

SECTION 1: Product and company identification

1.1. Product identifier

Product form : Mixture
 Product name : PTG-4534
 Formula : (1 - 35 %) Carbon monoxide, (0.0001 - 75 %) Carbon dioxide, (0.0001 - 50 %) Methane, (<100 %) Hydrogen, (<100 %) Nitrogen

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

Use of the substance/mixture : Industrial use; Use as directed.
 Restrictions on use : No additional information

1.3. Details of the supplier of the safety data sheet

Manufactured For: Scientific Gas Australia Pty Ltd. Unit 10, 12 Anderson Street Banksmeadow NSW, 2019 - Australia T PH 1300 880 531	By: PortaGas (Praxair, Inc.) 1202 E Sam Houston Pkwy S Pasadena, TX 77503 T 281-928-6477
New Zealand: Airtanks Limited Unit 3, 5/343 Church Street, Onehunga, Auckland 1061, New Zealand Phone: +64 9 930 6360	

1.4. Emergency telephone number

Emergency number : Australian Poison Information Centre: 13 11 26;
 Australian Fire Brigade: 000
 Onsite Emergency: 1-800-645-4633

CHEMTREC, 24hr/day 7days/week
 — Within USA: 1-800-424-9300, Outside USA: 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 (Liq.)	H280
Acute Tox. 4 (Inhalation:gas)	H332
Repr. 1A	H360
STOT RE 1	H372
Simple asphyxiant	SIAS

2.2. Label elements

GHS AU labelling

Hazard pictograms (GHS AU) :



Signal word (GHS AU) : DANGER
 Hazard statements (GHS AU) : H220 - **EXTREMELY FLAMMABLE GAS**
 H280 - CONTAINS GAS UNDER PRESSURE; MAY EXPLODE IF HEATED
 H332 - HARMFUL IF INHALED

Precautionary statements (GHS AU) :

H360 - MAY DAMAGE FERTILITY OR THE UNBORN CHILD
H372 - CAUSES DAMAGE TO ORGANS THROUGH PROLONGED OR REPEATED EXPOSURE

P201 - Obtain special instructions before use
P202 - Do not handle until all safety precautions have been read and understood
P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P260 - Do not breathe gas/vapors
P261 - Avoid breathing gas, vapors
P264 - Wash exposed skin thoroughly after handling
P270 - Do not eat, drink or smoke when using this product
P271 - Use and store only outdoors or in a well-ventilated area.
P273 - Avoid release to the environment.
P280 - Wear protective gloves/protective clothing/eye protection/face protection
P304+P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P308+P313 - IF EXPOSED OR CONCERNED: Get medical advice/attention
P312 - Call a poison center/doctor if you feel unwell
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 - Use and store only outdoors or in a well-ventilated place.
P405 - Store locked up
P410+P403 - Protect from sunlight. Store in a well-ventilated place.
P501 - Dispose of contents/container in accordance with local/regional/national/international regulations. Contact supplier for any special requirements.

2.3. Other hazards

No additional information available

2.4. Unknown acute toxicity (GHS US)

Not applicable

SECTION 3: Composition/Information on ingredients

3.1. Substance

Not applicable

3.2. Mixture

Name	Product identifier	%
Hydrogen	(CAS No) 1333-74-0	< 100
Nitrogen	(CAS No) 7727-37-9	< 100
Carbon dioxide	(CAS No) 124-38-9	0.0001 – 75
Methane	(CAS No) 74-82-8	< 50
Carbon monoxide	(CAS No) 630-08-0	1 – 35

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 skin contact : Adverse effects not expected from this product.

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.

First-aid measures after ingestion : Ingestion is not considered a potential route of exposure.

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

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

None.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : Use extinguishing media appropriate for surrounding fire.
HazChem code : 2TE.

5.2. Special hazards arising from the substance or mixture

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. Stop flow of gas if safe to do so, while continuing cooling water spray. 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 code regulations.

