



Emergency Contact: Chemtrec (800) 424-9300  
Or Norco (208) 336-1643

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## Pentane 0.0001% to 1.5%, Oxygen 2% to 23%, in Nitrogen

### MATERIAL SAFETY DATA SHEET

#### Identification

Product Name: Pentane 0.0001% to 1.5%, Oxygen 2% to 23% in Nitrogen  
CAS Number: N/A  
Chemical Family: Gas Mixture  
Chemical Formula: C<sub>5</sub>H<sub>12</sub>, O<sub>2</sub>, in N<sub>2</sub>  
Synonyms: Pentane, Oxygen in Nitrogen Mixture, Pentane LEL Mix  
MSDS Identification Code/Number: NL2320  
Prepared By: Quality Dept.

Revision Date: 08/18/11  
Last Review Date: 08/18/11

#### Composition, Information on Ingredients

##### Exposure Limits<sup>1</sup>:

INGREDIENT	% VOLUME	PEL-OSHA <sup>2</sup>	TLV-ACGIH <sup>3</sup>	LD <sub>50</sub> or LC <sub>50</sub> Route/Species
Pentane Formula: C <sub>5</sub> H <sub>12</sub> CAS Number: 109-66-0 RTECS#: RZ9450000	0.0001% to 1.5%	TWA 1000 PPM	TWA 600 PPM	LC <sub>50</sub> Rat, Inhalation 4 hours 12.33%
Oxygen Formula: O <sub>2</sub> CAS Number: 7782-44-7 RTECS# RS206000	2.0% to 23.0%	None Established	Non Established	Not Available
Nitrogen Formula: N <sub>2</sub> CAS Number: 7727-37-9 RTECS#: QW9700000	76.5% to 98%	Simple Asphyxiant	Simple Asphyxiant	Not Available

<sup>1</sup> Refer to individual state or provincial regulations, as applicable, for limits that may be more stringent than those listed here.

<sup>2</sup> As stated in 29 CFR 1910, Subpart Z (revised July 1, 1993).

<sup>3</sup> As stated in the ACGIH 2007 Threshold Limit Values for Chemical Substances and Physical Agents.

OSHA Regulatory Status: This material is classified as hazardous under OSHA regulations.

IDLH: Pentane 1500 PPM (10% LEL)

#### Hazards Identification

##### Emergency Overview:

Colorless, non-flammable gas with a mild gasoline type odor. High concentrations may have a narcotic effect. Repeated or prolonged skin contact may cause irritation or dermatitis. Use only with adequate ventilation. Contents under pressure. Use and store below 125°F (52°C).

##### Route of Entry:

Skin Contact No	Skin Absorption No	Eye Contact Yes	Inhalation Yes	Ingestion No
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<b>Hazards Identification Continued</b>
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**Health Effects:**

Exposure Limits Yes	Irritant Yes	Sensitization No
Teratogen No	Reproductive Hazard No	Mutagen No
Synergistic Effects None reported.		

**Carcinogenicity:** NTP: No IARC: No OSHA: No

**Eye Effects:**

May cause minor irritation. Contact with rapidly expanding gas near the point of release may cause frostbite.

**Skin Effects:**

Pentane is a primary skin irritant and fat solvent. Prolonged or repeated contact may tend to dry and defat skin causing irritation and dermatitis. Contact with rapidly expanding gas near the point of release may cause frostbite with redness, skin color change to gray or white, and blistering.

**Ingestion Effects:**

Ingestion is unlikely. Product is a gas at room temperature.

**Inhalation Effects:**

High concentrations of vapors may have a narcotic effect. Symptoms may include dizziness, headache and nausea.

**Medical Conditions Aggravated by Exposure:**

None Known

**NFPA Hazard Codes**

Health: 1  
Flammability: 0  
Instability: 0

**HMIS Hazard Codes**

Health: 1  
Flammability: 0  
Physical Hazard: 3

**Ratings System**

0 = No Hazard  
1 = Slight hazard  
2 = Moderate Hazard  
3 = Serious Hazard  
4 = Severe Hazard

Hazard ratings were assigned in accordance with Compressed Gas Association (CGA) guidelines as published in CGA Pamphlet P-19-2009, *CGA Recommended Hazard Ratings for Compressed Gases, 3<sup>rd</sup> Edition*.

<b>First Aid Measures</b>
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**Eye:**

Flush eyes with water for 15 minutes. If irritation persists, seek medical attention. If frostbite is suspected, flush eyes with cool water for 15 minutes and obtain immediate medical attention.

**Skin:**

Rinse skin thoroughly with water. If irritation persists, seek medical attention. For frostbite, immerse skin in lukewarm water. DO NOT USE HOT WATER. Obtain medical attention.

**Ingestion:**

None required. Product is a gas at normal temperatures and conditions.

**Inhalation:**

PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE. RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS. Victims 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, and if breathing has stopped, administer artificial resuscitation and supplemental oxygen. Further treatment should be symptomatic and supportive.

