SECTION 1  CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MG INDUSTRIES
3 GREAT VALLEY PARKWAY
MALVERN, PENNSYLVANIA 19355
PHONE: 610-695-7400
FAX: 610-695-7596
SUBSTANCE: 2 COMP. MIX OXYGEN .1-17.5% BAL. HALOCARBON 14
TRADE NAMES/SYNONYMS:
MGI68239
CREATION DATE: Sep 28 1990
REVISION DATE: Dec 07 1999

SECTION 2  COMPOSITION, INFORMATION ON INGREDIENTS

COMPONENT: TETRAFLUOROMETHANE
CAS NUMBER: 75-73-0
EC NUMBER (EINECS): 200-896-5
PERCENTAGE: 82.5-99.9
COMPONENT: OXYGEN, COMPRESSED GAS
CAS NUMBER: 7782-44-7
EC NUMBER (EINECS): 231-956-9
PERCENTAGE: 0.1-17.5

SECTION 3  HAZARDS IDENTIFICATION

NFPA RATINGS (SCALE 0-4):  HEALTH=1  FIRE=0  REACTIVITY=0
EC CLASSIFICATION (CALCULATED): Not determined.
PHYSICAL DESCRIPTION: Gas.
MAJOR HEALTH HAZARDS: difficulty breathing
POTENTIAL HEALTH EFFECTS:
INHALATION:
SHORT TERM EXPOSURE: irritation, nausea, vomiting, asthma, irregular heartbeat, symptoms of drunkenness, dizziness, disorientation, tingling sensation, dilated pupils, blindness, suffocation, lung congestion, blood disorders, convulsions
LONG TERM EXPOSURE: chest pain, lung damage
SKIN CONTACT:
SHORT TERM EXPOSURE: irritation, blisters
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: frostbite
LONG TERM EXPOSURE: no information is available
CARCINOGEN STATUS:
OSHA: N
NTP: N
IARC: N

SECTION 4  FIRST AID MEASURES

INHALATION: When safe to enter area, remove from exposure. Use a bag valve mask or similar device to perform artificial respiration (rescue breathing)
if needed. Keep warm and at rest. Get medical attention immediately.

SKIN CONTACT: Wash if needed. If frostbite, freezing, or cryogenic burns occur, warm affected area in warm water. If this is not available, gently wrap affected parts in blankets. Allow circulation to return naturally. Get medical attention immediately.

EYE CONTACT: It is unlikely that emergency treatment will be required. Wash with large amounts of water or normal saline until no evidence of chemical remains (at least 15-20 minutes). Get medical attention immediately.

INGESTION: It is unlikely that emergency treatment will be required. Get medical attention, if needed.

NOTE TO PHYSICIAN: For inhalation, consider oxygen.

SECTION 5     FIRE FIGHTING MEASURES

FIRE AND EXPLOSION HAZARDS: Negligible fire hazard. 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. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire. For tank, rail car or tank truck, evacuation radius: 800 meters (1/2 mile). Use extinguishing agents appropriate for surrounding fire. Cool containers with water spray until well after the fire is out. Apply water from a protected location or from a safe distance. Do not get water directly on material. Reduce vapors with water spray. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas. Consider downwind evacuation if material is leaking.

SECTION 6     ACCIDENTAL RELEASE MEASURES

OCCUPATIONAL RELEASE:
Stop leak if possible without personal risk. Keep unnecessary people away, isolate hazard area and deny entry. Stay upwind and keep out of low areas.

SECTION 7     HANDLING AND STORAGE


SECTION 8     EXPOSURE CONTROLS, PERSONAL PROTECTION

EXPOSURE LIMITS:
2 COMP. MIX OXYGEN .1-17.5% BAL. HALOCARBON 14:
No occupational exposure limits established.

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.

SECTION 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

SECTION 10 STABILITY AND REACTIVITY

REACTIVITY: Stable at normal temperatures and pressure.

CONDITIONS TO AVOID: 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.
CYANOGEN (LIQUID): Forms explosive mixture with the liquid.
CYCLOHEXANE-1,2-DIONE BIS(PHENYLHYDRAZONE): Forms explosive compound.
CYCLOOCTATETRAENE: May form explosive peroxides.
DIBORON: Explosive mixture on heating.
DIBORON TETRAFLUORIDE: Explosive mixture.
DIETHYLKETENE: 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 DIALKYNITROSAMINES: 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.

NICKEL 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.

PHENYLDICHLOORAMINE: Explosive reaction.

PHOSPHINE: Forms explosive mixture.

PHOSPHOROUS: Vigorous reaction.

