

Safety Data Sheet

According to 1907/2006/EG Regulation, Article 31

Substance: Propane

Stand: 09.08.2016 / Rev.-Nr. 02

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING		
1.1 Product Identifier		
Trade name: Item No.: 16847/Propane cylinder 14.1 oz (400 g)		
1.2 Relevant identified uses of the substance or mixture and uses advised against		
Product Use: Portable fuel.		
Uses Advised Against: None known.		
1.3 Details of the Supplier of the safety data sheet		
REFCO Manufacturing Ltd. Industriestrasse 11 6285 Hitzkirch Switzerland		
Tel. +41 41 919 72 82 Fax +41 41 919 72 83		
E-Mail: info@refco.ch		
Original Safety Data Sheet: Worthington Cylinder Corporation 300 E. Breed St., Chilton, WI 5301 Vereinigte Staaten E-Mailadresse: Ann.Stiefvater@worthingtonindustries.com		
1.4 Emergency Telephone Number		
Swiss Toxicological Information Centre, CH 8028 Zürich		
Notruf 145 oder +41 44 251 51 51		
Nicht dringende Anrufe: +41 44 251 66 66		
2. HAZARDS IDENTIFICATION		
2.1 Classification of the substance or mixture according to 1272/2008		
Physical hazards		
Flammable gases	Category 1	H220 - Extremely flammable gas.
Gases under pressure	Liquefied gas	H280 - Contains gas under pressure may explode if heated.
2.2 Label Elements		
Labelling according to Directive 1272/2008/EC		
		
EC Symbols:		
Signal word:	Danger	
Hazard statements:	H220 – Extremely flammable gas. Contains gas under pressure; may explode if heated. H280 – Contains gas under pressure; may explode if heated.	
Precautionary statements:	P210 – Keep away from heat/sparks/open flames/hot surfaces. - No smoking. P233 – Keep container tightly closed. P271 – Use only outdoors or in a well-ventilated area. P284 – Wear respiratory protection. P377 – Leaking gas fire: Do not extinguish, unless leak can be stopped safely. P381 – Eliminate all ignition sources if safe to do so. 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.	

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2.3 Other Hazards						
May displace oxygen and cause rapid suffocation. Not a PBT or vPvB substance or mixture.						
3. COMPOSITION/INFORMATION ON INGREDIENTS						
3.1 Substance						
Chemical name	%	CAS-No. / CE-No.	REACH	Index-No.	Classification	Notes
Propane	87.5 - 100	74-98-6 200-827-9	-	601-003-00-5	Flam. Gas 1; H220, Press. Gas; H280	U
Propylene	0 - 10	115-07-1 204-062-1	-	601-011-00-9	Flam. Gas 1; H220, Press. Gas; H280	U
Ethane	0 - 7	74-84-0 200-814-8		601-002-00-X	Flam. Gas 1; H220	U
Butane	0 - 2.5	106-97-8 203-448-7		601-004-00-0	Flam. Gas 1; H220, Press. Gas; H280	
Additives						
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.						
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.						
4.2 Most important symptoms and effects, both acute and delayed						
Exposure to rapidly expanding gas or vapourizing liquid may cause frostbite ("cold burn"). Very high exposure can cause						



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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 themselves.

4.3 Indication of any immediate medical attention and special treatment needed

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

5. FIRE FIGHTING 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

Selection of respiratory protection for firefighting: follow the general fire precautions indicated in the workplace.

5.3 Advice for firefighters

Special protective equipment for firefighters

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

Special fire fighting procedures

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

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.

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.



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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 (pO ₂ = 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).		
7.3. Specific end use(s) Portable fuel.		
8. EXPOSURE CONTROLS/PERSONAL PROTECTION		
8.1 Control Parameters Occupational Exposure Limits		
US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)		
Components	Type	Value
Propane (CAS 74-98-6)	PEL	1800 mg/m ³ 1000 ppm
Additives		
Ethyl Mercaptan (CAS 75-08-1)	Ceiling	25 mg/m ³ 10 ppm
US. ACGIH Threshold Limit Values		
Components	Type	Value
Butane (CAS 106-97-8)	STEL	1000 ppm
Propylene (CAS 115-07-1)	TWA	500 ppm
Additives		
Ethyl Mercaptan (CAS 75-08-1)	TWA	0.5 ppm
US. NIOSH: Pocket Guide to Chemical Hazards		
Components	Type	Value
Butane (CAS 106-97-8)	TWA	1900 mg/m ³ 800 ppm
Propane (CAS 74-98-6)	TWA	1800 mg/m ³ 1000 ppm
Additives		
Ethyl Mercaptan (CAS 75-08-1)	Ceiling	1.3 mg/m ³ 0.5 ppm
Biological limit values No biological exposure limits noted for the ingredient(s).		

