

SECTION: 1. Product and company identification

1.1. Product identifier

Product form : Mixture
 Product name : PTG-4357
 Formula : (0.0001 - 5 %) Ethane, (0.0001 - 5 %) Isobutane, (0.0001 - 10 %) Methane, (0.0001 - 5 %) Isopentane, (0.0001 - 5 %) Isopentane, (0.0001 - 5 %) Pentane, (0.0001 - 5 %) Propane in Nitrogen.

1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture : Calibration / Reference
 Use of the substance/mixture : Industrial use; Use as directed.

1.3. Details of the supplier of the safety data sheet

Manufactured For:	By:
Scientific Gas Australia Pty Ltd.	PortaGas (Praxair, Inc.)
Unit 10, 12 Anderson Street	1202 E Sam Houston Pkwy S
Banksmeadow NSW, 2019 - Australia	Pasadena, TX 77503
T PH 1300 880 531	T 281-928-6477

1.4. Emergency telephone number

Emergency number : Onsite Emergencies: 1-800-645-4633; Australian Poison Information Centre: 13 11 26;
 Australian Fire Brigade: 000
 CHEMTREC: USA 1-800-424-9300, International 001-703-527-3887 (Collect calls accepted, contract 17729)

SECTION 2: Hazard identification

2.1. Classification of the substance or mixture

Classification (GHS-AU)

Flam. Gas 1 H220
 Press. Gas (Comp.) H280
 Aquatic Acute 3 H402

2.2. Label elements

GHS AU labelling

Hazard pictograms (GHS-AU) :



GHS02

GHS04

Signal word (GHS-AU) :

DANGER

Hazard statements (GHS AU) :

H220 - **EXTREMELY FLAMMABLE GAS**
 H280 - CONTAINS GAS UNDER PRESSURE; MAY EXPLODE IF HEATED
 H402 - HARMFUL TO AQUATIC LIFE

Precautionary statements (GHS-AU) :

P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Heat, Hot surfaces, Open flames, Sparks
 P273 - Avoid release to the environment.
 P377 - LEAKING GAS FIRE: Do not extinguish, unless leak can be stopped safely.
 P381 - Eliminate all ignition sources if safe to do so.
 P403 - Use and store only outdoors or in a well-ventilated place.
 P410+P403 - Protect from sunlight. Store in a well-ventilated place.
 P501 - Dispose of contents/container Dispose in a safe manner in accordance with local/national regulations
 CGA-PG27 - Read and follow the Safety Data Sheet (SDS) before use.
 CGA-PG21 - Open valve slowly.
 CGA-PG10 - Use only with equipment rated for cylinder pressure.
 CGA-PG11 - Never put cylinders into unventilated areas of passenger vehicles.

CGA-PG12 - Do not open valve until connected to equipment prepared for use.
 CGA-PG06 - Close valve after each use and when empty.
 CGA-PG05 - Use a back flow preventive device in the piping.
 CGA-PG02 - Protect from sunlight when ambient temperature exceeds 52°C (125°F).

2.3. Other hazards

No additional information available

2.4. Unknown acute toxicity (GHS US)

No data available

SECTION 3: Composition/Information on ingredients

3.1. Substance

Not applicable

3.2. Mixture

Name	Product identifier	%
Nitrogen	(CAS No) 7727-37-9	75 - 100
Methane	(CAS No) 74-82-8	0.0001 - 10
Butane	(CAS No) 106-97-8	0.0001 - 5
Propane	(CAS No) 74-98-6	0.0001 - 5
Ethane	(CAS No) 74-84-0	0.0001 - 5

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures after inhalation : Remove to fresh air and keep at rest in a position comfortable for breathing. If not breathing, give artificial respiration. If breathing is difficult, trained personnel should give oxygen. Call a physician.

First-aid measures after eye contact : Immediately flush eyes thoroughly with water for at least 15 minutes. Hold the eyelids open and away from the eyeballs to ensure that all surfaces are flushed thoroughly. Contact an ophthalmologist immediately.

4.2. Most important symptoms and effects, both acute and delayed

No additional information available

4.3. Indication of any immediate medical attention and special treatment needed

None.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : Carbon dioxide, Dry chemical, Water spray or fog. Use extinguishing media appropriate for surrounding fire.

