

SAFETY DATA SHEET

COMMERCIAL PROPANE

This safety data sheet has been prepared in accordance with the requirements of UE Regulations 1907/2006 & 2020/878 (REACH) and 1772/2008 (CLP), and Guidance on the compilation of safety data sheets (European Chemicals Agency, December 2020).

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Substance Chemical Name	Propane
EC number	200-827-9
CAS number	74-98-6
Index number	601-003-00-5
Other names or synonyms	AvantiGas Commercial Propane, Liquid Petroleum Gas (LPG), Commercial propane, Technical propane.
Product description	A liquefied petroleum gas consisting predominantly of C3 hydrocarbons. Supplied as a fuel in a closed system meeting the requirements for commercial propane of BS4250 (and/or relevant national standards or regulations). Contains < 0.1 % (m/m) 1,3 butadiene, i.e. is not classified as carcinogenic or mutagenic.' 1,3 butadiene is not classified as reproductively toxic.
REACH Registration Number	As a liquefied petroleum gas, which occurs in nature and is not chemically modified, the substance does not require registration according to REACH Regulation by virtue of art. 2 (7) b and Annex V REACH.

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

Relevant identified use(s)	A multi-purpose product intended for uses including: fuels for equipment which has been specifically designed to run on commercial propane; internal combustion engine fuel and feedstock for the petrochemical industry.
Uses advised against	The product should only be used as advised above.

1.3 Details of the supplier of the safety data sheet

Supplier	Avanti Gas Limited
Full address	UGI House, Gisborne Close, Staveley, Chesterfield, Derbyshire, S43 3JT
Telephone number	+44 (0) 808 208 0000
National contact e-mail	enquiries@avantigas.com
Competent person for SDS	E-mail: hsseq@avantigas.com



1.4 Emergency telephone number

Emergency number	+44 (0) 808 178 2009
Opening hours	24 hours-a-day, 7 days-a-week

SECTION 2 : Hazard identification

2.1 Classification of the substance or mixture - according to Regulation (EC) No. 1272/2008 [CLP] Annex VI – Part 3 Table 3.1 – Harmonised Classification and Labelling

Physical hazards	
Flammable gas, category 1	H220: Extremely flammable gas
Gas under pressure, liquefied gas	H280: Contains gas under pressure, may explode if heated

2.2 Label elements - according to Regulation (EC) No. 1272/2008 [CLP]	
Hazard pictograms	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  GHS02: </div> <div style="text-align: center;">  GHS04: </div> </div>
Signal word	Danger
Hazard statements	H220: Extremely flammable gas H280: Contains gas under pressure, may explode if heated
Precautionary statements	<p><u>Prevention:</u> P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.</p> <p><u>Response:</u> P377: Leaking gas fire: Do not extinguish, unless leak can be stopped safely. P381: In case of leakage, eliminate all ignition sources.</p> <p><u>Storage:</u> P410+P403: Protect from sunlight. Store in a well-ventilated place.</p>

2.3 Other hazards
<p><u>Safety hazards:</u></p> <ul style="list-style-type: none"> • Readily forms an explosive air-vapour mixture at ambient temperature. • Vapour is heavier than air and may travel to remote sources of ignition (e.g. along drainage systems, into basements etc.). • Liquid leaks generate large volumes of flammable vapour (approximately 250: 1). • Electrostatic charges may be generated during pumping. • Electrostatic discharge may cause fire. <p><u>Health hazards:</u></p> <ul style="list-style-type: none"> • Cold burns (frostbite) will result from skin/eye contact with liquid. • Liquid release or vapour pressure jets present a risk of serious damage to the eyes. • Abuse involving wilful inhalation of very high concentrations of vapour, even for short periods, can produce unconsciousness or might prove fatal. • Inhalation may cause irritation to the nose and throat, headache, nausea, vomiting, dizziness and drowsiness. • In poorly ventilated or confined spaces, unconsciousness or asphyxiation may result due to high gas concentrations displacing available oxygen from the air.

