AIR LIQUIDE

Material Safety Data Sheet

Prepared according to US OSHA, CMA, ANSI and Canadian WHMIS Standards.

1. Product and company identification

NON-FLAMMABLE GAS MIXTURE

Contains: Hexane (< 1.1%) Balance Air; Methane (< 5.0%) Balance Air; Propylene (< 2%) Balance Air; Toluene (< 1.2%) Balance Air, Ethane (< 3%) Balance Air, Hydrogen (< 4.1%) Balance Air, Propane (< 2.3%) Balance Air, Pentane (< 1.5%) Balance Air, Butane (< 1.8%) Balance Air

Chemical family Not available.

Chemical formula Not applicable.

MSDS no. 30033

Product use General analytical/synthetic chemical uses.

AIR LIQUIDE

Manufactured/supplied

Address

2700 Post Oak Drive
Houston, TX 77056-8229

Emergency telephone number CHEMTREC: 1-800-424-9300

Telephone no.

GENERAL MSDS INFORMATION 1-(713)-896-2896
Fax on Demand 1-800/231-1366

2. Hazards identification

EMERGENCY OVERVIEW: WARNING!

HIGH PRESSURE GAS. CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION. MAY BE HARMFUL IF INHALED. CONTAINS MATERIAL THAT CAN CAUSE TARGET ORGAN DAMAGE. CONTAINS MATERIAL WHICH MAY CAUSE HERITABLE GENETIC EFFECTS, BASED ON ANIMAL DATA. GAS REDUCES OXYGEN AVAILABLE FOR BREATHING.

Keep away from heat (<52°C/125°F). Extremely hazardous gas under pressure. Use only with adequate ventilation. Avoid exposure during pregnancy.

Over-exposure signs/symptoms

Inhalation Adverse symptoms may include the following:
respiratory tract irritation
coughing

2. Hazards identification

Ingestion
No specific data.

Skin
Adverse symptoms may include the following:
irritation
redness

Eyes
Adverse symptoms may include the following:
pain or irritation
watering
redness

Inhalation

Inhalation of this product may cause dizziness, an irregular heartbeat, narcosis, nausea or asphyxiation.

Potential health effects

Acute
Gas reduces oxygen available for breathing. Prompt medical attention is mandatory in all cases of overexposure to this gas. Rescue personnel should wear a self-contained breathing apparatus and be aware of extreme fire and explosion hazard.

Chronic
Carcinogenic effects:
Classified None. by NIOSH, Classified A4 by ACGIH, 3 by IARC [Propylene].

Classified A4 by ACGIH, 3 by IARC [Toluene].
Mutagenic effects: Mutagenic in mammalian somatic cells, based on *in vivo* studies. [Propylene].
Teratogenic effects: Not available.

Target organs
Contains material which causes damage to the following organs: kidneys, the nervous system, liver, upper respiratory tract, skin, central nervous system (CNS), eye, lens or cornea. [Propylene]

(*) See Abbreviations (section 16).

3. Composition and information on ingredients

Chemical name	CAS #	mole %	Occupational exposure limits	IDLH
Air containing:		Balance.		
Nitrogen	7727-37-9	79	Simple asphyxiant.	NE
Oxygen	7782-44-7	21	Not applicable.	NE
Methane	74-82-8	< 5	**ACGIH TLV (United States, 1/2006).** TWA: 1000 ppm 8 hour(s).	NE
Hydrogen	1333-74-0	< 4.1	Simple asphyxiant.	NE
Ethane	74-84-0	< 3	**ACGIH TLV (United States, 1/2006).** TWA: 1000 ppm 8 hour(s).	NE
Propane	74-98-6	< 2.3	**ACGIH TLV (United States, 1/2006).** TWA: 1000 ppm 8 hour(s). **NIOSH REL (United States, 12/2001).** TWA: 1800 mg/m³ 10 hour(s). TWA: 1000 ppm 10 hour(s). **OSHA PEL (United States, 11/2006).** TWA: 1800 mg/m³ 8 hour(s). TWA: 1000 ppm 8 hour(s).	2100 ppm
Propylene	115-07-1	< 2	**ACGIH TLV (United States, 1/2006).** TWA: 500 ppm 8 hour(s).	NE
Butane	106-97-8	< 1.8	**ACGIH TLV (United States, 1/2006).** TWA: 1000 ppm 8 hour(s). **NIOSH REL (United States, 12/2001).** TWA: 1900 mg/m³ 10 hour(s). TWA: 800 ppm 10 hour(s). **OSHA PEL 1989 (United States, 3/1989).** TWA: 1900 mg/m³ 8 hour(s). TWA: 800 ppm 8 hour(s).	NE

