

# SAFETY DATA SHEET

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

1.1. Product identifier

Trade name or designation

Propane

of the mixture

Registration number

**Synonyms** None. SDS number WC002 UN1978 **Product code** 11-April-2014 Issue date

Version number 02

**Revision date** 09-August-2016 11-April-2014 Supersedes date

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

**Identified uses** Portable fuel. None known. Uses advised against 1.3. Details of the supplier of the safety data sheet

Rothenberger UK Limited Manufacturer/Supplier

2 Kingsthorne Park, Henson Way, **Address** 

Kettering, Northants, NN16 8PX

**Contact person** 

Sales E-mail address

Telephone number info@rothenberger.co.uk

+44 (0) 1536 310 300 / Fax: +44 (0) 1536 310 600 1.4. Emergency telephone

number +44 (0) 1536 310 300 / Fax: +44 (0) 1536 310 600 / 1-703-527-3887 International

### **SECTION 2: Hazards identification**

#### 2.1. Classification of the substance or mixture

The mixture has been assessed and/or tested for its physical, health and environmental hazards and the following classification applies.

### Classification according to Regulation (EC) No 1272/2008 as amended

Physical hazards

Flammable gases (including chemically

Category 1

H220 - Extremely flammable gas.

unstable gases) Gases under pressure

Liquefied gas

H280 - Contains gas under pressure; may explode if heated.

Contents under pressure. Heat may cause the containers to explode. Vapours may cause a flash **Hazard summary** 

fire or ignite explosively. Suffocation (asphyxiant) hazard - if allowed to accumulate to

concentrations that reduce oxygen below safe breathing levels.

#### 2.2. Label elements

#### Label according to Regulation (EC) No. 1272/2008 as amended

Hazard pictograms



Signal word Danger

**Hazard statements** 

Extremely flammable gas. H220

Contains gas under pressure; may explode if heated. H280

**Precautionary statements** 

Prevention

Propane

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

P233 Keep container tightly closed.

P271 Use only outdoors or in a well-ventilated area.

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P284 Wear respiratory protection.

Response

P377 Leaking gas fire: Do not extinguish, unless leak can be stopped safely.

P381 Eliminate all ignition sources if safe to do so.

**Storage** 

P410 + P403 Protect from sunlight. Store in a well-ventilated place.

**Disposal** Dispose of waste and residues in accordance with local authority requirements.

Supplemental label information None

2.3. Other hazards May displace oxygen and cause rapid suffocation. Not a PBT or vPvB substance or mixture.

### **SECTION 3: Composition/information on ingredients**

#### 3.2. Mixtures

#### **General information**

Chemical name	%	CAS-No. / EC No.	REACH Registration No.	INDEX No.	Notes
Propane	87.5-100	74-98-6 200-827-9	-	601-003-00-5	
Classification:	Flam. Gas 1;H220, Press. Gas;H280				U
Propylene	0-10	115-07-1 204-062-1	-	601-011-00-9	
Classification:	Flam. Gas 1;H220, Press. Gas;H280				U
Ethane	0-7	74-84-0 200-814-8	-	601-002-00-X	
Classification:	Flam. Gas 1;H220				U
Butane	0-2.5	106-97-8 203-448-7	-	601-004-01-8	
Classification:	Flam. Gas 1;H220, Press. Gas;H280				

# Additives

Chemical name	%	CAS-No. / EC No.	REACH Registration No.	INDEX No.	Notes
Ethyl mercaptan	<0.005	75-08-1 200-837-3	-	016-022-00-9	

### List of abbreviations and symbols that may be used above

CLP: Regulation No. 1272/2008.

Note U (Table 3.1): When put on the market gases have to be classified as "Gases under pressure", in one of the groups compressed gas, liquefied gas, refrigerated liquefied gas or dissolved gas. The group depends on the physical state in which the gas is packaged and therefore has to be assigned case by case.

**Composition comments** Gas concentrations are in percent by volume.

# **SECTION 4: First aid measures**

General information If you feel unwell, seek medical advice (show the label where possible). Ensure that medical

personnel are aware of the material(s) involved, and take precautions to protect themselves.

4.1. Description of first aid measures

**Inhalation** Remove from further exposure. For those providing assistance, avoid exposure to yourself or

others. Use adequate respiratory protection. If respiratory tract irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist

ventilation with a mechanical device or use mouth-to-mouth resuscitation.

