5-100 PPM H2S, 1-999 PPM CO, 0.1-3.0% Methane, 10-23.5% O2 in N2

SDS Number: NLB 2310 Revision Date: 6/1/2018

1 PRODUCT AND COMPANY IDENTIFICATION

Manufacturer

NorLab a division of Norco
898 W. Gowen Rd.
Boise, ID 83705

Contact:	**Quality Dept.**
Phone:	**208-336-1643**
Fax:	**208-433-6160**
Web:	**www.norlab-gas.com**

Product Name:	**5-100 PPM H2S, 1-999 PPM CO, 0.1-3.0% Methane, 10-23.5% O2 in N2**
Revision Date:	**6/1/2018**
Version:	**3**
SDS Number:	**NLB 2310**
Common Name:	**H2S Quad Mix (Methane)**
CAS Number:	**Not Available - Gas Mixture**
Chemical Formula:	**H2S+CH4+CO+O2+N2**
Synonyms:	**Quad Mix, Bump Gas, Calibration Gas Mixture**
Product Use:	**Calibration of analyitical instrumentation**

For Transportation Emergency Contact CHEMTREC: 800-424-9300

2 HAZARDS IDENTIFICATION

Classification of the Substance or Mixture

GHS Classification in Accordance with 29 CFR 1910 (OSHA HCS):

Physical, Gases Under Pressure, Compressed Gas
Health, Acute toxicity, 5 Inhalation

GHS Label Elements, Including Precautionary Statements

GHS Signal Word: WARNING

GHS Hazard Pictograms:

GHS Hazard Statements:

H280 - Contains gas under pressure; may explode if heated
H333 - May be harmful if inhaled
OSHA-H01 - MAY DISPLACE OXYGEN AND CAUSE RAPID SUFFOCATION.

GHS Precautionary Statements:

P202 - Do not handle until all safety precautions have been read and understood.
P251 - Pressurized container: Do not pierce or burn, even after use.
P260 - Do not breathe dust/fume/gas/mist/vapors/spray.
P271 - Use only outdoors or in a well-ventilated area.
P281 - Use personal protective equipment as required.
P304+340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P308+313 - IF exposed or concerned: Get medical advice/attention.

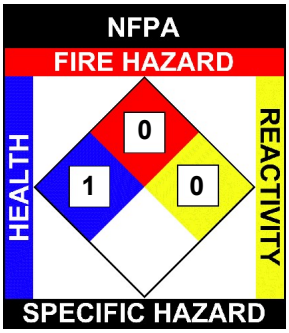
P403+233 - Store in a well ventilated place. Keep container tightly closed.
CGA-PG02 - Protect from sunlight when ambient temperature exceeds 52 °C (125 °F).
CGA-PG05 - Use a back flow preventive device in the piping.
CGA-PG06 - Close valve after each use and when empty.
CGA-PG10 - Use only with equipment rated for cylinder pressure.
CGA-PG20 - Use only equipment of compatible materials of construction.

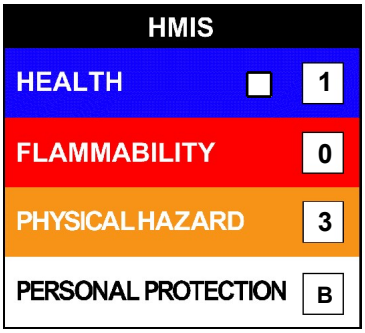
Hazards not Otherwise Classified (HNOC) or not Covered by GHS