SECTION 3: Composition/information on ingredients

3.1 Substances – Product identifier type in accordance with Article 18(2) of Regulation (EC) No. 1272/2008 [CLP]				
CAS No.	Substance Name	EC No.	Weight % content /ppm	SCL/ M-factor/ATE
74-98-6	Commercial Propane	200-827-9	> 80 %	Not available
106-99-0	Contains 1,3 Butadiene (1,3 butadiene not classed as carcinogen if < 0.1%)	203-450-8	< 0.1 %	Not available
75-08-1	A small quantity of ethyl mercaptan or similar odorizing agent is commonly added to assist in leak detection.	200-837-3	< 50 ppm	Not available
67-56-1	A small quantity of methanol is sometimes added as an anti-freeze agent.	200-659-6	< 1250 ppm	STOT SE 2, H371: 3% ≤ C < 10 % STOT SE 1, H370: C ≥ 10%,
3.2 Mixtures – not applicable (product listed as substance in Annex VI part.3 of Reg. (EC) No. 1272/2008 [CLP])				

SECTION 4: First aid measures

4.1 Description of first aid measures

4.1.1 General information	Do not enter area unless confirmed safe to do so. If possible, remove any affected person to uncontaminated safe area. In the case of accident or unwellness, seek medical advice immediately (show safety data sheet if possible).
4.1.2 Following inhalation	Remove the affected person to fresh air. If breathing has stopped administer artificial respiration. Give external cardiac massage if necessary. If the person is breathing, but unconscious, place them in the recovery position. Obtain medical assistance immediately.
4.1.3 Following skin contact	Cold burns should be flushed with warm water to normalise temperature. Cover the cold burns with sterile dressings. Do not apply ointments or powders. Obtain medical assistance immediately. Contaminated clothing may be a fire hazard and therefore should be soaked with water before being removed.
4.1.4 Following eye contact	Cold burns should be flushed with large amount of water to normalise temperature. Cover the eye with a sterile dressing and obtain medical assistance immediately. Remove contact lenses, if present and easy to do so.
4.1.5 Following ingestion	Not applicable
4.1.6 Self-protection of the first aider	First aider: Pay attention to self-protection.

4.2 Most important symptoms and effects, both acute and delayed

- High concentrations may cause central nervous system depression resulting in headaches, dizziness and nausea.
- Continued exposure may result in unconsciousness and/or death.
- Contact with liquefied gas can cause frostbite due to rapid evaporative cooling.

4.3 Indication of any immediate medical attention and special treatment needed

- Treat symptomatically. Administer oxygen if necessary.
- Treat frostbite with lukewarm water. Get immediate medical advice/attention.

SECTION 5: Firefighting measures

5.1 Extinguishing media

5.1.1 Suitable extinguishing media	<u>Large fire:</u> None. Product flow must be stopped and container cooled by water spray. Water fog should be used to assist approach to the source of the fire. Large fires should only be fought by the Fire Brigade. <u>Small fire:</u> dry powder
5.1.2 Unsuitable extinguishing media	<u>Large fire:</u> water jet (direct water jets on the burning product could cause a steam explosion and/or spread the fire). <u>Small fire:</u> water or foam. Simultaneous use of foam and water on the same surface is to be avoided as water destroys the foam.

5.2 Special hazards arising from the substance or mixture

- Hazardous combustion products may include: carbon monoxide, carbon dioxide, unidentified organic and inorganic compounds.
- The vapour is heavier than air, spreads along the ground and distant ignition is possible.
- Pressurised containers are liable to explode violently when subjected to high temperatures.
- Sustained fire attack on vessels may result in a Boiling Liquid Expanding Vapour Explosion (BLEVE).

