1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name	Refrigerant Grade Hydrocarbon — R290 (Propane); R600a (Isobutane)
GHS Product Identifier	Hydrocarbon Refrigerant — Propane and/or Isobutane
Chemical Name	Propane (R290) and 2-Methylpropane / Isobutane (R600a). Supplied as pure product per refrigerant grade.
Other names / Synonyms	Propane; Isobutane; Liquefied Petroleum Gas (LPG); Refrigerant Grade Propane; R290; R600a; HC refrigerant.
Recommended Use	Refrigerant gas for refrigeration and air-conditioning systems specifically designed for hydrocarbon (A3) refrigerants. For professional use only.
Restrictions on Use	Not supplied or to be used as a fuel gas. Do NOT mix with other refrigerants. Only to be handled by suitably trained and competent persons.

Details of the supplier

Supplier Name	Puregas Aust Pty Ltd
Address	15-17 Distribution Drive, Mickleham VIC 3064, Australia
Telephone	1300 733 097
Email / Web	sales@puregas.com.au

Emergency telephone number(s)

24 hr Emergency	1300 733 097 (24 hours)
Fire / Ambulance / Police	000 (within Australia)
Poisons Information Centre	13 11 26 (Australia)

2. HAZARDS IDENTIFICATION

CLASSIFIED AS HAZARDOUS UNDER THE GHS AS IMPLEMENTED BY AUSTRALIAN WHS REGULATIONS.

CLASSIFIED AS DANGEROUS GOODS (CLASS 2.1) UNDER THE ADG CODE.

GHS Classification	Flammable Gases: Category 1A Gases Under Pressure: Liquefied Gas
Dangerous Goods Class	Class 2.1 Flammable Gas (ADG Code)
Signal Word	DANGER

Pictograms: GHS02 (Flame — Flammable) + GHS04 (Gas Cylinder — gas under pressure)

Hazard statements

H220	Extremely flammable gas.
H280	Contains gas under pressure; may explode if heated.
AUH044	Risk of explosion if heated under confinement.

Precautionary statements

Prevention — P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

Response — P377	Leaking gas fire: do not extinguish unless leak can be stopped safely.
Response — P381	In case of leakage, eliminate all ignition sources.
Storage — P410+P403 / P403	Store in a well-ventilated place. Protect from sunlight.
Disposal	Return cylinders to supplier — see Section 13.

Other hazards

Simple asphyxiant — may displace oxygen in confined or poorly ventilated spaces. Contact with escaping liquefied gas may cause frostbite (cold burns). Vapour is heavier than air and may travel a considerable distance to remote ignition sources and flash back.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Ingredient	CAS Number	Proportion	Notes
Propane (R290 product)	74-98-6	≥ 95.0 %	Principal component
Isobutane (R600a product)	75-28-5	≥ 95.0 %	Principal component
n-Butane	106-97-8	≤ 1.5 %	Minor component
Ethyl mercaptan (odourant)	75-08-1	≈ 25 ppm	May be added for leak detection

Proportions are shown as minimums / ranges to reflect batch variation between supply sources. Actual composition of each batch is stated on the accompanying Certificate of Analysis (COA). Ethyl mercaptan odourant may be added at approximately 25 ppm for leak detection unless unodourised product is specified by the customer.

4. FIRST AID MEASURES

Inhalation	Remove to fresh air immediately; be aware of possible explosive atmosphere. If breathing is difficult, give oxygen. If not breathing, apply artificial respiration. Keep warm and rested. Seek medical attention.
Skin contact	Cold burns: remove contaminated clothing and gently flush affected areas with warm water (approx. 30 °C) for 15 minutes. Do not rub. Do not apply direct heat. Apply sterile dressing and treat as a thermal burn. Seek medical attention.
Eye contact	Cold burns: immediately flush with tepid water or sterile saline, holding eyelids apart, for 15 minutes. Seek medical attention.
Ingestion	Considered highly unlikely due to product form. For advice contact the Poisons Information Centre on 13 11 26 (Australia-wide) or a doctor.
Advice to doctor	Treat symptomatically. Severe inhalation over-exposure may sensitise the heart to catecholamine-induced arrhythmias — do NOT administer catecholamines (e.g. adrenaline) to an over-exposed person.
First aid facilities	Eye-wash facilities and a safety shower should be available where this product is handled.
Most important symptoms	Headache, dizziness, drowsiness, nausea, breathing difficulty, loss of consciousness. Direct contact with liquid or escaping compressed gas may cause frostbite.

