15% to 50% Methane, 10% to 40% Carbon Dioxide in Nitrogen

SDS Number: NLB 3240 Revision Date: 10/13/2017

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:	**15% to 50% Methane, 10% to 40% Carbon Dioxide in Nitrogen**
Revision Date:	**10/13/2017**
Version:	**2**
SDS Number:	**NLB 3240**
Common Name:	**Methane and Carbon Dioxide in Nitrogen**
CAS Number:	**Not Available - Gas Mixture**
EPA Number:	**Not Availble**
RCRA Number:	**Not Applicable**
Chemical Family:	**Gas Mixture**
Chemical Formula:	**CH4 +CO2 in N2**
Synonyms:	**Calibration Gas**
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
Physical, Flammable Gases, 1

GHS Label Elements, Including Precautionary Statements

GHS Signal Word: DANGER

GHS Hazard Pictograms:

GHS Hazard Statements:

H280 - Contains gas under pressure; may explode if heated
H220 - Extremely flammable gas
CGA-HG04 - MAY FORM EXPLOSIVE MIXTURES WITH AIR.
OSHA-H01 - MAY DISPLACE OXYGEN AND CAUSE RAPID SUFFOCATION.

GHS Precautionary Statements:

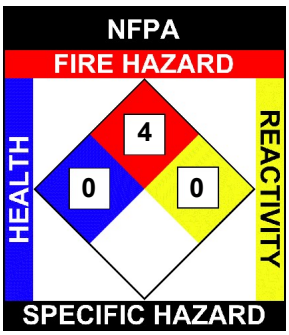
P202 - Do not handle until all safety precautions have been read and understood.
P210 - Keep away from heat/sparks/open flames/hot surfaces. No smoking
P261 - Avoid breathing dust/fume/gas/mist/vapors/spray.
P271 - Use only outdoors or in a well-ventilated area.

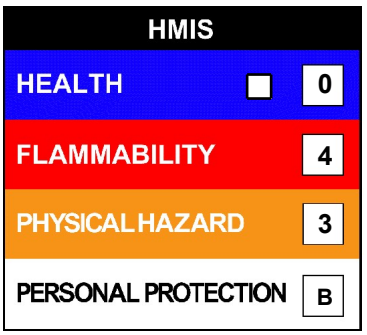
P281 - Use personal protective equipment as required.
P304+340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P314 - Get Medical advice/attention if you feel unwell.
P377 - Leaking gas fire: Do not extinguish unless leak can be stopped safely.
P381 - Eliminate all ignition sources if safe to do so.
P403+233 - Store in a well ventilated place. Keep container tightly closed.
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-PG12 - Do not open valve until connected to equipment prepared for use.
CGA-PG02 - Protect from sunlight when ambient temperature exceeds 52 °C (125 °F).

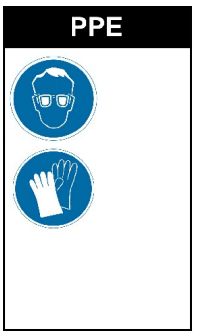
Hazards not Otherwise Classified (HNOC) or not Covered by GHS

Route of Entry:	**Skin; Eyes; Inhalation;**
Target Organs:	**Respiratory system;**
Inhalation:	**Methane, Carbon Dioxide and Nitrogen are simple asphyxiants. Oxygen levels should be maintained at greater than 18 molar percent at normal atmospheric pressure which is equivalent to a partial pressure of 135 mm Hg. Exposure to high concentrations of this gas mixture may exclude an adequate supply of oxygen.** **Effects of oxygen deficiency resulting from simple asphyxiants may include: rapid breathing, diminished mental alertness, impaired muscular coordination, faulty judgment, depression of all sensations, emotional instability, and fatigue. As asphyxiation progresses, nausea, vomiting, prostration, and loss of consciousness may result, eventually leading to convulsions, coma and death.** **Oxygen deficiency during pregnancy has produced developmental abnormalities in humans and experimental animals.** **Depending on concentration and duration of exposure, carbon dioxide may cause increased respiration, headache, mild narcotic effects, increased blood pressure and pulse, and asphyxiation. Symptoms of overexposure to carbon dioxide become more apparent when atmospheric oxygen is decreased to 15% to 17%. Chronic harmful effects are not known from repeated inhalation of concentrations below the PEL/TLV.** **Inhalation of high methane concentrations may cause central nervous system depression with dizziness, disorientation, in-coordination, nausea, and narcosis. High concentrations may also cause cardiac sensitization resulting in irregular heartbeat and may make the individual more susceptible to cardiac effects of substances such as epinephrine and adrenaline.**
Skin Contact:	**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:	**Contact with rapidly expanding gas near the point of release may cause frostbite.**
Ingestion:	**Not anticipated. Product is a gas at normal conditions.**

NFPA: Health = 0, Fire = 4, Reactivity = 0, Specific Hazard = n/a
HMIS III: Health = 0, Fire = 4, Physical Hazard = 3
HMIS PPE: B - Safety Glasses, Gloves







3 COMPOSITION/INFORMATION OF INGREDIENTS

Ingredients:

Cas#	%	Chemical Name
74-82-8	15.0-50.0%	Methane
124-38-9	10.0-40.0%	Carbon dioxide
7727-37-9	10.0-75.0%	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. Further treatment should be symptomatic and supportive.