**Skin contact**Not likely, due to the form of the product. If frostbite occurs, immerse affected area in warm water

(not exceeding 105°F/41°C). Keep immersed for 20 to 40 minutes. Get medical attention

immediately.

Eye contact Not likely, due to the form of the product. If frostbite occurs, immediately flush eyes with plenty of

warm water (not exceeding 105°F/41°C) for at least 15 minutes. If easy to do, remove contact

lenses. Get medical attention promptly if symptoms persist or occur after washing.

Ingestion This material is a gas under normal atmospheric conditions and ingestion is unlikely.

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

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

Exposure to rapidly expanding gas or vapourizing liquid may cause frostbite ("cold burn"). Very high exposure can cause suffocation from lack of oxygen. Symptoms may include loss of mobility/consciousness. Victim may not be aware of asphyxiation. Asphyxiation may bring about unconsciousness without warning and so rapidly that victim may be unable to protect themself.

Exposure may aggravate pre-existing respiratory disorders. Provide general supportive measures and treat symptomatically.

### **SECTION 5: Firefighting measures**

General fire hazards

Extremely flammable gas. Contents under pressure. Pressurised container may explode when exposed to heat or flame.

5.1. Extinguishing media

Suitable extinguishing media

Dry chemical powder. Carbon dioxide (CO2). Water fog. Foam.

Unsuitable extinguishing media

Do not use water jet as an extinguisher, as this will spread the fire.

5.2. Special hazards arising from the substance or mixture

Extremely flammable gas. Vapours may form explosive mixtures with air. Vapours may travel considerable distance to a source of ignition and flash back. During fire, gases hazardous to health may be formed.

5.3. Advice for firefighters
Special protective
equipment for firefighters
Special fire fighting

Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Do not extinguish fires unless gas flow can be stopped safely; explosive re-ignition may occur. Promptly isolate the scene by removing all persons from the vicinity of the incident. No action shall be taken involving any personal risk or without suitable training. For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus. Stop flow of material. Use water to keep fire exposed containers cool and to protect personnel effecting shutoff. If a leak or spill has not ignited, use water spray to disperse the vapors and to protect personnel attempting to stop leak. Prevent runoff from fire control or dilution from entering streams, sewers or drinking water supply.

Specific methods

procedures

Use standard firefighting procedures and consider the hazards of other involved materials. Cool containers exposed to flames with water until well after the fire is out.

## **SECTION 6: Accidental release measures**

6.1. Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

Evacuate the area promptly. No action shall be taken involving any personal risk or without suitable training. In the event of a leak evacuate all personnel until ventilation can restore oxygen concentrations to safe levels. Keep unnecessary personnel away. Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. Wear appropriate personal protective equipment (See Section 8).

For emergency responders

Keep unnecessary personnel away. Wear appropriate protective equipment and clothing during clean-up.

6.2. Environmental precautions

Should not be released into the environment. Prevent further leakage or spillage if safe to do so.

6.3. Methods and material for containment and cleaning up

Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Keep combustibles (wood, paper, oil etc) away from spilled material. Stop leak if you can do so without risk. If possible, turn leaking containers so that gas escapes rather than liquid. Isolate area until gas has dispersed.

6.4. Reference to other sections

For personal protection, see section 8 of the SDS. For waste disposal, see section 13 of the SDS.

## **SECTION 7: Handling and storage**

7.1. Precautions for safe handling

Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Do not handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. All equipment used when handling the product must be grounded. Do not breathe gas. Avoid prolonged exposure. Do not enter storage areas or confined spaces unless adequately ventilated. Use only outdoors or in a well-ventilated area. Oxygen concentration should not fall below 19.5 % at sea level (pO2 = 135 mmHg). Mechanical ventilation or local exhaust ventilation may be required. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.

7.2. Conditions for safe storage, including any incompatibilities

Store at temperatures not exceeding 49°C/120°F. Keep away from heat, sparks and open flame. Prevent electrostatic charge build-up by using common bonding and grounding techniques. Store in a cool, dry place out of direct sunlight. Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Protect cylinders from damage. Stored containers should be periodically checked for general condition and leakage. Store in original tightly closed container. Keep container tightly closed. Store in a well-ventilated place. Use care in handling/storage. Store away from incompatible materials (see section 10 of the SDS).