5. FIRE FIGHTING MEASURES

Extinguishing media	Stop the flow of gas if safe to do so (e.g. close valves). If the source cannot be isolated, do NOT extinguish the flame — re-ignition and explosion could occur. If extinguishing is absolutely necessary, use dry chemical powder only. Cool exposed cylinders with water spray from a protected location.
Unsuitable media	None known once gas source is isolated. Do NOT extinguish while the gas source is still flowing.

Special hazards	Cylinders heated in a fire may rupture and BLEVE. Vapour is heavier than air and flashback may occur along the vapour trail. Hazardous combustion products in enclosed spaces: carbon monoxide, carbon dioxide, unburned hydrocarbons.
Advice for firefighters	Wear SCBA and full protective clothing. Cool fire-exposed cylinders and vessels with water spray from a protected location, directing spray primarily onto upper surfaces. Do not approach containers suspected of being hot. Do not move fire-exposed cylinders for at least 24 hours; avoid shock and impact. Do not return a fire-exposed cylinder to service — seek supplier advice. Evacuate persons not fighting the fire.
Hazchem Code	2YE

6. ACCIDENTAL RELEASE MEASURES

Personal precautions	Any leak is a fire and/or explosion hazard. If a leak has not ignited: stop gas flow if safe, eliminate ALL ignition sources, evacuate non-essential personnel and ensure good ventilation. Use non-sparking tools and intrinsically safe equipment only. Approach from upwind.
Environmental precautions	Liquid leaks generate large volumes of heavier-than-air flammable vapour which may travel to remote ignition sources (e.g. along drains). Prevent entry to sewers, pits and basements.
Methods of cleanup	Water spray may be used to disperse vapour and protect personnel stopping the leak. Leaking cylinders: eliminate ignition sources, wear appropriate PPE, move to a well-ventilated remote area and allow to discharge. Do not attempt to repair a leaking valve or relief device — notify the supplier. Use a combustible gas detector to confirm the area is safe. Notify emergency services (000) for uncontrolled releases.
Reference to other sections	See Section 8 for exposure controls and PPE; Section 13 for disposal considerations.

7. HANDLING AND STORAGE

Safe handling	Handle in accordance with AS/NZS 1596 (Storage and handling of LP Gas), AS 4332 (Storage and handling of gases in cylinders) and the ADG Code. Use only hoses, gauges and equipment designed and approved for hydrocarbon refrigerants; do not use natural-rubber components. Ensure cylinders are within test date, fit for use, and leak-checked before use — check with soapy water or approved detection devices, never with a flame. Do not fill excessively dented, gouged or rusty containers (refer AS 2337.1). Only fill cylinders by mass on verified weighing equipment. Earth/bond transfer equipment.
Safe storage	Store cylinders upright, valve uppermost, secured, in a well-ventilated area away from heat and ignition sources. Segregate from oxidising agents. Do NOT store in pits or basements where heavier-than-air vapour may collect. Comply with AS 4332 and AS/NZS 1596. Do not remove warning labels. Do not contaminate cylinders with other products.
Transport	Cylinders shall be transported upright and secured in accordance with the ADG Code and the Load Restraint Guide (NTC), and shall not be dropped.
Specific end uses	Refrigerant service in appliances/systems designed for hydrocarbon (A3) refrigerants. Product spilt on clothing may give rise to delayed evaporation and a subsequent fire hazard — remove and air affected clothing.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure standards (Safe Work Australia Workplace Exposure Standards)

Substance	TWA (8 hr)	Source
Propane / LPG	1,000 ppm (1,800 mg/m³)	Safe Work Australia WES
Butane (all isomers, incl. isobutane)	800 ppm (1,900 mg/m³)	Safe Work Australia WES

Exposure standards to be verified against the current Safe Work Australia Workplace Exposure Standards list at each SDS review.

Engineering controls

Maintain adequate ventilation to keep vapour concentration below 10 % of the lower flammability limit. Confined areas (e.g. tanks) must be ventilated and gas-tested before entry. Use explosion-proof electrical equipment where required.