Skin Contact: None required for gas. For frostbite, immerse skin in lukewarm water. DO NOT USE HOT WATER. Obtain medical attention.

Eye Contact: None Required for gas. If frostbite is suspected, flush eyes with cool water for 15 minutes and obtain immediate medical attention.

Ingestion: Not a direct hazard.

5 FIRE FIGHTING MEASURES

Flammability:	Flammable Gas
Flash Point:	Not Determined
Flash Point Method:	Not Applicable
Burning Rate:	Not Determined
Autoignition Temp:	Not Determined
LEL:	5.0% (Methane)
UEL:	15.0% (Methane)

Flammable gas. Cylinder may rupture violently from pressure when involved in a fire situation. Stop flow of gas before extinguishing fire if safe to do so. Do not extinguish the fire until the supply is shut off as otherwise an explosive re-ignition may occur. If the fire is extinguished and the flow of gas continues, use increased ventilation to prevent build-up of explosive atmosphere. Use non-sparking tools to close container valves. Keep containers cool with water spray. Continue to cool fire-exposed cylinders until well after flames are extinguished. Be cautious of a Boiling Liquid Evaporating Vapor Explosion, BLEVE, if flame is impinging on surrounding containers. Direct 500 GPM water stream onto containers above liquid level with remote monitors. Limit the number of personnel in proximity of fire and evacuate surrounding areas in all directions. Continue to cool fire-exposed cylinders until well after flames are extinguished.

Advice for Firefighters:
If possible, stop the flow of gas supply. Inerting the atmosphere to reduce oxygen levels may extinguish flame, allowing capping of leaking container. Do not attempt this unless specifically trained. Reduce the rate of flow and inject an inert gas, if possible, before completely stopping the flow to prevent flashback. Do not extinguish the fire until the supply is shut off as otherwise and explosive re-ignition may occur. If the fire is extinguished and the flow of gas continues, use increased ventilation to prevent build-up of explosive atmosphere. Use non-sparking tools to close container valves. Use water spray to cool adjacent cylinders and areas. Be cautions of a Boiling iiquid Evaporating Vapor Explosion BiEVE, if flame is impinging on surrounding containers. Direct 500 GPM water stream onto containers above liquid level with remote monitors. iimit the number of personnel in proximity of fire and evacuate surrounding areas in all directions. Fire fighters 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

Personal Precautions, Protective Equipment and Emergency Procedures:
Immediately extinguish all ignition sources. No smoking, flames, flares or sparks in hazard area. Evacuate all personnel from affected area. Use appropriate protective equipment. If leak is in user's equipment, be certain to purge piping with inert gas prior to attempting repairs. If leak is in container or valve, contact the appropriate emergency telephone number listed in Section 1 or call your closest Norco/Noriab location.

Environmental Precautions:
Prevent further release (leakage/spillage) if safe to do so.

Methods and Materials for Containments and Cleaning Up:
Contact the appropriate emergency telephone number listed in Section 1 or call your closest Norco/Norlab location. Ensure adequate ventilation.

7 HANDLING AND STORAGE

Handling Precautions:

Separate flammable mixture from oxygen and other oxidizers by a minimum distance of 20 ft. or by a 5ft. high barrier with a minimum fire resistance rating of a half hour.

Use only in well-ventilated areas. Valve protection caps must remain in place unless container 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 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 back flow into the cylinder. Do not insert any object (i.e.: screwdriver) into valve cap openings as this can damage the valve causing leakage.

This mixture is a Flammable Gas! Store and use only in appropriate locations as specified by the NEC (National Electrical Code). Containers and all piping and associated material handling equipment must be Grounded /Bonded according to NEC during use to prevent the accumulation of static electricity which can act as an ignition source.

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.

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 iimits in Air below TLV & PEL limits. Maintain atmospheric Oxygen content at or above 19.5%**

Personal Protective Equipment:

Methane (74-82-8) [15.0-50.0%]
Carbon dioxide (124-38-9) [10.0-40.0%]
Nitrogen (7727-37-9) [10.0-75.0%]

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: Fluorinated rubber Minimum layer thickness: 0.7 mm Break through time: 480 min Material tested:Vitoject (KCL 890 / Aldrich Z677698, Size M)

Splash protection: Material: Nitrile rubber Minimum layer thickness: 0.4 mm Break through time: 60 min Material tested:Camatril (KCL 730 / Aldrich Z677442, 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: Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin and body protection: impervious 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: General industrial hygiene practice.