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## SECTION 8: Exposure controls/personal protection

#### 8.1. Control parameters

#### Occupational exposure limits

**UK. EH40 Workplace Exposure Limits (WELs)** 

Components	Туре	Value	
Butane (CAS 106-97-8)	STEL	1810 mg/m3	
		750 ppm	
	TWA	1450 mg/m3	
		600 ppm	
Additives	Туре	Value	
Ethyl mercaptan (CAS 75-08-1)	STEL	5.2 mg/m3	
,		2 ppm	
	TWA	1.3 mg/m3	
		0.5 ppm	

**Biological limit values** No biological exposure limits noted for the ingredient(s).

**Recommended monitoring** 

procedures

Follow standard monitoring procedures.

Derived no effect levels

(DNELs)

Not available.

Predicted no effect

concentrations (PNECs)

Not available.

Control banding approach

No data available.

8.2. Exposure controls

Appropriate engineering

controls

Provide adequate ventilation and minimize the risk of inhalation of gas. Use process enclosures,

local exhaust ventilation, or other engineering controls to control airborne levels below

recommended exposure limits.

Individual protection measures, such as personal protective equipment

**General information** Use personal protective equipment as required. Personal protection equipment should be chosen

according to the CEN standards and in discussion with the supplier of the personal protective

equipment.

Eye/face protection

Skin protection

Wear approved safety glasses or goggles.

- Hand protection Wear appropriate chemical resistant gloves. Neoprene or nitrile gloves are recommended.

- Other Wear protective clothing appropriate for the risk of exposure.

Respiratory protection If engineering controls do not maintain airborne concentrations below recommended exposure

limits (where applicable) or to an acceptable level (in countries where exposure limits have not

been established), an approved respirator must be worn.

Thermal hazards Contact with liquefied gas might cause frostbites, in some cases with tissue damage. Wear

appropriate thermal protective clothing, when necessary.

Do not eat, drink or smoke when using the product. Wash thoroughly after handling. Provide Hygiene measures

eyewash station and safety shower. Handle in accordance with good industrial hygiene and safety

practices.

**Environmental exposure** 

controls

Environmental manager must be informed of all major releases.

### **SECTION 9: Physical and chemical properties**

### 9.1. Information on basic physical and chemical properties

Colorless gas. **Appearance** Physical state Gas (Liquefied).

**Form** Compressed liquefied gas.

Colour Colourless. Odour Rotten egg. **Odour threshold** Not available. Not applicable. pН Melting point/freezing point -188 °C (-306.4 °F)

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range

-104.0 °C (-155.2 °F) Flash point **Evaporation rate** Not applicable.

Flammability (solid, gas) Extremely flammable gas.

Upper/lower flammability or explosive limits

**Explosive limit - lower (%)** 2.15 % Explosive limit - upper 96%

(%)

127 psig (21°C / 70°F) Vapour pressure

Not available. Vapour density Relative density 0.504 (liquid)

1.5 (vapor) (air=1) @ 15°C / 60°F

Slightly soluble in water. Solubility(ies)

Partition coefficient 1.77

(n-octanol/water)

**Auto-ignition temperature** 432 °C (809.6 °F) **Decomposition temperature** Not available. Not applicable. **Viscosity** Not explosive. **Explosive properties** Not oxidising. Oxidising properties

9.2. Other information

Molecular weight 45 g/mol 100 % Percent volatile

# **SECTION 10: Stability and reactivity**

10.1. Reactivity Reacts violently with strong oxidants, nitrites, inorganic chlorides, chlorites and perchlorates

causing fire and explosion hazard.

10.2. Chemical stability Stable under normal temperature conditions and recommended use. Polymerization will not occur. May form explosive mixture with air. 10.3. Possibility of hazardous

reactions

10.4. Conditions to avoid Avoid heat, sparks, open flames and other ignition sources. Avoid temperatures exceeding the

flash point. Contact with incompatible materials.

Strong oxidising agents. Strong acids. Halogens. Nitrates. 10.5. Incompatible materials

Thermal decomposition of this product can generate carbon monoxide and carbon dioxide. 10.6. Hazardous

Hydrocarbons. decomposition products

## **SECTION 11: Toxicological information**

**General information** Occupational exposure to the substance or mixture may cause adverse effects.

Information on likely routes of exposure

Inhalation High concentrations: Breathing of high concentrations may cause dizziness, light-headedness,

headache, nausea and loss of co-ordination. Continued inhalation may result in unconsciousness.