## Fire Fighting Measures

Conditions of Flammability: Not flammable		
Flash point: None	Method: Not Applicable	Autoignition Temperature: None
LEL (%): None	UEL (%): None	
Hazardous combustion products: None		
Sensitivity to mechanical shock: None		
Sensitivity to static discharge: None		

### Fire and Explosion Hazards:

Nonflammable Contains pentane in concentrations below the LEL of 1.5%. Cylinders may vent rapidly or rupture violently from pressure when involved in a fire situation. Product may contain sufficient oxygen to support combustion.

### Extinguishing Media:

Use as appropriate for surrounding materials.

### Fire Fighting Instructions:

If possible, stop the flow of gas supply. Use water spray to cool adjacent cylinders and areas. Fire fighters should wear a full-facepiece NIOSH/MSHA approved self-contained breathing apparatus (SCBA) operated in positive pressure mode and full turnout gear.

## Accidental Release Measures

Evacuate all personnel from affected area. Use appropriate protective equipment. 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 or container valve, contact the appropriate emergency telephone number listed in Section 1 or call your closest Norco/NorLab location.

## Handling and Storage

Gas mixture is non-corrosive and may be used with any common structural material.

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.

Protect cylinders from physical damage. Store in a cool, dry, well ventilated area of non-combustible construction away from heavy traffic areas and emergency exits. Do not allow the temperature where cylinders are stored to exceed 125°F (52°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.

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 from 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.

## Exposure Controls, Personal Protection

### Engineering Controls:

Local exhaust used in combination with general ventilation as necessary to maintain air contaminants at or below acceptable exposure guidelines

### Eye/Face Protection:

Safety goggles or glasses as appropriate for the job.

### Skin Protection:

Protective gloves of nitrile rubber or polyvinyl alcohol.

## Exposure Controls, Personal Protection Continued

**Respiratory Protection:**

Positive pressure air line with full-face mask and escape bottle or self-contained breathing apparatus should be available for emergency use.

**Other/General Protection:**

Safety shoes

## Physical and Chemical Properties

PARAMETER	VALUE	UNITS
Physical state (gas, liquid, solid)	: Gas	
Vapor pressure	: Not Available	
Vapor density (Air = 1)	: ~ 1	
Evaporation point	: Not Available	
Boiling point	: Not Available	°F
	: Not Available	°C
Freezing point	: Not Available	°F
	: Not Available	°C
pH	: Not Available	
Specific gravity	: Not Available	
Oil/water partition coefficient	: Not Available	
Solubility (H <sub>2</sub> O)	: Slightly Soluble	(as pentane)
Odor threshold	: 300 – 500 PPM	(as pentane)
Odor and appearance	: Colorless gas with a slight gasoline type odor.	

## Stability and Reactivity

**Stability:**

Stable

**Incompatible Materials:**

None

**Hazardous Polymerization:**

Does not occur

## Toxicological Information

**Inhalation:**

Ten minute exposures to pentane concentrations of 5,000 PPM (0.5%) produced slight dizziness within a few minutes.

**Skin and Eye:**

Pentane is a mucous membrane irritant in animals. Ten-minute exposure in humans to 5,000 PPM (0.5%) pentane did not produce noticeable eye, nose or respiratory tract irritation. Undiluted pentane applied to human skin for 1 hour and 5 hours cause immediate irritation (hyperemia, erythema, pigmentation and swelling) with blisters after 5 hours. Mild symptoms continued for up to 96 hours after exposure, but no permanent scarring was observed.

**Chronic:**

Exposures to pentane alone in animals has not caused neurologic damage. It is possible that pentane in solvent mixtures may potentiate hexacarbon neuropathy in humans.

## Ecological Information

Product does not contain Class I or Class II ozone depleting substances. Not toxic. Will not bioconcentrate.

<b>Disposal Considerations</b>
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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.

<b>Transportation Information</b>
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Parameter	United States DOT	Canada TDG
<b>Proper Shipping Name:</b>	Compressed Gas, N.O.S. (Pentane, Nitrogen)	Compressed Gas N.O.S.
<b>Hazard Class:</b>	2.2	2.2
<b>Identification Number:</b>	UN1956	UN1956
<b>Shipping Label:</b>	Non-flammable Gas	Non-flammable Gas

<b>Regulatory Information</b>
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**SARA Title III Notifications and Information:**

Pentane is listed under the accident prevention provisions of section 112(r) of the Clean Air Act (CAA) with a threshold quantity (TQ) of 10,000 pounds.

**SARA Title III – Hazard Classes:**

Pentane is listed under the accident prevention provisions of section 112(r) of the Clean Air Act (CAA) with a threshold quantity (TQ) of 10,000 pounds.

**SARA Title III- Section 313 Supplier Notification:**

Pentane is listed under the accident prevention provisions of section 112(r) of the Clean Air Act (CAA) with a threshold quantity (TQ) of 10,000 pounds.

**California Proposition 65:**

This product does not contain ingredient(s) known to the State of California to cause cancer or reproductive toxicity.

<b>Other Information</b>
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Compressed gas cylinders must not be refilled without the express written permission of the owner. Shipment of a compressed gas cylinder which has not been filled by the owner or with his/her (written) consent is a violation of transportation regulations.

**Disclaimer of expressed and implied warranties:**

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