated.

SARA TITLE III SARA SECTIONS 311/312 HAZARDOUS CATEGORIES (40 CFR 370.21):
ACUTE: Yes
CHRONIC: No
FIRE: No
REACTIVE: No
SUDDEN RELEASE: Yes


STATE REGULATIONS:
California Proposition 65: Not regulated.

CANADIAN REGULATIONS:
WHMIS CLASSIFICATION: Not determined.

EUROPEAN REGULATIONS:
EC CLASSIFICATION (CALCULATED): Not determined.

NATIONAL INVENTORY STATUS:
U.S. INVENTORY (TSCA): Listed on inventory.

TSCA 12(b) EXPORT NOTIFICATION: Not listed.

16. OTHER INFORMATION

MSDS SUMMARY OF CHANGES
3. HAZARDS IDENTIFICATION
11. TOXICOLOGICAL INFORMATION

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