PORTAGAS

Material Safety Data Sheet

PRODUCT NAME
(Description)
10 - 50ppm vol. Hydrogen Sulfide
35 - 400ppm vol. Carbon Monoxide
10 - 50% LEL (0.5 - 2.5% vol) Methane
10 – 21% vol. Oxygen
Balance Nitrogen

Document # MS161004
Rev 0 2003

TRADE NAME & SYNONYMS
Confined Space Entry Calibration Gas - QUAD/Oxygen deficient
10 - 50ppm Hydrogen Sulfide
35 - 400ppm Carbon Monoxide
10 - 50% LEL (0.5 - 2.5% molar) Methane
10 – 21% Oxygen
Balance Nitrogen

CHEMICAL NAME & SYNONYMS
10 - 50ppm H2S
35 - 400ppm vol. CO
10 - 50% LEL C1
10 – 21% vol. O2
Balance N2

FORMULA (minor and balance components)
H_2S, CO, CH_4,O_2 and N_2

CAS NUMBERS
Hydrogen Sulfide 7783-06-04
Carbon Monoxide 630-08-0
Methane 74-82-8
Oxygen 7782-44-7
Nitrogen 7727-37-9

CHEMICAL FAMILY
Compressed Gas Mixture

HEALTH HAZARD DATA

TIME WEIGHTED AVERAGE (TWA) EXPOSURE LIMITS (ACGIH 1984-85 and later)

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The Hydrogen Sulfide component is 10 ppm (mole) TLV, with a 15 ppm (mole) STEL

Carbon Monoxide component is 25 ppm (mole),
OSHA 1989: 35 ppm (mole) PEL, Ceiling Value 200 ppm (mole).

Methane is defined as a simple asphyxiant.

The Oxygen concentration found in this mixture is insufficient for supporting life, and in combination with the other components found in this mixture, it is unfit for human respiration.

Nitrogen is defined as a simple asphyxiant.

SYMPTOMS OF EXPOSURE
At low levels (30+/-15 ppm), continuous exposure to Hydrogen Sulfide will typically result in headaches, dizziness or nausea, and cause irritation to the mucous membrane and eye tissue. Higher levels (250+/-50 ppm) can result in respiratory arrest leading to coma or unconciousness. Exposure to levels greater than 700 ppm for more than 30 minutes have been fatal. Continuous inhalation of low concentrations may cause olfactory fatigue causing a decreased ability to detect its presence by odor.

Carbon Monoxide is colorless and odorless (no warning of its presence). Prolonged exposure will produce headaches, and dizziness from its asphyxiant properties.

TOXICOLOGICAL PROPERTIES
Hydrogen Sulfide is toxic by inhalation as well as irritating to the mucous membrane and eye tissue. Continuous inhalation of low concentrations may cause olfactory fatigue causing a decreased ability to detect its presence by odor. Toxicologically Hydrogen Sulfide reacts with enzymes in the blood stream inhibiting respiration, causing pulmonary disorders resulting in collapse or death.

The State of California lists Carbon Monoxide as a compound known to cause developmental reproductive toxicity. Carbon Monoxide complexes with hemoglobin in the blood stream preventing the hemoglobin from transporting Oxygen from the lungs.
TOXICOLOGICAL PROPERTIES (continued)

In the event of the displacement of air by release of the mixture in an insufficiently ventilated area, asphyxiation may result if the level of oxygen available for breathing drops below 18% by volume, possibly resulting in headache, loss of balance/dizziness, reduction in the ability to perform movements or speak, weakened sense of touch. In any case, some, all or none of these symptoms may manifest, so that there are no

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definite warning signs.

RECOMMENDED FIRST AID TREATMENT
Prompt medical attention is manadatory in all cases of overexposure to Hydrogen Sulfide and/or Carbon Monoxide.
Rescue personnel should use self contained breathing apparatus (SCBA).
Avoid when possible, the use of equipment that may create a static discharge or provide an ignition source. Relocate the affected person to an uncontaminated area, if breathing has stopped, provide assisted (mouth-to-mouth) respiration, keeping the person warm and calm. Oxygen or a 5% Carbon Dioxide in Oxygen mixture should be administered by a qualified person.