HazChem code : 2SE.

5.2. Special hazards arising from the substance or mixture

Fire hazard : **EXTREMELY FLAMMABLE GAS.**

Explosion hazard : **EXTREMELY FLAMMABLE GAS.** Forms explosive mixtures with air and oxidizing agents.

Reactivity : No reactivity hazard other than the effects described in sub-sections below.

5.3. Advice for firefighters

Firefighting instructions : Evacuate all personnel from the danger area. Use self-contained breathing apparatus (SCBA) and protective clothing. Immediately cool containers with water from maximum distance. Remove ignition sources if safe to do so. Remove containers from area of fire if safe to do so. On-site fire brigades must comply with their provincial and local fire regulations.

Protection during firefighting : **DANGER! FLAMMABLE, HIGH PRESSURE GAS..**

Special protective equipment for fire fighters : Standard protective clothing and equipment (Self Contained Breathing Apparatus) for fire fighters.

Other information : Containers are equipped with a pressure relief device. (Exceptions may exist where authorized by DOT.).

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : If venting or leaking gas catches fire, do not extinguish flames. Flammable vapors may spread from leak, creating an explosive reignition hazard. Vapors can be ignited by pilot lights, other flames, smoking, sparks, heaters, electrical equipment, static discharge, or other ignition sources at locations distant from product handling point. Explosive atmospheres may linger. Before entering an area, especially a confined area, check the atmosphere with an appropriate device.

6.1.1. For non-emergency personnel

No additional information available

6.1.2. For emergency responders

No additional information available

6.2. Environmental precautions

Prevent waste from contaminating the surrounding environment. Prevent soil and water pollution. Dispose of contents/container in accordance with local/regional/national/international regulations. Contact supplier for any special requirements.

6.3. Methods and material for containment and cleaning up

No additional information available

6.4. Reference to other sections

See also sections 8 and 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use only non-sparking tools. Use only explosion-proof equipment.

Wear leather safety gloves and safety shoes when handling cylinders. Protect cylinders from physical damage; do not drag, roll, slide or drop. While moving cylinder, always keep in place removable valve cover. Never attempt to lift a cylinder by its cap; the cap is intended solely to protect the valve. When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders. Never insert an object (e.g, wrench, screwdriver, pry bar) into cap openings; doing so may damage the valve and cause a leak. Use an adjustable strap wrench to remove over-tight or rusted caps. Slowly open the valve. If the valve is hard to open, discontinue use and contact your supplier. Close the container valve after each use; keep closed even when empty. Never apply flame or localized heat directly to any part of the container. High temperatures may damage the container and could cause the pressure relief device to fail prematurely, venting the container contents. For other precautions in using this product, see section 16.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Store only where temperature will not exceed 125°F (52°C). Post “No Smoking/No Open Flames” signs in storage and use areas. There must be no sources of ignition. Separate packages and protect against potential fire and/or explosion damage following appropriate codes and requirements (e.g, NFPA 30, NFPA 55, NFPA 70, and/or NFPA 221 in the U.S.) or according to requirements determined by the Authority Having Jurisdiction (AHJ). Always secure containers upright to keep them from falling or being knocked over. Install valve protection cap, if provided, firmly in place by hand when the container is not in use. Store full and empty containers separately. Use a first-in, first-out inventory system to prevent storing full containers for long periods. For other precautions in using this product, see section 16.

Store in a cool, well-ventilated place. Store and use with adequate ventilation. Store only where temperature will not exceed 125°F (52°C). Firmly secure containers upright to keep them from falling or being knocked over. Install valve protection cap, if provided, firmly in place by hand. Store full and empty containers separately. Use a first-in, first-out inventory system to prevent storing full containers for long periods.

OTHER PRECAUTIONS FOR HANDLING, STORAGE, AND USE: When handling product under pressure, use piping and equipment adequately designed to withstand the pressures to be encountered. Never work on a pressurized system. Use a back flow preventive device in the piping. Gases can cause rapid suffocation because of oxygen deficiency; store and use with adequate ventilation. If a leak occurs, close the container valve and blow down the system in a safe and environmentally correct manner in compliance with all international, federal/national, state/provincial, and local laws; then repair the leak. Never place a container where it may become part of an electrical circuit.