Personal protective equipment (PPE)

Eye / Face	Safety glasses with side shields. Face shield when making/breaking refrigerant connections.
Hands	Insulated or leather gloves when handling cylinders and liquid transfer connections.
Body	Protective footwear. Cotton or fire-retardant overalls in transfer areas.
Respiratory	Not normally required with adequate ventilation. Where an inhalation risk exists, wear an air-line respirator or SCBA — filter respirators do not protect against asphyxiation.

9. PHYSICAL AND CHEMICAL PROPERTIES

Property	R290 (Propane)	R600a (Isobutane)
Appearance	Colourless liquefied gas	Colourless liquefied gas
Odour	Odourless; ethyl mercaptan may be added (≈ 25 ppm)	Odourless; ethyl mercaptan may be added (≈ 25 ppm)
Boiling point (101.3 kPa)	–42 °C	–11.7 °C
Vapour pressure at 25 °C	≈ 950 kPa (absolute); ≈ 850 kPa (gauge)	≈ 350 kPa (absolute); ≈ 250 kPa (gauge)
Flammability range in air	2.1 – 9.5 % v/v	1.8 – 8.4 % v/v
Auto-ignition temperature	≈ 470 °C	≈ 460 °C
Relative vapour density (air=1)	1.55	2.0
Liquid density at 15 °C	≈ 0.51 kg/L	≈ 0.56 kg/L
Solubility in water	Slight (≈ 0.001 cm³/cm³)	Slight
Oxidising properties	Not oxidising	Not oxidising
Volatiles	100 %	100 %

10. STABILITY AND REACTIVITY

Reactivity	Stable under recommended conditions of storage and handling. Incompatible with strong oxidising agents; may react violently with oxidants.
Chemical stability	Stable under normal conditions of storage and use.
Hazardous reactions	Hazardous polymerisation will not occur.
Conditions to avoid	Heat, sparks, open flames, hot surfaces, static discharge and other ignition sources. Avoid temperatures above 45 °C in storage.
Incompatible materials	Strong oxidisers (hypochlorites, nitric acid), oxygen, halogens and metal halides. Do not use natural-rubber hoses or fittings.
Hazardous decomposition products	On combustion in an oxygen-deficient enclosed space: carbon monoxide, carbon dioxide, unburned hydrocarbons, and irritating smoke/fumes.

11. TOXICOLOGICAL INFORMATION

Health hazard summary	Asphyxiant gas — symptoms of exposure relate directly to displacement of oxygen from air.
Acute toxicity — inhalation	Non-irritating; asphyxiant. Low concentrations may cause nausea, dizziness, headache and drowsiness; high concentrations may have a narcotic effect and lead to rapid loss of consciousness.

Acute toxicity — skin / eye	Non-irritating. Contact with evaporating liquid or super-cold vessels or pipework may cause frostbite with severe tissue damage.
Acute toxicity — oral	Not a relevant route of exposure (gas).
Cardiac sensitisation	Very high inhalation concentrations may cause cardiac sensitisation (arrhythmia).
Deliberate inhalation abuse	Deliberate inhalation of high concentrations can cause sudden fatality or brain damage.
Skin / Respiratory sensitisation	Not classified as a sensitiser.
Mutagenicity	Not classified.
Carcinogenicity	Not classified.
Reproductive toxicity	Not classified.
STOT — single exposure	Asphyxiant; may cause drowsiness, dizziness, breathing difficulty and unconsciousness in high concentrations.
STOT — repeated exposure	Not classified as causing organ damage from repeated exposure.
Aspiration hazard	Not classified.

Toxicity data

Component	Acute toxicity data
Propane (R290) — 74-98-6	LC50 (inhalation): 50,000 ppm
Isobutane (R600a) — 75-28-5	LC50 (inhalation, rat, 15 min): 57 pph

12. ECOLOGICAL INFORMATION

Ecotoxicity	No known ecological damage caused by this product. Low toxicity to aquatic organisms.
Persistence and degradability	Expected to be inherently biodegradable; degrades rapidly in air by indirect photolysis (atmospheric lifetime less than one year).
Bioaccumulative potential	No bioconcentration expected.
Mobility in soil	Volatile — will evaporate rapidly from soil and water surfaces.
Other adverse effects	Ozone Depletion Potential (ODP): 0. Global Warming Potential (GWP, IPCC AR4, 100-yr): ≈ 3. Very low GWP makes both R290 and R600a preferred hydrocarbon replacements for HFC refrigerants.