POTENTIALLY HAZARDOUS MIXTURES WITH OTHER CHEMICALS
Hazardous reactions may occur with Hydrogen Sulfide when mixed with concentrated vapors of Nitric Oxide or other strong oxidizers, and vapors of Chlorine, Oxygen Difluoride or Nitrogen Trifluoride.

PHYSICAL DATA

MOLECULAR WEIGHT
28.19

SPECIFIC GRAVITY
0.98 (Air = 1)

VAPOR PRESSURE
@70F, above Critical Temperatures

LIQUID DENSITY AT BOILING POINT
52.36 lb/ft^3 average

GAS DENSITY AT STP
0.072 lb/ft^3 average

FREEZING TEMPERATURE
-346F

SOLUBILITY IN WATER
Slight

APPEARANCE AND ODOR
Shipped in compressed gas cylinders under pressure (typically 160 - 810 psig).
Vapor is colorless with a "rotten egg" odor.

FIRE & EXPLOSION HAZARD DATA

FLAMMABLE LIMITS % BY VOLUME
N/A

EXTINGUISHING MEDIA
N/A (Nonflammable gas), use water if involved in a fire.

NFPA 704 NUMBER (HFR)
1 0 0

ELECTRICAL CLASSIFICATION
Nonhazardous

FLASH POINT
N/A

AUTO IGNITION TEMPERATURE
N/A

SPECIAL FIRE FIGHTING PROCEDURES

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When the mixture is involved in a fire, Self Contained Breathing Apparatus is required
UNUSUAL HAZARDS
None

REACTIVITY DATA

STABILITY
Stable
INCOMPATIBILITY
Possibly strong acid or oxidizer vapors
HAZARDOUS DECOMPOSITION PRODUCTS
Oxides of Sulfur
HAZARDOUS POLYMERIZATION PRODUCTS
None
CONDITIONS TO AVOID
N/A

ACTIONS TO BE TAKEN IN THE EVENT OF AN UNINTENDED RELEASE (LEAK)

FOR EMERGENCIES INVOLVING THIS PRODUCT CALL INFOTRAC (800)535-5053

Evacuate all personnel from the affected area. Use appropriate protective equipment. *If safe to do so:* Shut off flow of gas, and purge lines with an inert gas. Switch off non-essential electrical equipment.

WASTE DISPOSAL METHODS
Do not attempt to dispose of any unused quantites of product or their containers without contacting Portagas for instructions.

PERSONAL PROTECTION INFORMATION

RESPIRATORY/VENTILATION
Self Contained Breathing Apparatus/Hood with forced ventilation to prevent accumulation and exposure to the TLV of Carbon Monoxide and Hydrogen Sulfide, and contribute to LEL and Oxygen deficient conditions.
GLOVES
Rubber (neoprene, butyl, poly)
EYES AND OTHER
Safety goggles or glasses only, contact lenses are not recommended
15 minute shower/eyewash, steel toed/metatarsal protection shoes.

SPECIAL SAFETY AND REGULATORY CONSIDERATIONS

LABELING DOT Shipping name: Compressed gases, n.o.s.

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Tech. Description:	(Oxygen, Nitrogen)
Identification No.:	UN 1956
Hazard Class, Div.	Nonflammable Gas, 2.2
IATA Packing Inst.	200

HANDLING
Use only in well ventilated areas. The cylinder should be secured with a chain, strap on its side or by use of a stand when connected to a regulator. Do not drag, drop or roll the cylinder. Use both hands when carrying the cylinder. Do not heat the cylinder. One-way check valves in the use line are recommended to prevent backflow. Systems should be cleaned "for Oxygen service" before first use.

STORAGE
Protect the cylinders from physical damage. Store the cylinders in a cool (<130F), dry, ventilated, posted "no smoking or open flames" area constructed of non-combustible materials, and away from ailes and other traffic areas. Keep full cylinders separated from empties. Rotate stock first-in, first-out (FIFO).

PACKAGING
Use the cylinders as provided, with the recommended regulator. Do not attempt to refill

OTHER PRECAUTIONS the cylinder or transfill the product from one container to another. Conduct monitoring of gas exposure to personnel, do not rely on odor as a way to detect the presence of gas.

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