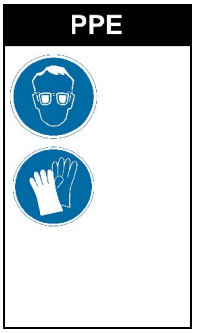
Route of Entry:	**Inhalation;**
Target Organs:	**Cardiovascular system; Lungs; Blood; Central nervous system;**
Inhalation:	**This mix may or may not contain suffecient oxygen to sustain life. Nitrogen acts as a simple asphyxiant displacing the oxygen content in the air necessary for life. The following effects of asphyxiation are representative and it is possible that none of these symptoms may occur: loss of balance or dizziness; tightness in the frontal area of the forehead; tingling of the tongue, fingertips or toes; weakened speech leading to the inability to utter sounds; rapid reduction in the ability to perform movements; reduced consciousness of surroundings; loss of tactile sensations; and heightened mental activity.** **Concentrations of 150 PPM hydrogen sulfide can cause upper respiratory tract irritation, olfactory nerve paralysis, and pulmonary edema with prolonged exposure. Concentrations of 200 PPM hydrogen sulfide may be life threatening. Exposure to non-fatal levels of hydrogen sulfide may result in coughing, lacrimation, mucous nasal discharge, depression, fluid sounds in the lungs, headache, sweating, vertigo, irritability, weakness confusion, delirium, convulsions and cyanosis. At higher exposures hydrogen sulfide may cause sudden collapse, anoxic convulsions, pulmonary edema, hemorrhages in various organs, degenerative changes in the liver and kidney, edema of the intestines and brain and/or rapid death.** **Inhaled carbon monoxide binds with blood hemoglobin to form carboxyhemoglobin. Carboxyhemoglobin cannot take part in normal oxygen transport, greatly reducing the blood's ability to transport oxygen. Depending on levels and duration of exposure, symptoms may include headache, dizziness, heart palpitations, weakness, confusion, nausea, and even convulsions, eventual unconsciousness and death. Some experimental evidence indicates teratogenic and reproductive effects for carbon monoxide.**
Skin Contact:	**Contact with hydrogen sulfide in this product may cause severe pain itching and erythema. Contact with rapidly expanding gas near the point of release may cause frostbite with redness, skin color change to gray or white, and blistering.**
Eye Contact:	**Exposure to 20-50 PPM hydrogen sulfide will cause eye irritation. Low to moderately high concentrations may cause painful conjunctivitis, photophobia, lacrimation and corneal opacity. Exposure to 50-100 PPM hydrogen sulfide has resulted in temporary damage to the corneal epithelium in dogs, cats, rabbits, and guinea pigs. Contact with rapidly expanding gas near the point of release may cause frostbite.**
Ingestion:	**Ingestion of this product is unlikely but can cause irritation of the mucous membranes and gastrointestinal tract.**

Product is a colorless non-flammable gas with a distinctive rotten egg like odor. Do not rely on smell to detect hydrogen sulfide because of olfactory fatigue. Exposure to low levels of hydrogen sulfide causes irritation of mucous membranes. Inhaled carbon monoxide binds to the blood hemoglobin, greatly reducing the red blood cell's ability to transport oxygen to body tissues. Effects may include headaches, dizziness, convulsions, loss of consciousness, and death. Mix may or may not have sufficient oxygen content to support life therefore mix should be treated as a simple asphyxiate. Contents under pressure. Use and store below 125 °F (52 °C).

NFPA: Health = 1, Fire = 0, Reactivity = 0, Specific Hazard = n/a
HMIS III: Health = 1, Fire = 0, Physical Hazard = 3
HMIS PPE: B - Safety Glasses, Gloves







3 COMPOSITION/INFORMATION OF INGREDIENTS

Ingredients:

Cas#	%	Chemical Name
7783-06-4	0.0005-0.01%	Hydrogen sulfide
630-08-0	0.0001-0.0999%	Carbon monoxide
74-82-8	0.1-3.0%	Methane
7782-44-7	10.0-23.5%	Oxygen
7727-37-9	73.3901-89.8994%	Nitrogen

4 FIRST AID MEASURES

Inhalation: **PROMPT REMOVAL FROM THE CONTAMINATED AREA AND IMMEDIATE MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE. RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS. Conscious persons should be assisted to an uncontaminated area and be treated with supplemental oxygen. Quick removal from the contaminated area is most important. Unconscious persons should be moved to an uncontaminated area and be given artificial respiration and oxygen at the same time. The administering of the oxygen at an elevated pressure (up to 2 to 2.5 atmospheres) has shown to be beneficial as has treatment in a hyperbaric chamber. The physician should be informed that the patient has inhaled toxic quantities of carbon monoxide.**

Depending on the concentration of the carbon monoxide present, this product may act as a simple asphyxiate or a chemical asphyxiate. This mixture contains sufficient oxygen to support life.

Inhaled carbon monoxide binds with blood hemoglobin to form carboxyhemoglobin. Carboxyhemoglobin cannot take part in normal oxygen transport, greatly reducing the blood's ability to transport oxygen. Depending on levels and duration of exposure, symptoms may include headache, dizziness, heart palpitations, weakness, confusion, nausea, and even convulsions, eventual unconsciousness and death.