5.3 Advice for firefighters

- Special protective equipment for firefighters: wear full fire-resistant clothing and self-contained breathing apparatus.
- Keep adjacent containers cool by spraying with water.
- Fire Fighting - particularly with foam and water - may give rise to contaminants entering water courses.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

6.1.1 For non-emergency personnel	<ul style="list-style-type: none">• Use personal protection equipment, see section 8• Evacuate from the hazard area to emergency meeting point
6.1.2 For emergency responders	<p><u>Immediate emergency actions:</u></p> <ul style="list-style-type: none">• Remove persons to safety.• Isolate hazard area and deny entry.• Use personal protective equipment, see section 8.• Remove all possible sources of ignition in the surrounding area.• Call the Emergency Services if required.• Treat or refer casualties if necessary.• Notify authorities if any exposure to the general public or the environment occurs or is likely to occur.• Risk of explosion. Inform the Emergency Services if product enters surface water drains. <p><u>Further actions:</u></p> <ul style="list-style-type: none">• Shut off leaks, if possible, without taking personal risks.• AVOID MAKING SPARKS.• Position firefighting equipment.• Check wind direction and attempt to disperse the vapours or to direct their flow (e.g. by using water curtains or fog sprays) to a safer location e.g. area free from ignition sources• Attempt to prevent the gas from entering low lying areas e.g. cellars, pits, drains, sewers or confined spaces.• Attempt to prevent the gas from entering watercourses e.g. rivers, sewers• Test atmosphere for flammable gas concentrations to ensure safe working conditions before personnel are allowed to enter the area.• Confirm all electrical equipment is suitable for use in the area.• Take precautionary measures against static discharge. Ensure electrical continuity by earthing all equipment.

6.2 Environmental Precautions

- Avoid loss of containment to the environment. Use appropriate containment methods.

6.3 Methods and material for containment and cleaning up

6.3.1 For containment	<p><u>Small release:</u> Allow to evaporate. Any firefighting products should be contained using appropriate methods.</p> <p><u>Large release:</u> Notify Emergency Services. If trained and competent to do so attempt to disperse the vapour or to direct its flow to a safer location, e.g. by using fog sprays or water curtains. Allow to evaporate. Any firefighting products should be contained using appropriate methods.</p>
6.3.2 For cleaning up	Clean objects and areas from firefighting products observing environmental local and national regulations.
6.3.3 Other information	None

6.4 Reference to other sections

- Personal Protective Equipment, see Section 8.
- Disposal of spilled material, see Section 13.

SECTION 7: Handling and storage

General precautions:

- Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this material.
- Ensure that all local and national regulations regarding handling and storage facilities are followed.

7.1 Precautions for safe handling

Protective measures:

- Use only in well-ventilated areas.
- Where handling cylinders wear personal protective equipment (see section 8).
- Follow local and national regulation related to ventilation, quantity limits, etc.

Measures to prevent fire:

- This product is highly flammable. No smoking or naked lights.
- Avoid any spark creation.
- Remove potential ignition sources, including portable electronic devices.
- Electrostatic charges may be generated during handling and discharge may cause fire.
- Earth all equipment.
- Properly dispose of any contaminated rags or cleaning materials in order to prevent fires.

Measures to prevent vapour or mist generation:

- This product is intended for use in closed systems only.
- Use local exhaust ventilation if there is a risk of inhaling vapours or mists.
- Use semi-automated and predominantly enclosed filling lines.

Measures to protect the environment

- This product is not classified as dangerous for the environment (see section 12)

Advice on general occupational health:

- Exposure to this product should be reduced as low as reasonably practicable.
- Work in well-ventilated zone.
- Avoid contact with skin, eyes and clothes.
- Provide eye shower and label its location conspicuously.
- Use suitable Personal Protective Equipment, see section 8.
- Contaminated leather articles including shoes cannot be decontaminated and should be destroyed to prevent reuse.
- Air-dry contaminated clothing in a well-ventilated area before laundering.

7.2 Conditions for safe storage, including any incompatibilities

Technical measures and storage conditions:

- Store in a well-ventilated area, away from ignition sources and other sources of heat.