PHOSPHOROUS 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.

VINYLS: May form explosive peroxides.

TETRAFLUOROMETHANE:

ALUMINUM: Exothermic reaction.
HAZARDOUS DECOMPOSITION:
Thermal decomposition products: miscellaneous decomposition products
POLYMERIZATION: Will not polymerize.

SECTION 11  TOXICOLOGICAL INFORMATION

TETRAFLUOROMETHANE:
TOXICITY DATA:
895000 ppm/15 minute(s) inhalation-rat LClO
ACUTE TOXICITY LEVEL: Insufficient Data.
ADDITIONAL DATA: Stimulants such as epinephrine may induce ventricular arrhythmias.

OXYGEN, COMPRESSED GAS:
TOXICITY DATA:
100 pph/14 hour(s) inhalation-human TCLo
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:
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, amблиопія, 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.
TETRAFLUOROMETHANE: High concentrations may cause hypoxia with dizziness, disorientation, incoordination, narcosis, nausea, and vomiting.
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.

TETRAFLUOROMETHANE: No data available.

SKIN CONTACT:

ACUTE EXPOSURE:

2 COMP. MIX OXYGEN 0.1-17.5% BAL. HALOCARBON 14: 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 0.1-17.5% BAL. HALOCARBON 14: No data available.

EYE CONTACT:

ACUTE EXPOSURE:

2 COMP. MIX OXYGEN 0.1-17.5% BAL. HALOCARBON 14: 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 0.1-17.5% BAL. HALOCARBON 14: No data available.

INGESTION:

ACUTE EXPOSURE:

2 COMP. MIX OXYGEN 0.1-17.5% BAL. HALOCARBON 14: 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 0.1-17.5% BAL. HALOCARBON 14: No data available.

SECTION 12  ECOLOGICAL INFORMATION

Not available

SECTION 13  DISPOSAL CONSIDERATIONS

Dispose in accordance with all applicable regulations.

SECTION 14  TRANSPORT INFORMATION

U.S. DOT 49 CFR 172.101 SHIPPING NAME-UN NUMBER:
Compressed gases, n.o.s. (tetrafluoromethane, oxygen)-UN1956

U.S. DOT 49 CFR 172.101 HAZARD CLASS OR DIVISION:
2.2

U.S. DOT 49 CFR 172.101 AND SUBPART E LABELING REQUIREMENTS:
Nonflammable gas

U.S. DOT 49 CFR 172.101 PACKAGING AUTHORIZATIONS:
NON-BULK PACKAGING: 49 CFR 173.302, 305
BULK PACKAGING: 49 CFR 173.314, 315

U.S. DOT 49 CFR 172.101 QUANTITY LIMITATIONS:
PASSenger AIRCRAFT OR RAILCAR: 75 kg
CARGO AIRCRAFT ONLY: 150 kg

LAND TRANSPORT ADR/RID:
SUBSTANCE NAME: Compressed gas, n.o.s.
UN NUMBER: UN1956
ADR/RID CLASS: 2
ITEM NUMBER: 1A
WARNING SIGN/LABEL: 2; 13
HAZARD ID NUMBER: 20
AIR TRANSPORT IATA/ICAO:
CORRECT TECHNICAL NAME: Compressed gas, n.o.s.
UN/ID NUMBER: UN1956
IATA/ICAO CLASS: 2.2
LABEL: Nonflammable gas
MARITIME TRANSPORT IMDG:
CORRECT TECHNICAL NAME: Compressed gases, n.o.s.
UN/ID NUMBER: UN1956
IMDG CLASS: 2(2.2)
EmS No.: 2-04
MFAG Table No.: 620
MARINE POLLUTANT: N

SECTION 15 REGULATORY INFORMATION

U.S. REGULATIONS:
TSCA INVENTORY STATUS: Y
TSCA 12(b) EXPORT NOTIFICATION: Not listed.
CERCLA SECTION 103 (40CFR302.4): N
SARA SECTION 302 (40CFR355.30): N
SARA SECTION 304 (40CFR355.40): N
SARA SECTION 313 (40CFR372.65): N
SARA HAZARD CATEGORIES, SARA SECTIONS 311/312 (40CFR370.21):
ACUTE: Y
CHRONIC: N
FIRE: N
REACTIVE: N
SUDDEN RELEASE: Y
STATE REGULATIONS:
California Proposition 65: N
EUROPEAN REGULATIONS:
EC NUMBER: Not assigned.

SECTION 16 OTHER INFORMATION

MSDS SUMMARY OF CHANGES

SECTION 14 TRANSPORT INFORMATION
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