3. Composition and information on ingredients

Pentane	109-66-0	< 1.5	**ACGIH TLV (United States, 1/2006).** TWA: 600 ppm 8 hour(s). **NIOSH REL (United States, 12/2001).** CEIL: 1800 mg/m³ 15 minute(s). CEIL: 610 ppm 15 minute(s). TWA: 350 mg/m³ 10 hour(s). TWA: 120 ppm 10 hour(s). **OSHA PEL (United States, 11/2006).** TWA: 2950 mg/m³ 8 hour(s). TWA: 1000 ppm 8 hour(s).	1500 ppm
Toluene	108-88-3	< 1.2	**ACGIH TLV (United States, 1/2006).** **Skin** TWA: 188 mg/m³ 8 hour(s). TWA: 50 ppm 8 hour(s). **NIOSH REL (United States, 12/2001).** STEL: 560 mg/m³ 15 minute(s). STEL: 150 ppm 15 minute(s). TWA: 375 mg/m³ 10 hour(s). TWA: 100 ppm 10 hour(s). **OSHA PEL Z2 (United States, 11/2006).** AMP: 500 ppm 10 minute(s). CEIL: 300 ppm TWA: 200 ppm 8 hour(s).	500 ppm
Hexanes	73513-42-5	< 1.1	Not available.	NE

This material is classified hazardous under OSHA regulations in the United States and the WHMIS Controlled Product Regulation in Canada.

NE = Not Established **C = Ceiling Limit** **See Section 16 for Definitions of Terms Used**

Note: All WHMIS required information is included. It is located in approriate sections based on the ANSI Z400.1-2004 format.

4. First aid measures

Eye contact In case of contact, immediately flush eyes with plenty of water for at least 20 minutes. Get medical attention if symptoms occur.

Skin contact In case of contact, immediately flush skin with plenty of water. Get medical attention if symptoms occur.

Inhalation If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Get medical attention if symptoms appear.

Ingestion Since the product is a gas, it will probably be inhaled rather than ingested. Start by considering the first aid measures in case of inhalation.

5. Fire-fighting measures

Flash point Not available.

Auto-ignition temperature Not available.

Flammable limits Not available.

Products of combustion Decomposition products may include the following materials:
carbon oxides
nitrogen oxides

Fire extinguishing agents

(Suitable) Use an extinguishing agent suitable for the surrounding fire.

(Unsuitable) None known.

Unusual fire/explosion hazards Contains gas under pressure. In a fire or if heated, a pressure increase will occur and the container may burst or explode.

5. Fire-fighting measures

Special fire-fighting procedures Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

6. Accidental release measures

Personal precautions EVACUATE ALL PERSONNEL FROM AFFECTED AREA.
Use appropriate protective equipment. If leak is in user's equipment, be certain to purge piping with an inert gas prior to attempting repairs. If leak is on cylinder or cylinder valve, contact the closest Air Liquide location.

Environmental precautions In case of a leak, clear the affected area, protect people, eliminate sources of ignition and respond with trained personnel. Adequate fire protection must be provided.

If leaking incidentally from the cylinder or its valve, contact your supplier. Use non-sparking tools and equipment during the response.

Methods for cleaning up Contact your local Air Liquide Gas supplier for details.

Other information Not available.

7. Handling and storage

Hygiene measures Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Be aware of any signs of dizziness or fatigue; exposures to fatal concentrations of this gas mixture could occur without any significant warning symptoms; due to oxygen deficiency. Non-sparking tools should be used.

Handling Valve protection caps must remain in place unless cylinder is secured with valve outlet piped to usage 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 to the cylinder. Do not tamper with (valve) safety device. Close valve after each use and when empty.

Storage Protect cylinders from physical damage. Store in cool, dry, well-ventilated area of non combustible construction away from heavily trafficked areas and emergency exits. Do not allow the temperature where cylinders are stored to exceed 52°C/125°F. Cylinders must be stored upright and firmly secured to prevent falling or being knocked over. Full and empty cylinders should be segregated. Post "No Smoking or Open Flames" signs in the storage or use area. There should be no source of ignition in the storage or use area. Segregate from oxidizing materials.

8. Exposure controls and personal protection

Engineering controls Use only in well-ventilated areas. Gas is heavier than air and will therefore accumulate in low lying areas.

