5-100 PPM H2S, 1-300 PPM CO, 0.0001-0.75% Pentane, 2-23.5% O2 in N2

1 PRODUCT AND COMPANY IDENTIFICATION

Product Identifier:	**5-100 PPM H2S, 1-300 PPM CO, 0.0001-0.75% Pentane, 2-23.5% O2 in N2**
Synonyms:	**Quad Mix, Bump Gas, Calibration Gas Mixture**
Common Name:	**H2S Quad Mix (Pentane)**
SDS Number:	**NLB 2300**
Revision Date:	**3/2/2016**
Version:	**2**
CAS Number:	**Not Available - Gas Mixture**
Chemical Formula:	**H2S+C5H12+CO+O2+N2**
Product Use:	**Calibration of analyitical instrumentation**
Supplier Details:	**NorLab a division of Norco 898 W. Gowen Rd. Boise, ID 83705**
Contact:	**Quality Dept.**
Phone:	**208-336-1643**
Fax:	**208-433-6160**
Internet:	**www.norlab-gas.com**

For Transportation Emergency Contact CHEMTREC: 800-424-9300

2 HAZARDS IDENTIFICATION

Classification of Substance

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

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. Inhallation of high concentrations of Iso Pentane vapors may have a narcotic effect. Symptoms may include dizziness, headache and nusea.

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).

3 COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Ingredients

CAS#	%	Chemical Name
7783-06-4	0.0005-0.01%	Hydrogen sulfide
630-08-0	0.0001-0.03%	Carbon monoxide
109-66-0	0.0001-0.75%	Pentane
7782-44-7	2.0-23.5%	Oxygen
7727-37-9	73.9625-97.9993 %	Nitrogen

4 FIRST AID MEASURES

Inhalation: **PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE TO PRODUCT. RESCUE PERSONNEL SHOULD BE EQUIPED WITH SELF-CONTAINED BREATHING APPARATUS. Conscious persons should be assisted to an uncontaminated area and inhale fresh air. Quick removal from the contaminated area is most important. Unconscious persons should be moved to an uncontaminated area, given assisted (artificial) respiration and supplemental oxygen. The physician should be informed the patient has inhaled quantities of hydrogen sulfide.**

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 Temperature:	**Not Available**
Lower Explosive Limit:	**None**
Upper Explosive Limit:	**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.

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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. Post "NO SMOKING OR OPEN FLAMES" sign in the storage or use area.

5-100 PPM H2S, 1-300 PPM CO, 0.0001-0.75% Pentane, 2-23.5% O2 in N2

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 (7783-06-4) [0.0005-0.01%]
Carbon monoxide (630-08-0) [0.0001-0.03%]
Pentane (109-66-0) [0.0001-0.75%]
Oxygen (7782-44-7) [2.0-23.5%]
Nitrogen (7727-37-9) [73.9625-97.9993%]

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 (7783-06-4) [0.0005-0.01%]

Components with workplace control parameters

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

Carbon monoxide (630-08-0) [0.0001-0.03%]

Components with workplace control parameters

TWA	50 ppm	USA. Occupational Exposure Limits (OSHA) - Table Z- 1 Limits for Air Contaminants
	55 mg/m3	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 (see BEI section)		
TWA	35 ppm	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
	40 mg/m3	
TWA	35 ppm	USA. NIOSH Recommended Exposure Limits
	40 mg/m3	
C/REL	200 ppm	USA. NIOSH Recommended Exposure Limits
	229 mg/m3	

Pentane (109-66-0) [0.0001-0.75%]

Components with workplace control parameters

TWA	600 ppm	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
	1,800 mg/m3	
STEL	750 ppm	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
	2,250 mg/m3	
TWA	1,000 ppm	USA. Occupational Exposure Limits (OSHA) - Table Z- 1 Limits for Air Contaminants
	2,950 mg/m3	The value in mg/m3 is approximate.
TWA	600 ppm	USA. ACGIH Threshold Limit Values (TLV)
TWA	600 ppm	USA. ACGIH Threshold Limit Values (TLV)
Peripheral neuropathy		
TWA	120 ppm	USA. NIOSH Recommended Exposure Limits
	350 mg/m3	
C/REL	610 ppm	USA. NIOSH Recommended Exposure Limits - 15 minute ceiling value
	1,800 mg/m3	

Oxygen (7782-44-7) [2.0-23.5%] : no data available

Nitrogen (7727-37-9) [73.9625-97.9993%] : no data available

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 or Melting Point:	**Not Determined**
Flammability:	**Not Flammable**
Flash Point:	**Not Determined**
Partition Coefficient:	**Not Determined**
Vapor Pressure:	**Not Determined**
Vapor Density:	**Not Determined**
Potentia Hydrogenii:	**Not Determined**
Evaporation Rate:	**Not Determined**
Bulk Density:	**Not Determined**
Upper Flammability Limit and Lower Flammability Limit:	**None**

10 STABILITY AND REACTIVITY

Chemical Stability:	**Product is stable under normal conditions.**
Conditions to Avoldentification:	**Avoid open flames and high temperatures.**
Materials to Avoldentification:	**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 (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: no data available
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 (630-08-0) [0.0001-0.03%]

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

Pentane (109-66-0) [0.0001-0.75%]