Some experimental evidence indicates teratogenic and reproductive effects.

Skin Contact: **If irritation occurs, flush affected area with copious quantities of water. Remove contaminated clothing. If irritation persists, seek medical attention.**
For frostbite, immerse skin in lukewarm water. DO NOT USE HOT WATER.

Eye Contact: **PERSONS WITH POTENTIAL EXPOSURE TO HYDROGEN SULFIDE SHOULD NOT WEAR CONTACT LENSES. Flush eyes with large amounts of water for at least 15 minutes, holding eyelids open to ensure adequate rinsing. If irritation persists, seek immediate medical attention. If frostbite is suspected, flush eyes with cool water for 15 minutes and obtain immediate medical attention.**

Ingestion: **Ingestion unlikely. Product is a gas under normal conditions**

5 FIRE FIGHTING MEASURES

Flammability:	**Not Flammable**
Flash Point:	**Not Available**
Flash Point Method:	**Not Applicable**
Burning Rate:	**Not Available**
Autoignition Temp:	**Not Available**
LEL:	**None**
UEL:	**None**

Fire and Explosion Hazards:
Nonflammable. Cylinders may rupture violently or vent rapidly from pressure when involved in a fire situation.

Extinguishing Media:
None required. Use as appropriate for surrounding materials

Fire Fighting Instructions:
Use water spray to cool adjacent cylinders and areas. Firefighters should wear respiratory protection (SCBA) and full turnout or Bunker gear. Continue to cool fire-exposed cylinders until well after flames are extinguished.

6 ACCIDENTAL RELEASE MEASURES

Isolate hazard area, evacuate personnel and deny entry to unauthorized/unprotected individuals. Extinguish all ignition sources and ventilate closed spaces and low areas. Hydrogen sulfide is soluble, use water spray to knock down vapors and protect personnel. Dike run-off waters for later disposal. Personnel entering area should wear appropriate protective equipment, including respiratory protection suitable for unknown concentrations. Personnel should not re-enter an area until hydrogen sulfide has sufficiently dispersed and adequate oxygen re-established. If a leak is in user's equipment, be certain to purge piping with an inert gas prior to attempting repairs. If leak is in container valve, contact the appropriate emergency telephone number listed in Section 1 or call your closest Norco/NorLab location.

7 HANDLING AND STORAGE

Handling Precautions:

Use only in well-ventilated areas. Valve protection caps must remain in place unless the cylinder is secured with valve outlet piped to use point. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Use a pressure regulator when connecting cylinder to lower pressure (<3000 PSIG) piping or systems. Do not heat cylinder by any means to increase the discharge rate of product from the cylinder. Use a check valve or trap in the discharge line to prevent hazardous backflow into the cylinder.

Do not rely on the olfactory sense to detect the presence of hydrogen sulfide. Analytical devices and instrumentation are readily available for this purpose. Perform frequent analytical tests to be certain that the TWA is not exceeded. Many metals corrode rapidly with wet hydrogen sulfide. Anhydrous hydrogen sulfide can be handled in carbon steel, aluminum, Inconel ®, Stelite ®, 304 and 316 stainless steels. Avoid hard steels, which are highly stressed since they may be susceptible to hydrogen embrittlement from hydrogen sulfide. Multipoint air samplers with alarms for plant production units should be provided to constantly monitor the air in and around the units.

For additional recommendations, consult Compressed Gas Association Pamphlets P-1.

Never carry a compressed gas cylinder or a container of a gas in cryogenic liquid form in an enclosed space such as a car trunk, van or station wagon. A leak can result in a fire, explosion, asphyxiation or a toxic exposure.

Storage Requirements:

Protect cylinders from physical damage. Store in cool, dry, well-ventilated area away from heavy traffic areas and emergency exits. Do not allow the temperature where cylinders are stored to exceed 125 degrees F (52 degrees C). Cylinders should be stored upright and firmly secured to prevent falling or being knocked over. Full and empty cylinders should be segregated. Use a "first in-first out" inventory system to prevent full cylinders from being stored for excessive periods of time.