Hazchem Code : 2TE

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

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

6.1.2. For emergency responders

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

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 : 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 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 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

Carbon monoxide (630-08-0)		
ACGIH	ACGIH OEL TWA	25 ppm
ACGIH	BEI	3.5 % of hemoglobin Parameter: Carboxyhemoglobin - Medium: blood - Sampling time: end of shift (background, nonspecific) 20 ppm Parameter: Carbon monoxide - Medium: end-exhaled air - Sampling time: end of shift (background, nonspecific)
USA OSHA	OSHA PEL TWA	55 mg/m ³
USA OSHA	OSHA PEL TWA	50 ppm
AU SWA TWA PPM	OES TWA	30 ppm
AU SWA TWA MGM3	OES TWA	34 mg/m ³
AU SWA STEL MGM3	OES STEL	34 mg/m ³
Carbon dioxide (124-38-9)		
ACGIH	ACGIH OEL TWA	5000 ppm
ACGIH	ACGIH OEL STEL	30000 ppm
USA OSHA	OSHA PEL TWA	9000 mg/m ³
USA OSHA	OSHA PEL TWA	5000 ppm
AU SWA TWA PPM	OES TWA	5000 ppm 12500 ppm (in coal mines)
AU SWA TWA MGM3	OES TWA	9000 mg/m ³ 22500 mg/m ³ (in coal mines)
AU STEL PPM	OES STEL	30000 ppm
AU SWA STEL MGM3	OES STEL	9000 mg/m ³ 22500 mg/m ³ (in coal mines)
Hydrogen (1333-74-0)		
ACGIH	Remark (ACGIH)	Simple asphyxiant
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	

8.2. Exposure controls

- Appropriate engineering controls : Provide adequate general and local exhaust ventilation. Ensure exposure is below occupational exposure limits (where available).
- Personal protective equipment : Gloves. Safety glasses.



- Eye protection : Wear safety glasses when handling cylinders; vapor-proof goggles and a face shield during cylinder changeout or whenever contact with product is possible. Select eye protection in accordance with AS/NZS 1336 and AS/NZS 1337.
- 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.
- Respiratory protection : When workplace conditions warrant respirator use, follow a respiratory protection program that meets AS/NSZ 1715, AS/NSZ 1716, ANSI Z88.2, or MSHA 30 CFR 72.710 (where applicable). Use an air-supplied or air-purifying cartridge if the action level is exceeded. Ensure that the respirator has the appropriate protection factor for the exposure level. If cartridge type respirators are used, the cartridge must be appropriate for the chemical exposure. For emergencies or instances with unknown exposure levels, use a self-contained breathing apparatus (SCBA).
- 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 : 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
- Partition coefficient n-octanol/water (Log Pow) : Not applicable.
- Partition coefficient n-octanol/water (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

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

None.

10.4. Conditions to avoid

None.

10.5. Incompatible materials

None.

10.6. Hazardous decomposition products

None.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Not classified

PTG-4534	
ATE US (gases)	5371.429 ppmV/4h
Carbon monoxide (630-08-0)	
LC50 inhalation rat (ppm)	3760 ppm/1h
ATE US (gases)	1880 ppmV/4h

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 : MAY DAMAGE FERTILITY OR THE UNBORN CHILD.

Specific target organ toxicity (single exposure) : Not classified

Specific target organ toxicity (repeated exposure) : CAUSES DAMAGE TO ORGANS THROUGH PROLONGED OR REPEATED EXPOSURE.

Aspiration hazard : Not applicable

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : No known ecological damage caused by this product.

12.2. Persistence and degradability

PTG-4534	
Persistence and degradability	No ecological damage caused by this product.

Carbon dioxide (124-38-9)	
Persistence and degradability	No ecological damage caused by this product.
Hydrogen (1333-74-0)	
Persistence and degradability	No ecological damage caused by this product.
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.