7.3. Specific end use(s)

None.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Ethane (74-84-0)		
ACGIH	Not established	
USA OSHA	Not established	
Methane (74-82-8)		
ACGIH	Not established	
USA OSHA	Not established	
Nitrogen (7727-37-9)		
ACGIH	Not established	
USA OSHA	Not established	
Propane (74-98-6)		
USA OSHA	OSHA PEL (TWA) (mg/m ³)	1800 mg/m ³
USA OSHA	OSHA PEL (TWA) (ppm)	1000 ppm
ACGIH	Not established	
Butane (106-97-8)		
ACGIH	ACGIH TLV-STEL (ppm)	1000 ppm
AU SWA TWA PPM	TWA (ppm)	800 ppm
AU SWA TWA MGM3	TWA (mg/m ³)	1900 mg/m ³
AU SWA STEL MGM3	STEL (mg/m ³)	1900 mg/m ³
USA OSHA	Not established	

8.2. Exposure controls

Appropriate engineering controls : Use an explosion-proof local exhaust system. Local exhaust and general ventilation must be adequate to meet exposure standards. MECHANICAL (GENERAL): **Inadequate - Use only in a closed system.** Use explosion proof equipment and lighting. Provide adequate general and local exhaust ventilation. Ensure exposure is below occupational exposure limits (where available).

Personal protective equipment : Safety glasses. Gloves.



Eye protection : Wear safety glasses with side shields.

Skin and body protection : Wear work gloves and metatarsal shoes for cylinder handling. Protective equipment where needed. Select in accordance with AS/NZS 2161, AS/NZS 2210.1, and AS/NZS 4503.

Thermal hazard protection : Wear cold insulating gloves when transfilling or breaking transfer connections.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Gas
Color	: Colorless
Odor	: No data available
Odor threshold	: No data available
pH	: Not applicable.
Relative evaporation rate (butyl acetate=1)	: No data available
Relative evaporation rate (ether=1)	: Not applicable.
Melting point	: No data available
Freezing point	: No data available
Boiling point	: No data available
Flash point	: No data available
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Flammability (solid, gas)	: No data available
Vapor pressure	: Not applicable.
Relative vapor density at 20 °C	: No data available
Relative density	: No data available
Solubility	: Water: No data available
Log Pow	: Not applicable.
Log Kow	: Not applicable.
Viscosity, kinematic	: Not applicable.
Viscosity, dynamic	: Not applicable.
Explosive properties	: Not applicable.
Oxidizing properties	: None.
Explosion limits	: No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

No reactivity hazard other than the effects described in sub-sections below.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No additional information available

10.4. Conditions to avoid

Keep away from heat/sparks/open flames/hot surfaces. – No smoking.

10.5. Incompatible materials

No additional information available

10.6. Hazardous decomposition products

No additional information available

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Not classified

Ethane (74-84-0)	
ATE US (vapors)	658 mg/l/4h
ATE US (dust, mist)	658 mg/l/4h
Propane (74-98-6)	
LC50 inhalation rat (ppm)	> 800000 ppm (Exposure time: 15 min)

Skin corrosion/irritation : Not classified
 pH: Not applicable.

Serious eye damage/irritation : Not classified
 pH: Not applicable.

Respiratory or skin sensitization : Not classified

Germ cell mutagenicity : Not classified

Carcinogenicity : Not classified

Reproductive toxicity : Not classified

Specific target organ toxicity (single exposure) : Not classified

Specific target organ toxicity (repeated exposure) : Not classified

Aspiration hazard : Not classified

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : HARMFUL TO AQUATIC LIFE WITH LONG LASTING EFFECTS.

12.2. Persistence and degradability

PTG-4357	
Persistence and degradability	No ecological damage caused by this product.
Ethane (74-84-0)	
Persistence and degradability	The substance is biodegradable. Unlikely to persist.
Methane (74-82-8)	
Persistence and degradability	The substance is biodegradable. Unlikely to persist.
Nitrogen (7727-37-9)	
Persistence and degradability	No ecological damage caused by this product.
Propane (74-98-6)	
Persistence and degradability	The substance is biodegradable. Unlikely to persist.
Butane (106-97-8)	
Persistence and degradability	The substance is biodegradable. Unlikely to persist.