Respiratory protection Maintain oxygen levels above 19.5% in the workplace. Use supplied air respiratory protection if oxygen levels are below 19.5% (air purifying respirators will not function) or during emergency response to a release of this gas mixture. During an emergency situation, before entering the area, check for oxygen-deficient atmospheres. If respiratory protection is required, follow the requirements of the Federal OSHA Respiratory Protection Standard (29 CFR 1910.134), or equivalent State standard.

8. Exposure controls and personal protection

Eye protection	Safety glasses with side shields.
Hand protection.	Wear leather gloves when handling cylinders of this gas mixture. Otherwise, wear glove protection appropriate to the specific operation for which this gas mixture is used.
Skin protection	Use body protection appropriate for task. Cotton clothing is recommended for use to prevent static electric build-up. Pressurized product may require use of fire retardant clothing.
Exposure limits	**See Section 3.**

9. Physical and chemical properties

Physical state/Appearance	Compressed gas.
Color	Colorless.
Odor	Odorless.
Odor threshold	Not available.
Molecular weight	Not applicable.
Specific gravity	Weighted average: 0.54 (Air = 1)
Density	Not available.
Boiling point	Not available.
Melting/freezing point	Weighted average: -194.13°C (-317.4°F)
pH	Not available.
Evaporation rate	Not available.
Volatility (%)	100% (v/v)
VOC content	0%
Vapor pressure	Not available.
Vapor density	Weighted average: 0.9 (Air = 1)
Solubility	Insoluble in the following materials: cold water and hot water.
Partition coefficient (LogKow)	Not available.
Expansion ratio	Not available.
Flash point	Not available.
Auto-ignition temperature	Not available.
Flammable limits	Not available.

10. Stability and reactivity

Stability	The product is stable.
Hazardous decomposition products	Nitrogen oxides.
Incompatibility with various substances	Reactive or incompatible with the following materials: oxidizing materials, organic materials and acids.
Hazardous polymerization	Will not occur.
Conditions to avoid	Avoid all possible sources of ignition (spark or flame). Container explosion may occur under fire conditions or when heated above 52°C/125°F.

11. Toxicological information

Acute	Gas reduces oxygen available for breathing. Prompt medical attention is mandatory in all cases of overexposure to this gas. Rescue personnel should wear a self-contained breathing apparatus and be aware of extreme fire and explosion hazard.
Ingestion	Since the product is a gas, it will probably be inhaled rather than ingested.
Inhalation	Gas reduces oxygen available for breathing. Irritating to respiratory system.
Skin	Irritating to skin.
Eyes	Irritating to eyes.

11. Toxicological information

Chronic

Carcinogenic effects	See Section 2.
Mutagenic effects	Not applicable.
Teratogenic effects	Contains material which can cause birth defects.
Medical conditions aggravated by over-exposure	Pre-existing digestive disorders and disorders involving any other target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.
Notes to physician	Administer oxygen, if necessary. Treat symptoms and eliminate exposure.

12. Ecological information

Ecotoxicity data

Ingredient name	Species	Period	Result
Toluene	Daphnia magna (EC50)	48 hour(s)	6 mg/l
	Daphnia magna (EC50)	48 hour(s)	6.56 mg/l
	Oncorhynchus mykiss (EC50)	48 hour(s)	6.78 mg/l
	Oncorhynchus mykiss (LC50)	96 hour(s)	5.8 mg/l
	Oncorhynchus mykiss (LC50)	96 hour(s)	6.78 mg/l
	Pimephales promelas (LC50)	96 hour(s)	12.6 mg/l

Biodegradable/OECD	Not readily biodegradable.
Mobility	Gases are mobile in the atmosphere.
Products of degradation	Gases enter environment as released; do not degrade.

13. Disposal considerations

Waste disposal	Residual materials contained in customer-owned cylinders should be disposed of in accordance with Federal, State and Local regulations on waste management. For residual materials contained in cylinders owned by Air Liquide, contact Sales or Customer Service to determine appropriate disposal. Do not return cylinders without authorization from Air Liquide.

14. Transport information

Proper shipping name	COMPRESSED GAS, N.O.S. (Nitrogen)
Hazard classification	Class 2.2: Non-flammable, non-toxic gas.
UN number	UN1956
Packing group	Not applicable.
Label	2.2
NORTH AMERICAN EMERGENCY RESPONSE GUIDEBOOK NUMBER:	126
Marine pollutant/Other information	Not applicable.

15. Regulatory information

United States

OSHA HAZARD COMMUNICATION STANDARD (29CFR PART 1910.1200).