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls:

All ventilation should be designed in accordance with OSHA standard (29 CFR 1910.94). Use local exhaust at filling zones and where leakage and dust formation is probable. Use mechanical (general) ventilation for storage areas. Use appropriate ventilation as required to keep Exposure limits in Air below TLV & PEL limits. Maintain atmospheric Oxygen content at or above 19.5%

Personal Protective Equipment:

Hydrogen sulfide cas#:(7783-06-4) [0.0005-0.01%]
Carbon monoxide cas#:(630-08-0) [0.0001-0.0999%]
Methane cas#:(74-82-8) [0.1-3.0%]
Oxygen cas#:(7782-44-7) [10.0-23.5%]
Nitrogen cas#:(7727-37-9) [73.3901-89.8994%]

Personal protective equipment

Respiratory protection: Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type AXBEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection: Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching gloves outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands. Full contact Material: butyl-rubber Minimum layer thickness: 0.3 mm Break through time: 480 min Material tested:Butoject (KCL 897 / Aldrich Z677647, Size M)

Splash protection: Material: butyl-rubber Minimum layer thickness: 0.3 mm Break through time: 480 min Material tested:Butoject (KCL 897 / Aldrich Z677647, Size M) data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374 If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an Industrial Hygienist familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Eye protection: Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin and body protection: Complete suit protecting against chemicals, Flame retardant antistatic protective clothing, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Hygiene measures: Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

Hydrogen sulfide cas#:(7783-06-4) [0.0005-0.01%]

TWA	10 ppm	USA. ACGIH Threshold Limit Values (TLV)
STEL	15 ppm 21 mg/m3	USA. ACGIH Threshold Limit Values (TLV)
TWA	10 ppm 14 mg/m3	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
STEL	15 ppm 21 mg/m3	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
CEIL	20 ppm	USA. Occupational Exposure Limits (OSHA) - Table Z2
Peak	50 ppm	USA. Occupational Exposure Limits (OSHA) - Table Z2 -Z37.2-1966
TWA	1 ppm	USA. ACGIH Threshold Limit Values (TLV)

Central Nervous System impairment Upper Respiratory Tract irritation 2010 Adoption

STEL	5 ppm	USA. ACGIH Threshold Limit Values (TLV)

Central Nervous System impairment Upper Respiratory Tract irritation 2010 Adoption

CEIL	10 ppm 15 mg/m3	USA. NIOSH Recommended Exposure Limits

10 minute ceiling value

Carbon monoxide cas#:(630-08-0) [0.0001-0.0999%]

CEIL	200 ppm 229 mg/m3	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000

Sampling for the carbon monoxide ceiling shall be averaged over 5 minutes but an instantaneous reading over 1500 ppm shall not be exceeded.

TWA	50 ppm 55 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z- 1 - Limits for Air Contaminant s

The value in mg/m3 is approximate.

TWA	25 ppm	USA. ACGIH Threshold Limit Values (TLV)

Carboxyhemoglobinemia Substances for which there is a Biological Exposure Index or Indices.

TWA	35 ppm 40 mg/m3	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
TWA	35 ppm 40 mg/m3	USA. NIOSH Recommended Exposure Limits
CEIL	200 ppm 229 mg/m3	USA. NIOSH Recommended Exposure Limits

Methane cas#:(74-82-8) [0.1-3.0%]

TWA	1,000 ppm	USA. ACGIH Threshold Limit Values (TLV)

Central Nervous System impairment Cardiac sensitization

9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	**Colorless Gas**
Physical State:	**Gas**
Odor:	**Characteristic rotten egg odor**
Odor Threshold:	**Faint but readilly perceptable at 0.77 ppm. Do not rely on smell to detect hydrogen sulfide because of olfactory fatigue.**
Molecular Formula:	**Mixture**
Particle Size:	**Not Determined**
Solubility:	**Very slightly soluble**
Softening Point:	**Not Determined**
Viscosity:	**Not Determined**
Percent Volatile:	**100%**
Heat Value:	**Not Determined**
Boiling Point:	**Not Determined**
Freezing/Melting Pt.:	**Not Determined**
Flammability:	**Not Flammable**
Flash Point:	**Not Determined**
Partition Coefficient:	**Not Determined**
Vapor Pressure:	**Not Determined**
Vapor Density:	**Not Determined**
pH:	**Not Determined**
Evap. Rate:	**Not Determined**
Bulk Density:	**Not Determined**
UFL/LFL:	**None**