12.3. Bioaccumulative potential

PTG-4357	
Log Pow	Not applicable.
Log Kow	Not applicable.
Bioaccumulative potential	No ecological damage caused by this product.
Ethane (74-84-0)	
Log Pow	1.81
Log Kow	Not applicable.
Bioaccumulative potential	Not expected to bioaccumulate due to the low log Kow (log Kow < 4). Refer to section 9.
Methane (74-82-8)	
Log Pow	1.09
Bioaccumulative potential	Not expected to bioaccumulate due to the low log Kow (log Kow < 4). Refer to section 9.
Nitrogen (7727-37-9)	
Log Pow	Not applicable.
Log Kow	Not applicable.
Bioaccumulative potential	No ecological damage caused by this product.
Propane (74-98-6)	
Log Pow	2.36
Log Kow	Not applicable.
Bioaccumulative potential	Not expected to bioaccumulate due to the low log Kow (log Kow < 4). Refer to section 9.
Butane (106-97-8)	
Log Pow	2.89
Bioaccumulative potential	Not expected to bioaccumulate due to the low log Kow (log Kow < 4). Refer to section 9.

12.4. Mobility in soil

PTG-4357	
Mobility in soil	No data available.
Ethane (74-84-0)	
Mobility in soil	No data available.
Ecology - soil	Because of its high volatility, the product is unlikely to cause ground or water pollution.
Methane (74-82-8)	
Ecology - soil	Because of its high volatility, the product is unlikely to cause ground or water pollution.
Nitrogen (7727-37-9)	
Mobility in soil	No data available.
Ecology - soil	No ecological damage caused by this product.
Propane (74-98-6)	
Mobility in soil	No data available.
Ecology - soil	Because of its high volatility, the product is unlikely to cause ground or water pollution.
Butane (106-97-8)	
Ecology - soil	Because of its high volatility, the product is unlikely to cause ground or water pollution.

12.5. Other adverse effects

Effect on ozone layer : None.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Product/Packaging disposal recommendations : Dispose of contents/container in accordance with local/regional/national/international regulations. Contact supplier for any special requirements.

SECTION 14: Transport information

Transport of Australian Dangerous Goods

UN-No. (ADG) : UN1954
 Proper Shipping Name (ADG) : COMPRESSED GAS, FLAMMABLE, N.O.S.
 Class (ADG) : 2.1 - Class 2.1 - Flammable gas
 Danger labels (ADG) : 2.1 - Flammable gases



Special provision (ADG) : 274

In accordance with DOT

Transport document description : UN1954 Compressed gas, flammable, n.o.s., 2.1
 UN-No.(DOT) : UN1954
 Proper Shipping Name (DOT) : Compressed gas, flammable, n.o.s.
 Class (DOT) : 2.1 - Class 2.1 - Flammable gas
 Hazard labels (DOT) : 2.1 - Flammable gas



DOT Symbols : G - Identifies proper shipping name (PSN) requiring the addition of technical name(s) in parentheses following the PSN.

Additional information

Emergency Response Guide (ERG) Number : 115
 HazChem code : 2SE.
 Other information : No supplementary information available.
 Special transport precautions : Avoid transport on vehicles where the load space is not separated from the driver's compartment. Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency. Before transporting product containers:
 - Ensure there is adequate ventilation. - Ensure that containers are firmly secured. - Ensure cylinder valve is closed and not leaking. - Ensure valve outlet cap nut or plug (where provided) is correctly fitted. - Ensure valve protection device (where provided) is correctly fitted.