Compressed gas
Irritating material
Target organ effects

SARA 313

15. Regulatory information

	Product name	CAS number	Concentration (%)
Form R - Reporting requirements	: Propylene	115-07-1	1 - 5
	Toluene	108-88-3	1 - 5
Supplier notification	: Propylene	115-07-1	1 - 5
	Toluene	108-88-3	1 - 5

SARA 313 notifications must not be detached from the MSDS and any copying and redistribution of the MSDS shall include copying and redistribution of the notice attached to copies of the MSDS subsequently redistributed.

SARA 302/304 emergency planning and notification: No products were found.

SARA 311/312 MSDS distribution - chemical inventory - hazard identification: Nitrogen: Sudden release of pressure; Oxygen: Fire hazard, Sudden release of pressure, Delayed (chronic) health hazard; Methane: Fire hazard, Sudden release of pressure; Propylene: Fire hazard, Sudden release of pressure; Toluene: Fire hazard, Immediate (acute) health hazard, Delayed (chronic) health hazard; Ethane: Fire hazard, Sudden release of pressure, Immediate (acute) health hazard; Hydrogen: Fire hazard, Sudden release of pressure; Propane: Fire hazard, Sudden release of pressure; Pentane: Fire hazard, Immediate (acute) health hazard; Butane: Fire hazard, Sudden release of pressure

CERCLA: Hazardous substances.: Toluene: 1000 lbs. (454 kg);

US INVENTORY (TSCA)

TSCA 4(a) final test rules: Pentane; Hexanes
TSCA 8(a) PAIR: Pentane
TSCA 8(b) inventory: All components listed.
TSCA 12(b) one-time export: Pentane

State regulations

California Prop. 65

WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm. [Propylene]

Massachusetts Substances: The following components are listed: Nitrogen; Oxygen; Methane; Hydrogen; Ethane; Propane; Propylene; Butane; Pentane;Toluene
New Jersey Hazardous Substances: The following components are listed: Nitrogen; Oxygen; Methane; Hydrogen; Ethane; Propane; Propylene; Butane; Pentane;Toluene
New York Acutely Hazardous Substances: The following components are listed: Toluene
Pennsylvania RTK Hazardous Substances: The following components are listed: Nitrogen; Oxygen; Methane; Hydrogen; Ethane; Propane; Propylene; Butane; Pentane;Toluene

Canada

CEPA Toxic substances: The following components are listed: Methane
Canadian ARET: None of the components are listed.
Canadian NPRI: The following components are listed: Propane; Propylene;Toluene
Alberta Designated Substances: None of the components are listed.
Ontario Designated Substances: None of the components are listed.
Quebec Designated Substances: None of the components are listed.

CEPA NDSL /DSL

Canada inventory: Not determined.

WHMIS (Classification)

Class A: Compressed gas.
Class D-2B: Material causing other toxic effects (Toxic).

16. Other information

NFPA RATING

HMIS RATING

Health	*	1
Fire hazard		0
Physical Hazard		0
Personal protection		G

(*): The asterisk above, stands for achronic health effect under HMIS.

MIXTURES: When two or more gases or liquefied gases are mixed, their hazardous properties may combine to create additional, unexpected hazards. Obtain and evaluate the safety information for each component before you produce the mixture. Consult an Industrial Hygienist or other trained person when you make your safety evaluation of the end product. Remember, gases and liquids have properties which can cause serious injury or death.

Further information about gas mixtures can be found in pamphlets published by: Compressed Gas Association Inc (CGA), 4221 Walney Road, 5th floor, Chantilly, VA 20151-2923 Telephone: (703) 788-2700.

Abbreviations : **ACGIH: American Conference of Governmental Industrial Hygiene.**
ACGIH-A4-Not Classifiable as a Human Carcinogen.
IARC: International Agency for Research on Cancer.
IARC 3: Not classifiable for human.
NIOSH: National Institute of Occupational Safety and Health.
NIOSH: None.
OECD: Organisation for Economic Co-operation and Development.

Prepared by Atrion Regulatory Services Inc.

AIR LIQUIDE

This Material Safety Data Sheet is offered pursuant to OSHA's Hazard Communication Standard, 29 CFR, 1910.1200, American National Standard Institute Z400.1, 2004, the Canadian Workplace Hazardous Material Information Systems (WHMIS). Other government regulations must be reviewed for applicability to this gas mixture. To the best of Air Liquide's knowledge, the information contained herein is reliable and accurate as of this date; however, accuracy, suitability or completeness are not guaranteed and no warranties of any type, either express or implied, are provided. The information contained herein relates only to this specific product. If this gas mixture is combined with other materials, all component properties must be considered. Data may be changed from time to time. Be sure to consult the latest edition.