13. DISPOSAL CONSIDERATIONS

Waste disposal	Return cylinders and surplus product to Puregas or the supplier for disposal of contents. Do NOT vent to atmosphere in enclosed areas; recover or flare surplus product through licensed facilities. Do NOT puncture or incinerate containers.
Legislation	Dispose of in accordance with relevant Commonwealth, State and local environmental-protection and waste-management legislation.

14. TRANSPORT INFORMATION

CLASSIFIED AS DANGEROUS GOODS BY THE CRITERIA OF THE ADG CODE.

Field	Detail
UN Number	UN 1075
Proper Shipping Name	PETROLEUM GASES, LIQUEFIED
DG Class / Subsidiary Risk	2.1 (Flammable Gas) / none allocated
Packing Group	None allocated

Field	Detail
Hazchem Code / EPG	2YE / 2A2
EmS (IMDG)	F-D, S-U
Transport regulation	Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code, current edition); Load Restraint Guide (NTC).

Pictogram: Class 2.1 — Flammable Gas (transport label)

Special precautions: cylinders must be transported upright with valves protected and secured; outlet relief devices must not be obstructed; segregate from oxidisers; cylinders must be separated from the driver.

15. REGULATORY INFORMATION

Safe Work Australia / GHS	Classified as hazardous under the GHS as implemented by Australian WHS Regulations; classified as a dangerous good (Class 2.1) under the ADG Code.
Victoria — DG Regulations 2022	Dangerous Goods (Storage and Handling) Regulations 2022 — placarding, manifest and notification requirements apply above threshold quantities.
Ozone / SGG	Hydrocarbon refrigerants are NOT scheduled substances under the Ozone Protection and Synthetic Greenhouse Gas Management Act 1989; no Commonwealth refrigerant import licence or ARCtick trading authorisation applies to this product.
Inventory / Poisons Schedule	All constituents are listed on the Australian Inventory of Industrial Chemicals (AIIC). No poisons schedule number allocated (SUSMP).
Other relevant standards	AS/NZS 1596; AS 4332; AS/NZS 1677.1 & 1677.2; AS 2337.1; AS/NZS 60335-2-89 and AS/NZS 5149 series (appliance / system design, informative).
State licensing	Queensland: gas work licence (hydrocarbon refrigerants) applies to work on refrigeration gas systems.

16. OTHER INFORMATION

Revision history

Rev 1.1 (2 July 2026)	Section 3 composition amended to minimum-content ranges reflecting multi-source supply, with batch composition carried on the Certificate of Analysis; n-butane disclosed as minor component. Section 9 vapour pressures corrected to state absolute and gauge values. Section 8 exposure standards updated pending verification against current Safe Work Australia WES. Sections 4–7 and 14 expanded for consistency with ADG and cylinder-handling requirements.
Rev 1.0 (17 May 2026)	Original issue.

Refrigerant designations

R290	Propane
R600a	Isobutane (2-Methylpropane)

Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
ADG	Australian Dangerous Goods Code
AICS	Australian Inventory of Chemical Substances
AS 4332	Australian Standard — Storage and handling of gases in cylinders

CAS #	Chemical Abstracts Service registry number
EC No.	European Community Number
GHS	Globally Harmonised System of Classification and Labelling of Chemicals
IATA	International Air Transport Association
ICAO	International Civil Aviation Organisation
IMDG/IMO	International Maritime Dangerous Goods Code / International Maritime Organisation
SCBA	Self-Contained Breathing Apparatus
STEL	Short-Term Exposure Limit
STOT	Specific Target Organ Toxicity
SUSMP	Standard for the Uniform Scheduling of Medicines and Poisons
SWA	Safe Work Australia
TWA	Time-Weighted Average

Issued: 2 July 2026 **Revision:** 1.1 **Prepared by:** Puregas Aust Pty Ltd **Next review:** July 2031

The data given here applies only when the product is used for its proper application(s); the product is not sold as suitable for other applications. This SDS is based on current knowledge and describes the product for health, safety and environmental purposes only — it does not constitute a specification or warranty of product properties. If the buyer repackages this product, it is the buyer's responsibility to ensure proper health, safety and other necessary information is included with and/or on the container. The controlled copy of this SDS is maintained at puregas.com.au; downloaded or printed copies are uncontrolled.