Requirements for storage rooms and vessels

- No smoking or naked lights.
- Store and use only in equipment/containers designed for use with this product.
- Ensure adequate ventilation.
- Cylinders containing the product must be stored with valves uppermost.
- Where for practical reason and where legally approved, large cylinders (≥ 30 kg of product) without PRV may be stored horizontally based on pre-defined conditions i.e. cylinders are check-weighed to ensure not overfill, valve tested to ensure no leakage in the closed position, valve cap tested for leakage in the valve's open position, the valve's hand-wheel is protected by a shroud or metallic or plastic cap, and a thermoplastic seal as minimum.

Further information on storage conditions:

- Do not store near cylinders containing compressed oxygen or other strong oxidizers.
- Containers must be properly labelled. Do not remove warning labels from containers.
- Protect containers against damage.

7.3 Specific end use(s)

- Observe instructions for use.
- Protect cylinders from physical damage; do not drag, roll, slide or drop.
- Vapour offtake cylinders must be used in the vertical position, with the outlet valve at the top.
- Containers, even those that have been emptied, can contain explosive vapours. Do not cut, drill, grind, weld or perform similar operations on or near containers.

Recommended Materials

- For containers and container linings, use materials specifically approved for use with this product.
- Examples of suitable materials are: PA-11, PEEK, PVDF, PTFE, GRE (Epoxy), GRVE (vinyl ester), Viton (FKM), type F and GB, Neoprene (CR).

Unsuitable Materials

- Some forms of cast iron.
- Examples of materials to avoid are: ABS, polymethyl methacrylate (PMMA), polyethylene (PE/HDPE), polypropylene (PP), PVC, natural rubber (NR), Nitrile (NBR), ethylene propylene rubber (EPDM), butyl (IIR), Hypalon (CSM), polystyrene, polyvinyl chloride (PVC), polyisobutylene.

SECTION 8: Exposure controls/personal protection

Preventive industrial medical examination are to be carried out.

8.1 Control parameters¹

Occupational exposure limits (OEL): **UK - Workplace exposure limit (WEL)**

Substance	CAS No	Source	Type	ppm	mg/m ³	Hazard designation
Propane (no specific reference in EH40. See Liquefied petroleum gas) (LPG)	68476-85-7	UK HSE EH40/2005 Workplace Exposure Limits, edition 2020	Long-term (8 hour) WEL	1000	1750	Carc. (only applies if LPG contains more than 0.1% of buta-1,3 diene)
			Short-term (15 min) WEL	1250	2180	

DNEL and PNEC not available – testing is technically not possible (REACH – annex XI point 2).

8.2 Exposure control

8.2.1 Appropriate engineering controls

Technical measures to prevent exposure:

- Product to be used in closed systems only. Use sealed systems as far as possible.
- Ensure adequate ventilation. Local exhaust ventilation is recommended.
- Where required, use adequate explosion-proof ventilation to control airborne concentrations below the exposure guidelines/ limits,
- Keep concentrations well below lower explosion limits (see section 9). Use gas detectors to not exceed lower flammability limit with optical and acoustic signals and process shut down if concentration reach 50% LFL.
- Periodic monitoring of the concentration of product in the breathing zone of workers/ the general workplace may be required to confirm compliance with an OEL and adequacy of exposure controls.
- Monitor systems for leaks.
- Use suitable materials for containment systems.

¹ In addition to occupational exposure limits (OELs) applicable in the UK, limits applicable in other countries may also be indicated depending on the markets you supply LPG.