10 STABILITY AND REACTIVITY

Chemical Stability:	**Product is stable under normal conditions.**
Conditions to Avoid:	**Avoid open flames and high temperatures.**
Materials to Avoid:	**All flammable materials. Hydrogen sulfide will react with brass materials with copper sulfide as a reaction product.**
Hazardous Decomposition:	**Carbon Oxides, Nitrogen Oxides (NOx) and Sulfur Oxides.**
Hazardous Polymerization:	**Will not occur.**

11 TOXICOLOGICAL INFORMATION

Hydrogen sulfide cas#:(7783-06-4) [0.0005-0.01%]

Information on toxicological effects

Acute toxicity:
Oral LD50 no data available
Inhalation LC50 LC50 Inhalation - mouse - 1 h - 634 ppm
LC50 Inhalation - rat - 444 ppm Remarks: Lungs, Thorax, or Respiration:Other changes. Diarrhoea Kidney, Ureter, Bladder:Urine volume increased.
Dermal LD50
Other information on acute toxicity

Skin corrosion/irritation: no data available

Serious eye damage/eye irritation: no data available

Respiratory or skin sensitization: no data available

Germ cell mutagenicity: no data available

Carcinogenicity:
IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity: Reproductive toxicity - rat - Inhalation:

Effects on Newborn: Physical.
no data available

Teratogenicity: no data available

Specific target organ toxicity - single exposure (Globally Harmonized System):
no data available

Specific target organ toxicity - repeated exposure (Globally Harmonized System):
no data available

Aspiration hazard:

Potential health effects: Inhalation Toxic if inhaled. May cause respiratory tract irritation. Ingestion May be harmful if swallowed. Skin May be harmful if absorbed through skin. May cause skin irritation. Eyes May cause eye irritation.

Signs and Symptoms of Exposure: Hydrogen sulfide is strongly bound to methemoglobin in a manner similar to cyanide. Toxicologically, its reaction with enzymes in the blood stream inhibits cell respiration resulting in pulmonary paralysis, sudden collapse, and death. It is recognized by its characteristic odor of "rotten eggs". The detectable, minimum perceptible odor occurs at 0.13ppm, rapid olfactory fatigue can occur at high concentrations (>100 ppm). At concentrations of 20ppm hydrogen sulfide begins acting as an irritant on the mucous membranes of the eyes and respiratory tract and increases with concentration and exposure time. Eye irritation is characterized by irritation of the conjunctiva with photophobia to keratoconjunctivitis and vesiculat ion of the cornea epithelium. Prolonged exposure to moderate concentrations (250ppm) may cause pulmonary edema. At concentrations over 500ppm, drowsiness, dizziness, excitement, headache, unstable gait, and other systemic symptoms occur within a few minutes. Sudden loss of consciousness without premonition, anxiety, or sense of struggle are characteristic of acute exposure at concentrations above 700ppm. At concentrations of 1000-2000ppm hydrogen sulfide is rapidly absorbed through the lung into the blood. In this range a single inhalation may cause coma and may be rapidly fatal. Initially hyperpnea occurs, followed by rapid collapse and respiratory inhibition. At higher concentrations, hydrogen sulfide exerts an immediate paralyzing effect on the respiratory centers. When concentration reaches 5000ppm, imminent death almost always results., Exposure to and/or consumption of alcohol may increase toxic effects.

Synergistic effects: no data available

Additional Information:

RTECS: MX1225000

Carbon monoxide cas#:(630-08-0) [0.0001-0.0999%]

Information on toxicological effects

Acute toxicity:
Oral LD50 Inhalation LC50 LC50 Inhalation - rat - 4 h - 1807 ppm
Dermal LD50 no data available
Other information on acute toxicity

Skin corrosion/irritation: no data available

Serious eye damage/eye irritation: no data available

Respiratory or skin sensitization: no data available

Germ cell mutagenicity: no data available

Carcinogenicity:
IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by

ACGIH.
NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity: no data available

Teratogenicity: Known human reproductive toxicant

Specific target organ toxicity - single exposure (Globally Harmonized System):
no data available

Specific target organ toxicity - repeated exposure (Globally Harmonized System):
Inhalation - Causes damage to organs through prolonged or repeated exposure.

Aspiration hazard: no data available

Potential health effects: Inhalation May be harmful if inhaled. May cause respiratory tract irritation. Ingestion May be harmful if swallowed. Skin May be harmful if absorbed through skin. May cause skin irritation. Eyes May cause eye irritation.