12.3. Bioaccumulative potential

PTG-4534	
Partition coefficient n-octanol/water (Log Pow)	Not applicable.
Partition coefficient n-octanol/water (Log Kow)	Not applicable.
Bioaccumulative potential	No ecological damage caused by this product.
Carbon monoxide (630-08-0)	
Partition coefficient n-octanol/water (Log Kow)	Not applicable.
Carbon dioxide (124-38-9)	
BCF - Fish [1]	(no bioaccumulation)
Partition coefficient n-octanol/water (Log Pow)	0.83
Partition coefficient n-octanol/water (Log Kow)	Not applicable.
Bioaccumulative potential	No ecological damage caused by this product.
Hydrogen (1333-74-0)	
BCF - Fish [1]	(no bioaccumulation expected)
Partition coefficient n-octanol/water (Log Pow)	Not applicable.
Partition coefficient n-octanol/water (Log Kow)	Not applicable.
Bioaccumulative potential	No ecological damage caused by this product.
Methane (74-82-8)	
Partition coefficient n-octanol/water (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)	
Partition coefficient n-octanol/water (Log Pow)	Not applicable for inorganic gases.
Partition coefficient n-octanol/water (Log Kow)	Not applicable.
Bioaccumulative potential	No ecological damage caused by this product.

12.4. Mobility in soil

PTG-4534	
Mobility in soil	No data available.
Carbon monoxide (630-08-0)	
Mobility in soil	No data available.
Carbon dioxide (124-38-9)	
Mobility in soil	No data available.
Ecology - soil	No ecological damage caused by this product.
Hydrogen (1333-74-0)	
Mobility in soil	No data available.
Ecology - soil	No ecological damage caused by this product.
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.

12.5. Other adverse effects

Effect on ozone layer : None.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Product/Packaging disposal recommendations : Do not attempt to dispose of residual or unused quantities. Return container to supplier.

SECTION 14: Transport information

Transport of Australian Dangerous Goods

UN-No. (ADG) : UN1956
 Proper Shipping Name (ADG) : COMPRESSED GAS, N.O.S.
 Class (ADG) : 2.1 - Class 2.1 - Flammable gas
 Danger labels (ADG) : 2.2 - Non-flammable, non-toxic 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 : 2TE.
 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 - Gases



PTG-4534

Safety Data Sheet PTG-4534

Prepared in accordance with the model Work Health and Safety Regulations

Date of issue: 01/03/2022 Revision date: 08/10/2024 Version: 1.1

Air transport

UN-No. (IATA)	: 1954
Proper Shipping Name (IATA)	: Compressed gas, flammable, n.o.s.
Class (IATA)	: 2 - Gases
Instruction "cargo" (ICAO)	: 200
Instruction "passenger" (ICAO)	: FORBIDDEN
Instruction "passenger" - Limited quantities (ICAO)	: FORBIDDEN

SECTION 15: Regulatory information

15.1. US Federal regulations

No additional information available

15.2. International regulations

CANADA

Carbon Monoxide (630-08-0)>

Listed on the Canadian DSL (Domestic Substances List)

Carbon dioxide (124-38-9)>

Listed on the Canadian DSL (Domestic Substances List)

Hydrogen (1333-74-0)>

Listed on the Canadian DSL (Domestic Substances List)

Methane (74-82-8)>

Listed on the Canadian DSL (Domestic Substances List)

Nitrogen, Medipure Liquid Nitrogen (7727-37-9)>

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-4534()

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



PTG-4534

Safety Data Sheet PTG-4534

Prepared in accordance with the model Work Health and Safety Regulations

Date of issue: 01/03/2022 Revision date: 08/10/2024 Version: 1.1

Carbon Monoxide (630-08-0)				
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	Yes	No	No	
Carbon dioxide (124-38-9)				
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	
Hydrogen (1333-74-0)				
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)
No	No	No	No	
Nitrogen, Medipure Liquid 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	
Carbon Monoxide (630-08-0)				
U.S. - Massachusetts - Right To Know List U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List U.S. - Pennsylvania - RTK (Right to Know) List				
Carbon dioxide (124-38-9)				
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				
Hydrogen (1333-74-0)				
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, Medipure Liquid 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				

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.

Linde 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.

Linde and the Linde wordmark are trademarks or registered trademarks of Linde plc or its affiliates. The information contained herein is offered for use by technically qualified personnel at their discretion and risk without warranty of any kind.

Copyright © 2024, Linde Inc.

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.