	<p><u>Organisational measures to prevent exposure:</u></p> <ul style="list-style-type: none"> ● Handle and store in accordance with good industrial hygiene and safety practice. ● Permit to Work System when required. ● Avoid contact with skin, eyes and clothing. ● Changes at work stations during shift, when reasonably practicable. ● Wash hands before breaks and at the end of the workday. ● Do not breath vapours or spray mist <p><u>Substance related measures to prevent exposure during identified uses:</u></p> <ul style="list-style-type: none"> ● Product to be used in closed systems only. ● Follow instructions for users.
<p>8.2.2 Personal protective equipment (PPE)</p>	<p><u>General:</u></p> <ul style="list-style-type: none"> ● The choice shall be made on the risk assessment. ● PPE must meet applicable European or national standard. ● Follow Group/ Company guidelines. ● Check with PPE suppliers on specific requirements. <p><u>8.2.2.1 Eye and face protection</u></p> <p>Chemical splash goggles (gas-tight mono-goggles), face shield with chin guard or a hybrid of safety glasses and goggles - approved to EN-166</p> <p><u>8.2.2.2 Skin protection</u></p> <p>Hand protection:</p> <ul style="list-style-type: none"> ● Where hand contact with the product may occur use gloves against dangerous chemicals (EN-ISO 374) made e.g. from nitrile rubber. ● If contact with liquefied product is possible or anticipated use gloves against cold (EN-511) e.g. polar grip gloves. ● Gloves must be worn on clean hands. ● After using gloves, hands should be washed and dried thoroughly. ● Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, glove thickness, and dexterity. Seek advice from glove suppliers. Contaminated gloves should be replaced. <p>Other skin protection:</p> <ul style="list-style-type: none"> ● Antistatic overalls with sleeves or trousers and jacket (EN 1149) ● Antistatic and anti-slip footwear with toecap. Metatarsal protection is required during cylinder handling. <p><u>8.2.2.3 Respiratory protection</u></p> <ul style="list-style-type: none"> ● If operations are such that significant exposure to vapour may be anticipated, then suitable approved respiratory equipment should be worn. ● Equipment must be to the relevant EN standard and this may be determined by reference to EN-529 'Respiratory protective devices. Recommendations for selection, use, care and maintenance. Guidance document'. ● Filters should be identified by the appropriate supplier using the information contained within this SDS. ● The use of respiratory equipment must be strictly in accordance with the manufacturers' instructions and any statutory requirements governing its selection and use. ● All wearers of respiratory protection must be trained in its use. The nature of the atmosphere and the working environment will determine the protection required. ● A self-contained breathing apparatus (EN-137) must be used in case of intervention in an environment where the oxygen level is less than 17%. <p><u>8.2.2.4 Thermal hazards</u></p> <p>Frost burns from LPG or cold surfaces - no specific measures others than described in sections 8.2.2.1-2.</p>

	<p>8.2.2.5 - Thermal decomposition residue product protection</p> <p>Additional hazards may apply to residual products of thermal decomposition as recognised in section 10.6.</p> <p>When contact with residual contaminants may take place the following PPE must be used;</p> <ul style="list-style-type: none"> • Nitril EN 374 Chemical resistant gauntlets with a minimum breakthrough time of 30 minutes (in handling time is increased either gloves must be replaced at required of intervals or gloves with the required breakthrough time for the task must be used). Contaminated gloves should be replaced. • Goggles to BS EN 166 1FT 3 KN • Fire retardant / Antistatic overalls with sleeves or trousers and jacket (BS EN 1149 / BS EN BSEN 1149-3) <p>In addition if identified that there is a possibility of contact with pressurised contaminant or there are ventilation issues such as working in a confined space, then the following PPE must be worn;</p> <ul style="list-style-type: none"> • Negative Pressure Full Face Mask • Filters should be identified by the appropriate supplier using the information contained within 10.6 of this SDS relating to residual thermal decomposition products • Visor to BS EN 166 -1B39 • Goggles to BS EN 166 1FT 3 KN • Chemical Wellington Boots to EN 13832-3 Chemical resistant EN 13287 – Anti slip EN 20345 – Toe protection • Disposable Overalls, anti-static and fire resistant to BS EN 1149-5 / EN 14605 type 3 – liquid tight suit to EN 14116
<p>8.2.3 Environmental exposure controls</p>	<ul style="list-style-type: none"> • Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation (e.g. VOC). <p>Substance related measures; instruction, organisational and technical measures to prevent exposure:</p> <ul style="list-style-type: none"> • Product to be used in closed systems only. • Limit/ control emissions during product transfer equipment connection or disconnection, or LPG containers cleaning.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