Signs and Symptoms of Exposure: Blood disorders

Synergistic effects: no data available

Additional Information:

RTECS: FG3500000

Mice exposed to concentrations of carbon monoxide at 65 ppm and higher demonstrated dose-dependent effects on the fetus (i.e.: increased mortality and decreased weight) with no signs of maternal toxicity. Off spring of rats exposed to 150 ppm carbon monoxide had minor reductions in birth weight and persistent memory deficits which became more pronounced in adulthood. Fetal carboxyhemoglobin levels are generally 10 - 15% higher than maternal levels. Overexposure to carbon monoxide may also decrease the likelihood of successful pregnancy. In rats treated with carbon monoxide, the rate of successful pregnancy in the control group was 1005 whereas the rate of successful pregnancy in animals treated with 30 and 90 ppm carbon monoxide was 69% and 38% respectively.

Genetic changes were observed in mammalian cell assay systems at exposures of 1500 to 2500 ppm carbon monoxide for 10 minutes and degenerative changes to the brain were noted in rats chronically exposed to 26 ppm (30 mg/m_3).

Methane cas#:(74-82-8) [0.1-3.0%]

Information on toxicological effects

Acute toxicity:
Oral LD50 no data available
Inhalation LC50
Dermal LD50
Other information on acute toxicity

Skin corrosion/irritation: no data available

Serious eye damage/eye irritation: no data available

Respiratory or skin sensitization: no data available

Germ cell mutagenicity: no data available

Carcinogenicity:
IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity: no data available

Teratogenicity: no data available

Specific target organ toxicity - single exposure (Globally Harmonized System):
no data available

Specific target organ toxicity - repeated exposure (Globally Harmonized System):
no data available

Aspiration hazard: no data available

Potential health effects: Inhalation May be harmful if inhaled. May cause respiratory tract irritation. Ingestion May be harmful if swallowed. Skin May be harmful if absorbed through skin. May cause skin irritation. Eyes May cause eye irritation.

Signs and Symptoms of Exposure: To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Synergistic effects: no data available

Additional Information:

RTECS: PA1490000

Oxygen cas#:(7782-44-7) [10.0-23.5%]

Information on toxicological effects

Acute toxicity:
Oral LD50 no data available
Inhalation LC50
Dermal LD50
Other information on acute toxicity

Skin corrosion/irritation: no data available

Serious eye damage/eye irritation: no data available

Respiratory or skin sensitization: no data available

Germ cell mutagenicity: no data available

Carcinogenicity:
IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity: no data available

Teratogenicity: no data available

Specific target organ toxicity - single exposure (Globally Harmonized System):
no data available

Specific target organ toxicity - repeated exposure (Globally Harmonized System):
no data available

Aspiration hazard: no data available

Potential health effects: Inhalation May be harmful if inhaled. May cause respiratory tract irritation. Ingestion May be harmful if swallowed. Skin May be harmful if absorbed through skin. May cause skin irritation. Eyes May cause eye irritation.

Signs and Symptoms of Exposure: Nausea, Dizziness, Unconsciousness, May be harmful.

Synergistic effects: no data available

Additional Information:

RTECS: RS2060000

Nitrogen cas#:(7727-37-9) [73.3901-89.8994%]

Information on toxicological effects

Acute toxicity:
Oral LD50 no data available
Inhalation LC50
Dermal LD50
Other information on acute toxicity

Skin corrosion/irritation: no data available

Serious eye damage/eye irritation: no data available

Respiratory or skin sensitization: no data available

Germ cell mutagenicity: no data available

Carcinogenicity:
IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity: no data available

Teratogenicity: no data available

Specific target organ toxicity - single exposure (Globally Harmonized System):
no data available

Specific target organ toxicity - repeated exposure (Globally Harmonized System):
no data available

Aspiration hazard: no data available

Potential health effects: Inhalation May be harmful if inhaled. May cause respiratory tract irritation. Ingestion May be harmful if swallowed. Skin May be harmful if absorbed through skin. May cause skin irritation. Eyes May cause eye irritation.

Signs and Symptoms of Exposure: May be harmful., Nausea, Headache, Vomiting

Synergistic effects: no data available

Additional Information:

RTECS: QW9700000

12 ECOLOGICAL INFORMATION

Hydrogen sulfide cas#:(7783-06-4) [0.0005-0.01%]

Information on ecological effects

Toxicity:
Toxicity to fish LC50 - Pimephales promelas (fathead minnow) - 0.016 mg/l - 96.0 h.