Information on toxicological effects
Acute toxicity:
Oral LD50 LD50 Oral - mouse - 5,000 mg/kg
Inhalation LC50 LC50 Inhalation - rat - 4 h - 364,000 mg/m3
Dermal LD50 LD50 Dermal - rabbit - 3,000 mg/kg
Other information on acute toxicity no data available
Skin corrosion/irritation: Skin - rabbit - No skin irritation - OECD Test Guideline 404
Serious eye damage/eye irritation: no data available
Respiratory or skin sensitization: no data available
Germ cell mutagenicity: Genotoxicity in vitro - Ames test - S. typhimurium - negative
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): May cause drowsiness or dizziness.
Specific target organ toxicity - repeated exposure (Globally Harmonized System): no data available
Aspiration hazard: May be fatal if swallowed and enters airways.
Potential health effects: Inhalation May be harmful if inhaled. May cause respiratory tract irritation. Vapours may cause drowsiness and dizziness. Ingestion May be harmful if swallowed. Aspiration hazard if swallowed - can enter lungs and cause damage. Skin May be harmful if absorbed through skin. May cause skin irritation. Eyes May cause eye irritation.
Signs and Symptoms of Exposure: Contact with eyes can cause:, Redness, Blurred vision, Provokes tears., Prolonged or repeated contact with skin may cause:, defatting, Dermatitis, Central nervous system depression, Damage to the lungs.
Synergistic effects: no data available
Additional Information: RTECS: RZ9450000

Oxygen (7782-44-7) [2.0-23.5%]

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 (7727-37-9) [73.9625-97.9993%]

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 (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 (630-08-0) [0.0001-0.03%]
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

Pentane (109-66-0) [0.0001-0.75%]
Information on ecological effects
Toxicity:
Toxicity to daphnia EC50 - Daphnia magna (Water flea) - 9.74 mg/l - 48 h.
and other aquatic invertebrates
Persistence and degradability: Biodegradability Biotic/Aerobic Result: 70 % - Readily biodegradable.
Bioaccumulative potential: no data available
Mobility in soil: no data available
PBT and vPvB assessment: no data available
Other adverse effects: Toxic to aquatic life.
An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Avoid release to the environment. Do not empty into drains.

Oxygen (7782-44-7) [2.0-23.5%]
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 (7727-37-9) [73.9625-97.9993%]

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.

5-100 PPM H2S, 1-300 PPM CO, 0.0001-0.75% Pentane, 2-23.5% O2 in N2

14 TRANSPORT INFORMATION

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/PERC) / CODES
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*Nitrogen (7727379 73.9625-97.9993%) MASS, NJHS, PA, TSCA
*Oxygen (7782447 2.0-23.5%) MASS, NJHS, PA, SARA311/312, TSCA
*Pentane (109660 0.0001-0.75%) MASS, NJHS, OSHAWAC, PA, SARA311/312, TSCA, TXAIR
*Carbon monoxide (630080 0.0001-0.03%) MASS, NJEHS, OSHAWAC, PA, PROP65, SARA311/312, TSCA, TXAIR
*Hydrogen sulfide (7783064 0.0005-0.0100%) CERCLA, CSWHS, EHS302, HAP, MASS, NJEHS, NJHS, OSHAPSM, OSHAWAC, PA, SARA311/312, SARA313, TOXICRCRA, TSCA, TXAIR, TXHWL

This product contains hydrogen sulfide (CAS No.: 7783-06-4) which is listed under SARA 313 with a de minimus concentration of 1%; under SARA 304, CERCLA with a reportable quantity of 100 pounds, and is a SARA 302, Extremely Hazardous Substance with a Threshold Planning Quantity of 500 pounds.

WARNING This product can expose you to chemicals including Carbon monoxide, which is known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

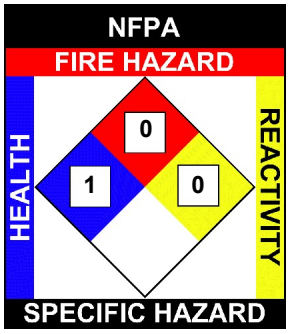
REGULATORY KEY DESCRIPTIONS

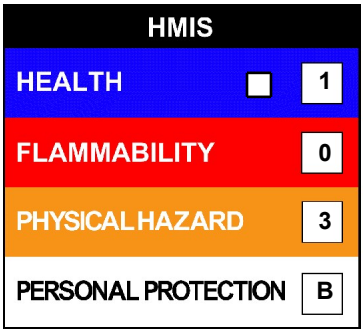
CERCLA = Superfund clean up substance
CSwHS = Clean water Act Hazardous substances
EHS302 = Extremely Hazardous Substance
HAP = Hazardous Air Pollutants
MASS = MA Massachusetts Hazardous Substances List
NJEHS = NJ Extraordinarily Hazardous Substances
NJHS = NJ Right-to-Know Hazardous Substances
OSHAPSM = OSHA Chemicals Requiring process safety management
OSHAwAC = OSHA workplace Air Contaminants
PA = PA Right-To-Know List of Hazardous Substances
PROP65 = CA Prop 65
SARA311/312 = SARA 311/312 Toxic Chemicals
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

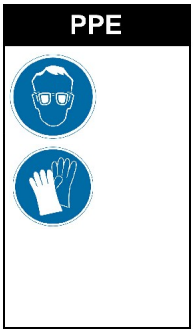
5-100 PPM H2S, 1-300 PPM CO, 0.0001-0.75% Pentane, 2-23.5% O2 in N2

16 OTHER INFORMATION

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







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