(a) Physical state	Gas (at standard conditions of temperature and pressure)
(b) Colour	Colourless
(c) Odour	Odourless, odorant added to provide a distinctive smell
(d) Melting point/ freezing point	Typical: -187.6 °C
(e) Boiling point or initial boiling and boiling range	Typical: -40 °C.
(f) Flammability	Flammable Gas
(g) Lower and upper explosion limit	Typical: LEL- 1.7%, UEL-10.9 %
(h) Flash point	Typical: -104 °C
(i) Auto-ignition temperature	Typical: 450 °C.
(j) Decomposition temperature	650 °C, decomposition to ethylene and ethane
(k) pH	Not applicable
(l) Kinematic viscosity	Not applicable
(m) Solubility	Negligible
(n) Partition coefficient n-octanol/water (log value)	Typical: Log P _{ow} =2.3
(o) Vapour pressure	Typical: 750 kPa at 15°C
(p) Density and/or relative density	Typical: 0,512 at 15°C (water=1.0)

(q) Relative vapour density	Typical: 1.5 at 15°C (air=1.0)
(r) Particle characteristics	Not applicable
9.2 Other information	
No additional information relevant to safe use of the substance.	

SECTION 10: Stability and reactivity	
10.1 Reactivity	Product will not become self-reactive.
10.2 Chemical stability	Product is chemically stable under recommended conditions of storage, use and temperature.
10.3 Possibility of hazardous reactions	No known hazardous reactions.
10.4 Conditions to avoid	<ul style="list-style-type: none"> • Creation of flammable atmospheres • Potential sources of ignition. • Storage at above 50 °C
10.5 Incompatible materials	Strong oxidising agents (e.g. chlorates, which may be used in agriculture, peroxides).
10.6 Hazardous decomposition products	<ul style="list-style-type: none"> • Hazardous decomposition products are not expected during normal storage. • If combusted, compounds of carbon dioxide and carbon monoxide will be released to atmosphere during any fire. • Carbon monoxide may be produced if there is insufficient air for complete combustion. • Thermal decomposition may result in residue which may contain various concentrations of substances like Phthalates, Adipates, Terephthalates and Thienothiophenes. These substances may damage fertility or the unborn child, may cause severe eye damage, may cause respiratory irritation or cause skin irritation. Appropriate measures should be taken in handling residue to avoid exposure and any residue should be appropriately disposed of as hazardous waste. If contact with thermal decomposition residue products may occur, please refer to personal protective equipment section 8.2.2.5.

SECTION 11: Toxicological information	
11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008	
<u>General:</u>	
<ul style="list-style-type: none"> • Information given is based on product data, a knowledge of the components and the toxicology of similar products. • Inhalation is the primary route of exposure although exposure may occur through skin or eye contact. 	
(a) acute toxicity (oral, dermal, inhalation)	Not applicable. Product is not classified as presenting an acute toxicity, irrespective of exposure type.
(b) skin corrosion/ irritation	Not irritating to skin. Contact with liquid product will cause cold burns and frostbite to the skin.
(c) serious eye damage/irritation	Essentially non-irritating to eyes. Contact with liquid product will present a risk of serious damage to the eyes.
(d) respiratory or skin sensitisation	Not expected to be a sensitizer.
(e) germ cell mutagenicity	No evidence of mutagenic activity.
(f) carcinogenicity	Not expected to be carcinogenic.

(g) reproductive toxicity	Not expected to impair sexual function and fertility. Not a developmental toxicant.
(h) STOT - single exposure	<ul style="list-style-type: none"> Low vapour concentrations may cause nausea, dizziness, headaches and drowsiness. May have a narcotic effect if high concentrations of vapour are inhaled. High vapour concentrations may produce symptoms of oxygen deficiency which, coupled with central nervous system depression, may lead to rapid loss of consciousness and/ or death.
(i) STOT - repeated exposure	Low systemic toxicity on repeated exposure.
(j) aspiration hazard	Not considered an aspiration hazard.