Persistence and degradability: no data available

Bioaccumulative potential: no data available

Mobility in soil: no data available

PBT and vPvB assessment: no data available

Other adverse effects: An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Very toxic to aquatic life.

Carbon monoxide cas#:(630-08-0) [0.0001-0.0999%]

Information on ecological effects

Toxicity: no data available

Persistence and degradability: no data available

Bioaccumulative potential: no data available

Mobility in soil: no data available

PBT and vPvB assessment: no data available

Other adverse effects: no data available

Methane cas#:(74-82-8) [0.1-3.0%]

Information on ecological effects

Toxicity: no data available

Persistence and degradability: no data available

Bioaccumulative potential: no data available

Mobility in soil: no data available

PBT and vPvB assessment: no data available

Other adverse effects: no data available

Oxygen cas#:(7782-44-7) [10.0-23.5%]

Information on ecological effects

Toxicity: no data available

Persistence and degradability: no data available

Bioaccumulative potential: no data available

Mobility in soil: no data available

PBT and vPvB assessment: no data available

Other adverse effects: no data available

Nitrogen cas#:(7727-37-9) [73.3901-89.8994%]

Information on ecological effects

Toxicity: no data available

Persistence and degradability: no data available

Bioaccumulative potential: no data available

Mobility in soil: no data available

PBT and vPvB assessment: no data available

Other adverse effects: no data available

13 DISPOSAL CONSIDERATIONS

Dispose of in accordance with local regulations. Do not attempt to dispose of waste or unused quantities in returnable cylinders. Return in the shipping container, properly labeled, with any valve outlet plugs or caps secure and valve protection cap in place to NorLab for proper disposal. Non-refillable containers should be vented in a well-ventilated area then disposed of in compliance with local regulations, or returned to NorLab.

14 TRANSPORT INFORMATION

UN1956, Compressed gas, n.o.s., 2.2

Proper Shipping Name US:
UN 1956, Compressed Gas N.O.S., (Hydrogen Sulfide, Nitrogen), 2.2

Proper Shipping Name Canada:
UN1956, Compressed Gas, N.O.S., (Hydrogen Sulfide, Nitrogen), 2.2

15 REGULATORY INFORMATION

Component (CAS#) [%] - CODES

RQ(100LBS), Hydrogen sulfide (7783-06-4) [0.0005-0.01%] CERCLA, CSWHS, EHS302, HAP, MASS, NJEHS, NJHS, OSHAPSM, OSHAWAC, PA, SARA313, TOXICRCRA, TSCA, TXAIR, TXHWL

Carbon monoxide (630-08-0) [0.0001-0.0999%] MASS, NJEHS, OSHAWAC, PA, PROP65, TSCA, TXAIR

Methane (74-82-8) [0.1-3.0%] MASS, NJHS, PA, TSCA, TXAIR

Oxygen (7782-44-7) [10.0-23.5%] MASS, PA, TSCA

Nitrogen (7727-37-9) [73.3901-89.8994%] MASS, PA, TSCA

Regulatory CODE Descriptions

RQ = Reportable Quantity
CERCLA = Superfund clean up substance
CSWHS = Clean Water Act Hazardous substances
EHS302 = Extremely Hazardous Substance
HAP = Hazardous Air Pollutants
MASS = MA Massachusetts Hazardous Substances List
NJEHS = NJ Extraordinarily Hazardous Substances
NJHS = NJ Right-to-Know Hazardous Substances
OSHAPSM = OSHA Chemicals Requiring process safety management
OSHAWAC = OSHA Workplace Air Contaminants
PA = PA Right-To-Know List of Hazardous Substances
SARA313 = SARA 313 Title III Toxic Chemicals
TOXICRCRA = RCRA Toxic Hazardous Wastes (U-List)
TSCA = Toxic Substances Control Act
TXAIR = TX Air Contaminants with Health Effects Screening Level
TXHWL = TX Hazardous Waste List
PROP65 = CA Prop 65

16 OTHER INFORMATION

Disclaimer:
Although reasonable care has been taken in the preparation of this document, we extend no warranties and make no representations as to the accuracy or completeness of the information contained herein, and assume no responsibility regarding the suitability of this information for the user's intended purposes or for the consequences of its use. Each individual should make a determination as to the suitability of the information for their particular purpose(s).