Methane (74-82-8) [15.0-50.0%]

Components with workplace control parameters
TWA 1,000 ppm USA. ACGIH Threshold Limit Values (TLV)
Central Nervous System impairment Cardiac sensitization

Carbon dioxide (124-38-9) [10.0-40.0%]

Components with workplace control parameters
TWA 5,000 ppm USA. ACGIH Threshold Limit Values (TLV)
Asphyxia

STEL 30,000 ppm USA. ACGIH Threshold Limit Values (TLV)
Asphyxia

TWA 10,000 ppm USA. OSHA - TABLE Z-1 Limits for Air Contaminants -
18,000 mg/m3 1910.1000
Exposures under 10,000 ppm to be cited as de minimus.

STEL 30,000 ppm USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000

54,000 mg/m3

TWA 5,000 ppm USA. Occupational Exposure Limits (OSHA) - Table Z- 1 Limits for Air Contaminants
9,000 mg/m3
The value in mg/m3 is approximate.

TWA 5,000 ppm USA. NIOSH Recommended Exposure Limits
9,000 mg/m3
Normal constituent of air (about 300 ppm).

STEL 30,000 ppm USA. NIOSH Recommended Exposure Limits
54,000 mg/m3
Normal constituent of air (about 300 ppm).

Nitrogen (7727-37-9) [10.0-75.0%] : no data available

9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	**Colorless Gas**		
Physical State:	**Gas**	**Odor:**	**Odorless**
Odor Threshold:	**Not Availble**	**Molecular Formula:**	**CH4 and CO2 in Nitrogen**
Particle Size:	**Not Determined**	**Solubility:**	**Slightly Soluble**
Spec Grav./Density:	**Not Determined**	**Softening Point:**	**Not Determined**
Viscosity:	**Not Determined**	**Percent Volatile:**	**100%**
Sat. Vap. Conc.:	**Not Determined**	**Heat Value:**	**Not Determined**
Boiling Point:	**Not Determined**	**Freezing/Melting Pt.:**	**Not Determined**
Flammability:	**Flammable Gas**	**Flash Point:**	**Not Determined**
Vapor Pressure:	**Not Determined**	**Octanol:**	**Not Determined**
Evap. Rate:	**Not Determined**	**Vapor Density:**	**Not Determined**
		Bulk Density:	**Not Determined**
		Auto-Ignition Temp:	**Not Determined**
		UFL/LFL:	**5.0% / 15.0% (Methane)**

10 STABILITY AND REACTIVITY

Chemical Stability:	**Product is stable under normal conditions.**
Conditions to Avoid:	**Oxidizers. Avoid heat, sparks, and flame.**
Materials to Avoid:	**Strong Oxidizing Agents.**
Hazardous Decomposition:	**Combustion will produce carbon dioxide and, possibly toxic chemicals such as carbon monoxide.**
Hazardous Polymerization:	**Will not occur.**

11 TOXICOLOGICAL INFORMATION

Methane (74-82-8) [15.0-50.0%]

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

Carbon dioxide (124-38-9) [10.0-40.0%]

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 cause severe frostbite. May be harmful if absorbed through skin. May cause skin
Eyes May cause eye irritation. Aggravated Acts as a simple asphyxiant by displacing air. , Medical Condition
Signs and Symptoms of Exposure: Nausea, Dizziness, Headache, Low to medium concentrations of carbon dioxide can:, affect regulation of blood circulation, affect the acidity of body fluids, respiratory difficulties, At high concentrations:, Breathing difficulties, Increased pulse rate, change in body acidity, Very high concentrations can cause:, Unconsciousness, death
Synergistic effects: no data available
Additional Information: RTECS: FF6400000

Nitrogen (7727-37-9) [10.0-75.0%]

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: May be harmful., Nausea, Headache, Vomiting
Synergistic effects: no data available
Additional Information: RTECS: QW9700000

12 ECOLOGICAL INFORMATION

Methane (74-82-8) [15.0-50.0%]

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

Carbon dioxide (124-38-9) [10.0-40.0%]

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

Nitrogen (7727-37-9) [10.0-75.0%]

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

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

Proper Shipping Name US:
UN 1954, Compressed Gas, Flammable, N.O.S., (Methane, Nitrogen), 2.1

Proper Shipping Name Canada:
UN 1954, Compressed Gas, Flammable, N.O.S., (Methane, Nitrogen), 2.1

15 REGULATORY INFORMATION

Component (CAS#) [%] - CODES

Methane (74-82-8) [15.0-50.0%] MASS, NJHS, PA, TSCA, TXAIR

Carbon dioxide (124-38-9) [10.0-40.0%] MASS, OSHAWAC, PA, TSCA, TXAIR

Nitrogen (7727-37-9) [10.0-75.0%] MASS, PA, TSCA

```
Regulatory CODE Descriptions
-----------------------------------------------------------------
MASS = MA Massachusetts Hazardous Substances List
NJHS = NJ Right-to-Know Hazardous Substances
PA = PA Right-To-Know List of Hazardous Substances
TSCA = Toxic Substances Control Act
TXAIR = TX Air Contaminants with Health Effects Screening Level
OSHAWAC = OSHA Workplace Air Contaminants
```

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).