11.2 Information on other hazards

- No other relevant information on adverse health effects.

SECTION 12: Ecological information

12.1 Toxicity	<p>No known ecological damage is caused by this product.</p> <p><u>Air</u>: Liquefied Petroleum Gases are mixtures of volatile components which when released to air will react rapidly with hydroxyl radicals and ozone to give carbon dioxide and water product.</p> <p><u>Water</u>: If released to water the product will rapidly evaporate.</p> <p><u>Soil</u>: If released to soil the product will rapidly evaporate.</p>
12.2 Persistence and degradability	Unlikely to cause long term adverse effects in the environment.
12.3 Bioaccumulative potential	This material is not expected to bioaccumulate.
12.4 Mobility in soil	Spillages are unlikely to penetrate the soil.
12.5 Result of the PBT and vPvB Assessment	A chemical safety report is not required for this product consequently no PBT and vPvB are required.
12.6 Endocrine disrupting properties	Not applicable
12.7 Other adverse effects	No known behaviour.

SECTION 13: Disposal consideration

13.1 Waste treatment methods

Waste disposal according to directive 2008/98/EC, covering waste and dangerous waste.

Waste code in accordance with EWC:

16 05 04* gases in pressure containers (including halons) containing dangerous substances.

13.1.1 Product/ Packaging disposal	<p><u>Product disposal</u>:</p> <ul style="list-style-type: none"> Users are recommended to contact the local supplier representative when they wish to dispose of surplus quantities of the product. Do not discharge product into areas where there is a risk of forming an explosive mixture with air. Do not dispose into the environment, in drains or in water courses. Given the nature and uses of this product, the need for disposal seldom arises. If necessary, dispose by controlled combustion in purpose-designed equipment. If this is not possible, contact the supplier. <p><u>Packaging Disposal</u>:</p> <ul style="list-style-type: none"> Cylinders are the property of <i>AvantiGas Ltd</i> and should be returned to the local dealer/stockist when no longer required
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	<ul style="list-style-type: none"> Empty vessels or cylinders will contain some remaining product. Hazard warning labels are a guide to the safe handling of empty packaging and should not be removed. For vessels seek specialist advice from suppliers. Empty containers represent a fire hazard as they will contain flammable product residues and vapour. Never attempt to modify, incinerate, crush, weld, solder or braze empty containers.
13.1.2 Waste treatment – relevant information	<ul style="list-style-type: none"> Waste arising from a spillage or vessel cleaning should be disposed of in accordance with prevailing regulations, preferably to a recognised collector or contractor. The competence of the collector or contractor should be established beforehand.
13.1.3 Sewage disposal - relevant information	<ul style="list-style-type: none"> Prevent product and waste from vessel cleaning from entering sewer systems.
13.1.4 Other disposal recommendation	<ul style="list-style-type: none"> Disposal should be in accordance with all applicable regional, national, and local laws and regulations.

SECTION 14: Transport information

	ADR	RID	ADN	IMDG	IATA
14.1 UN number or ID number	1978				
14.2 UN proper shipping name	Propane				
14.3 Transport hazard class(es)	Class 2, classification code 2F, label 2.1 For RID only: additionally label 13 (shunt carefully)				
14.4 Packing group	Not applicable				
14.5 Environmental hazards	No				
14.6 Special precautions for user	<ul style="list-style-type: none"> Always transport in closed containers that are secure and upright where reasonably practicable. Ensure that persons transporting the product know what to do in the event of an accident or spillage. Refer to Section 7 for special precautions which a user needs to be aware of or needs to comply with in connection with transport. 				
14.7 Maritime transport in bulk according to IMO instruments	Not applicable				
IATA Dangerous Goods Regulations (DGR)	Forbidden for transport on passenger aircraft.				