Skin contact Contact with liquefied gas may cause frostbite. Eye contact Contact with liquefied gas may cause frostbite.

This material is a gas under normal atmospheric conditions and ingestion is unlikely. Ingestion

Exposure to rapidly expanding gas or vapourizing liquid may cause frostbite ("cold burn"). Very **Symptoms** 

high exposure can cause suffocation from lack of oxygen. Victim may not be aware of

asphyxiation. Asphyxiation may bring about unconsciousness without warning and so rapidly that

victim may be unable to protect themself.

#### 11.1. Information on toxicological effects

**Acute toxicity** Not expected to be acutely toxic.

**Species** Components Test results

Propane (CAS 74-98-6)

Acute Inhalation

1355 mg/l LC50 Rat

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919503 Version #: 02  Components **Species Test results** 

Propylene (CAS 115-07-1)

Acute Inhalation

LC50 Mouse 680 mg/l, 2 Hours Rat 658 mg/l, 4 Hours

Skin corrosion/irritation Serious eye damage/eye

irritation

Based on available data, the classification criteria are not met. Based on available data, the classification criteria are not met.

Respiratory sensitisation Skin sensitisation

Germ cell mutagenicity

Reproductive toxicity

Carcinogenicity

Based on available data, the classification criteria are not met. Based on available data, the classification criteria are not met. Based on available data, the classification criteria are not met. Based on available data, the classification criteria are not met. Based on available data, the classification criteria are not met.

Specific target organ toxicity single exposure

Based on available data, the classification criteria are not met. Based on available data, the classification criteria are not met.

Specific target organ toxicity repeated exposure

Mixture versus substance

information

**Aspiration hazard** 

No information available.

Other information Exposure over a long period of time may cause central nervous system effects.

Not likely, due to the form of the product.

# **SECTION 12: Ecological information**

The product is not expected to be hazardous to the environment. 12.1. Toxicity

12.2. Persistence and

degradability

The product is readily biodegradable.

12.3. Bioaccumulative potential The product is not expected to bioaccumulate.

**Partition coefficient** n-octanol/water (log Kow)

Propane 1.77 Propylene (CAS 115-07-1) 1.77

Not available. **Bioconcentration factor (BCF)** 

12.4. Mobility in soil Not relevant, due to the form of the product. Not a PBT or vPvB substance or mixture. 12.5. Results of PBT

and vPvR assessment

12.6. Other adverse effects The product contains volatile organic compounds which have a photochemical ozone creation

potential.

# **SECTION 13: Disposal considerations**

13.1. Waste treatment methods

Residual waste Dispose in accordance with all applicable regulations.

Contaminated packaging Empty containers should be taken to an approved waste handling site for recycling or disposal.

16 05 04\* EU waste code

The Waste code should be assigned in discussion between the user, the producer and the waste

disposal company.

Disposal methods/information Use the container until empty. Do not dispose of any non-empty container. Empty containers have

residual vapor that is flammable and explosive. Cylinders should be emptied and returned to a hazardous waste collection point. Do not puncture or incinerate even when empty. Dispose in

accordance with all applicable regulations.

Special precautions Dispose of in accordance with local regulations.