Transport by sea

UN-No. (IMDG) : 1954
 Proper Shipping Name (IMDG) : COMPRESSED GAS, FLAMMABLE, N.O.S.
 Class (IMDG) : 2.1 - Flammable gases
 Limited quantities (IMDG) : None.
 EmS-No. (1) : F-D
 MFAG-No : 620
 EmS-No. (2) : S-U

Air transport

UN-No. (IATA) : 1954
 Proper Shipping Name (IATA) : COMPRESSED GAS, FLAMMABLE, N.O.S.
 Class (IATA) : 2
 Instruction "cargo" (ICAO) : 200
 Instruction "passenger" (ICAO) : FORBIDDEN



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Instruction "passenger" - Limited quantities : FORBIDDEN
(ICAO)

SECTION 15: Regulatory information

15.1. US Federal regulations

No additional information available

15.2. International regulations

CANADA

Ethane (74-84-0)

Listed on the Canadian DSL (Domestic Substances List)

Methane (74-82-8)

Listed on the Canadian DSL (Domestic Substances List)

Nitrogen (7727-37-9)

Listed on the Canadian DSL (Domestic Substances List)

Propane (74-98-6)

Listed on the Canadian DSL (Domestic Substances List)

Butane (106-97-8)

Listed on the Canadian DSL (Domestic Substances List)

EU-Regulations

15.2.2. National regulations

No additional information available

15.3. US State regulations

PTG-4357()

U.S. - California - Proposition 65 - Carcinogens List	No
U.S. - California - Proposition 65 - Developmental Toxicity	No
U.S. - California - Proposition 65 - Reproductive Toxicity - Female	No
U.S. - California - Proposition 65 - Reproductive Toxicity - Male	No

Ethane (74-84-0)

U.S. - California - Proposition 65 - Carcinogens List	U.S. - California - Proposition 65 - Developmental Toxicity	U.S. - California - Proposition 65 - Reproductive Toxicity - Female	U.S. - California - Proposition 65 - Reproductive Toxicity - Male	Non-significant risk level (NSRL)
No	No	No	No	

Methane (74-82-8)

U.S. - California - Proposition 65 - Carcinogens List	U.S. - California - Proposition 65 - Developmental Toxicity	U.S. - California - Proposition 65 - Reproductive Toxicity - Female	U.S. - California - Proposition 65 - Reproductive Toxicity - Male	Non-significant risk level (NSRL)
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Methane (74-82-8)				
No	No	No	No	
Nitrogen (7727-37-9)				
U.S. - California - Proposition 65 - Carcinogens List	U.S. - California - Proposition 65 - Developmental Toxicity	U.S. - California - Proposition 65 - Reproductive Toxicity - Female	U.S. - California - Proposition 65 - Reproductive Toxicity - Male	Non-significant risk level (NSRL)
No	No	No	No	
Propane (74-98-6)				
U.S. - California - Proposition 65 - Carcinogens List	U.S. - California - Proposition 65 - Developmental Toxicity	U.S. - California - Proposition 65 - Reproductive Toxicity - Female	U.S. - California - Proposition 65 - Reproductive Toxicity - Male	Non-significant risk level (NSRL)
No	No	No	No	
Butane (106-97-8)				
U.S. - California - Proposition 65 - Carcinogens List	U.S. - California - Proposition 65 - Developmental Toxicity	U.S. - California - Proposition 65 - Reproductive Toxicity - Female	U.S. - California - Proposition 65 - Reproductive Toxicity - Male	Non-significant risk level (NSRL)
No	No	No	No	
Ethane (74-84-0)				
U.S. - Massachusetts - Right To Know List U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List				
Methane (74-82-8)				
U.S. - Massachusetts - Right To Know List U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List				
Nitrogen (7727-37-9)				
U.S. - Massachusetts - Right To Know List U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List				
Propane (74-98-6)				
U.S. - Massachusetts - Right To Know List U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List				
Butane (106-97-8)				
U.S. - Massachusetts - Right To Know List U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List				

SECTION 16: Other information

Other information

: When you mix two or more chemicals, you can 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 evaluate the end product. Before using any plastics, confirm their compatibility with this product.

Praxair asks users of this product to study this SDS and become aware of the product hazards and safety information. To promote safe use of this product, a user should (1) notify employees, agents, and contractors of the information in this SDS and of any other known product hazards and safety information, (2) furnish this information to each purchaser of the product, and (3) ask each purchaser to notify its employees and customers of the product hazards and safety information.

The opinions expressed herein are those of qualified experts within Praxair, Inc. We believe that the information contained herein is current as of the date of this Safety Data Sheet. Since the use of this information and the conditions of use are not within the control of Praxair, Inc, it is the user's obligation to determine the conditions of safe use of the product.

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SDS Australia - Praxair

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.