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Authorisation and/ or restrictions on use: None

EU legislation:

- Regulation (EC) 1907/2006 on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) – as amended.
- Regulation EC 1272/2008 on classification, labelling and packaging of substances and mixtures (CLP Regulation) – as amended.
- Regulation EU 2016/425 on personal protective equipment.
- Framework Directive 89/391/EEC on the introduction of measures to encourage improvements in the safety and health of workers at work – as amended.
- Directive 89/656/EEC on the minimum health and safety requirements for the use by workers of personal protective equipment at the workplace (3rd individual directive) – as amended.

- Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work (14th individual directive) - as amended.
- Directive 1999/92/EC on minimum requirements for improving the safety and health protection of workers potentially at risk from explosive atmospheres (15th individual directive) – as amended.
- Directive 2008/98/EC on waste – as amended.
- Directive 2012/18/EU on the control of major accident hazards involving dangerous substances.
- Directive 2010/35/EU on transportable pressure equipment (TPED).
- Directive 2008/68/EC on inland transport of dangerous goods – as amended.
- Where applicable, regulations referred to in section 14, editions in force.

National regulations:

- The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment (Amendment) (EU Exit) Regulations 2020

15.2 Chemical safety assessment

No chemical safety assessment has been performed for this substance due to its REACH exemption - see section 1.1

SECTION 16: Other information

(a) Indication of changes

Version 1.0 - Initial issue March 2021

Version 1.1 - 1st change with minor amendments not requiring update and re-issue to former recipients

Version 2.0 - 1st change requiring provision of update to former recipients according to Article 31(9) [REACH] until 31 December 2022.

This version 2.0 replaces version 1.1 from March 2022 and includes amendments resulting from Commission Regulation (EU) 2020/878 amending Annex II to Regulation (EC) No 1907/2006 (REACH).

The word "SECTION" has been added in each of 16 headings as a part of the heading specified as being required. Minor amendments has been made in the sections: 1.2, 1.4 , 3.1, 11.2, 12.6, 14.7, 16, and a major one in section 9.1.

This version 2.1 replaces version 2.0 from June 2022 and includes minor amendments in section 1.1 Product identifier/Product description and in the headline of section 2.1.

This version 2.2 replaces version 2.1 from April 2023 and includes additional information in relation to thermal composition residues in section 10.6

(b) Abbreviations and acronyms:

ADN	European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
ATE	Acute Toxicity Estimate
CLP	Classification Labelling and Packaging Regulation
DNEL	Derived No Effect Level
EC	European Commission or European Community
ECHA	European Chemicals Agency
EN	European Standard
EWC	European Waste Classification
HSE	Health and Safety Executive (in UK)
IATA	International Air Transport Association
IBC Code	International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk
IMDG	International Maritime Dangerous Goods
IMO	International Maritime Organization
ISO	International Standard
LEL	Lower Explosion Limit
LPG	Liquefied Petroleum Gas
MARPOL	The International Convention for the Prevention of Pollution of Ships

M-factor	Multiplication factor
N.O.S.	Not Otherwise Specified
OEL	Occupational Exposure Limit
PBT	Persistent, Bioaccumulative and Toxic
PNEC	Predicted No Effect Concentration
PRV	Pressure Relief Valve
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
RID	Regulations concerning the International Carriage of Dangerous Goods by Rail
SCL	Specific Concentration Limit
SDS	Safety Data Sheet
STOT SE	Specific Target Organ Toxicity - Single Exposure
UEL	Upper Explosion Limit
UK HSE	United Kingdom Health and Safety Executive
VOC	Volatile Organic Compounds
vPvB	very Persistent and very Bioaccumulative
WEL	Workplace Exposure Limit

(c) Training advice:

Substance should only be handled by trained staff.

(d) Additional information:

The above information describes exclusively the safety requirements of the product and is based on our present-day knowledge. The information is intended to give you advice about the safe handling of commercial propane for storage, processing, transport and disposal. The information cannot be transferred to other products. In the case of mixing this product with other products or in the case of processing, the information on this safety data sheet is not necessarily valid for the new made-up material.

End of safety data sheet