# **SECTION 14: Transport information**

**ADR** 

14.1. UN number UN1978 14.2. UN proper shipping **PROPANE** 

name

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```
14.3. Transport hazard class(es)
        Class
                                 2.1
        Subsidiary risk
        Label(s)
                                 2 1
        Hazard No. (ADR)
                                 23
        Tunnel restriction code B/D
                                 Not applicable.
    14.4. Packing group
    14.5. Environmental hazards No
    14.6. Special precautions
                                 Read safety instructions, SDS and emergency procedures before handling.
    for user
RID
                                 UN1978
    14.1. UN number
                                 PROPANE
    14.2. UN proper shipping
    name
    14.3. Transport hazard class(es)
                                 2.1
        Class
        Subsidiary risk
                                 2.1 (+13)
        Label(s)
                                 Not applicable.
    14.4. Packing group
    14.5. Environmental hazards No
    14.6. Special precautions
                                 Read safety instructions, SDS and emergency procedures before handling.
    for user
ADN
    14.1. UN number
                                 UN1978
                                 PROPANE
    14.2. UN proper shipping
    name
    14.3. Transport hazard class(es)
        Class
                                 2.1
        Subsidiary risk
        Label(s)
                                 2.1
                                 Not applicable.
    14.4. Packing group
    14.5. Environmental hazards No
                                 Read safety instructions, SDS and emergency procedures before handling.
    14.6. Special precautions
    for user
IATA
                                 UN1978
    14.1. UN number
                                 Propane
    14.2. UN proper shipping
    name
    14.3. Transport hazard class(es)
        Subsidiary risk
    14.4. Packing group
                                 Not applicable.
    14.5. Environmental hazards No
    ERG Code
    14.6. Special precautions
                                 Read safety instructions, SDS and emergency procedures before handling.
    for user
IMDG
    14.1. UN number
                                 UN1978
                                 PROPANE
    14.2. UN proper shipping
    14.3. Transport hazard class(es)
        Class
        Subsidiary risk
    14.4. Packing group
                                 Not applicable.
    14.5. Environmental hazards
```

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Read safety instructions, SDS and emergency procedures before handling.

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No

F-D, S-U

Not applicable.

Marine pollutant

14.6. Special precautions

according to Annex II of Marpol

**EmS** 

for user 14.7. Transport in bulk

and the IBC Code

#### **General information**

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 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. Ensure adequate ventilation. Ensure compliance with applicable regulations.

## **SECTION 15: Regulatory information**

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

#### **EU** regulations

Regulation (EC) No. 1005/2009 on substances that deplete the ozone layer, Annex I and II, as amended

Not listed.

Regulation (EC) No. 850/2004 On persistent organic pollutants, Annex I as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 1 as amended

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 2 as amended Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 3 as amended Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex V as amended Not listed.

Regulation (EC) No. 166/2006 Annex II Pollutant Release and Transfer Registry, as amended

Not listed

Regulation (EC) No. 1907/2006, REACH Article 59(10) Candidate List as currently published by ECHA Not listed.

#### **Authorisations**

Regulation (EC) No. 1907/2006, REACH Annex XIV Substances subject to authorisation, as amended Not listed.

#### Restrictions on use

Regulation (EC) No. 1907/2006, REACH Annex XVII Substances subject to restriction on marketing and use as amended Ethyl mercaptan (CAS 75-08-1)

Directive 2004/37/EC: on the protection of workers from the risks related to exposure to carcinogens and mutagens at work, as amended.

Not listed.

# Other EU regulations

## Directive 2012/18/EU on major accident hazards involving dangerous substances, as amended

Ethyl mercaptan (CAS 75-08-1)

Other regulations The product does not need to be labelled in accordance with EC directives or respective national

laws

National regulations Follow national regulation for work with chemical agents. Young people under 18 years old are not

allowed to work with this product according to EU Directive 94/33/EC on the protection of young

people at work, as amended.

15.2. Chemical safety

assessment

No Chemical Safety Assessment has been carried out.

### **SECTION 16: Other information**

### List of abbreviations

PBT: Persistent, bioaccumulative and toxic. vPvB: Very Persistent and very Bioaccumulative.

DNEL: Derived No-Effect Level.

PNEC: Predicted No-Effect Concentration.

STEL: Short term exposure limit. TWA: Time weighted average. PEL: Permissible Exposure Limit. LC50: Lethal Concentration, 50%.

References HSDB® - Hazardous Substances Data Bank

IARC Monographs. Overall Evaluation of Carcinogenicity National Toxicology Program (NTP) Report on Carcinogens

ACGIH Documentation of the Threshold Limit Values and Biological Exposure Indices

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Information on evaluation method leading to the classification of mixture

Full text of any H-statements not written out in full under Sections 2 to 15 The classification for health and environmental hazards is derived by a combination of calculation methods and test data, if available.

H220 Extremely flammable gas.

H280 Contains gas under pressure; may explode if heated.

This SDS contains revisions in the following section(s):

1 - 10

Training information

Disclaimer

Follow training instructions when handling this material.

All information in this Safety Data Sheet is believed to be accurate and reliable. However, no guarantee or warranty of any kind is made with regard to the accuracy of information or the suitability of the recommendations contained herein. It is the user's responsibility to assess the safety and toxicity of this product under their own conditions of use and to comply with all applicable laws and regulations.

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