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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

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



Wear approved safety glasses or goggles.

Skin protection

- 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.

General hygiene considerations

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

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	Colorless gas.
Physical state	Gas (Liquefied).
Form	Compressed liquefied gas.
Color	Colorless
Odor	Rotten egg.
Odor threshold	Not available
pH	Not applicable
Melting point / freezing point	-306.4 °F (-188 °C)
Initial Boiling Point and Boiling range	-43.6 °F (-42 °C) 14.7 psia
Flash point	-155.2 °F (-104.0 °C)



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Evaporation rate	Not applicable.
Flammability (solid, gas)	Extremely flammable gas.
Flammability limit - lower	2.15%
Flammability limit - upper	9.6%
Vapor pressure	127 psig (21°C / 70°F)
Vapor density	Not available.
Relative density	0.504 (liquid) 1.5 (vapor) (air=1) @ 15°C / 60°F
Solubility (water)	Slightly soluble in water.
Partition coefficient (n-octanol/water)	1.77
Auto-ignition temperature	809.6 °F (432 °C)
Decomposition temperature	Not available.
Viscosity	Not available.
Explosive properties	Not explosive.
Oxidising properties	Not oxidising

9.2 Other Information

Molecular weight	45g/mol
Percent volatile	100%

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.

10.3 Possibility of Hazardous Reactions

Polymerization will not occur. May form explosive mixture with air.

10.4 Conditions to Avoid

Avoid heat, sparks, open flames and other ignition sources. Avoid temperatures exceeding the flash point. Contact with incompatible materials.

10.5 Incompatible Materials

Strong oxidising agents. Strong acids. Halogens. Nitrates.

10.6 Hazardous Decomposition Products

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

11. TOXICOLOGICAL INFORMATION

General Information

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

Information on likely routes of exposure

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

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.

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Skin contact	Contact with liquefied gas may cause frostbite.	
Eye contact	Contact with liquefied gas may cause frostbite.	
Symptoms	Exposure to rapidly expanding gas or vapourizing liquid may cause frostbite ("cold burn"). Very 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	High concentration: Suffocation (asphyxiate) hazard - if allowed to accumulate to concentrations that reduce oxygen below safe breathing levels.	
Toxicological data		
Components	Species	Test Results
Propane (CAS 74-98-6) Acute <i>Inhalation</i> LC50	Rat	1355 mg/l
Propylene (CAS 115-07-1) Acute <i>Inhalation</i> LC50	Mouse Rat	680 mg/l, 2 Hours 658 mg/l, 4 Hours
Skin corrosion/irritation	Based on available data, the classification criteria are not met.	
Serious eye damage/ eye irritation	Based on available data, the classification criteria are not met.	
Respiratory sensitization	Based on available data, the classification criteria are not met.	
Skin sensitization	Based on available data, the classification criteria are not met.	
Germ cell mutagenicity	Based on available data, the classification criteria are not met.	
Carcinogenicity	Based on available data, the classification criteria are not met.	
Reproductive toxicity	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.	
Specific target organ toxicity repeated exposure	Based on available data, the classification criteria are not met.	
Aspiration hazard	Not likely, due to the form of the product.	
Mixture versus substance Information	No information available.	
Other information	Exposure over a long period of time may cause central nervous system effects.	

12. ECOLOGICAL INFORMATION

12.1 Toxicity

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



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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 Know)

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

12.4 Mobility in soil

Not relevant, due to the form of the product.

12.5 Result of PBT and vPvB assessment

Not a PBT or vPvB substance or mixture.

12.6 Other adverse effects

The product contains volatile organic compounds which have a photochemical ozone creation potential.

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.
EU waste code	16 05 04* 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.

14. TRANSPORT INFORMATION

ADR / RID / IMDG / IATA / ADN

14.1. UN number	UN1978
14.2. UN proper shipping Name	PROPANE
14.3. Transport hazard class(es)	
Class	2.1
Subsidiary risk	-
Label(s)	2.1, 2.1 (+13) (RID)
Hazard No. (ADR)	23
Tunnel restriction code	B/D
14.4. Packing group	Not applicable.
14.5. Environmental hazards	No.
ERG Code (IATA)	10L
EmS (IMDG)	F-D, S-U
14.6. Special precautions	Read safety instructions, SDS and emergency procedures before



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for user	handling.
14.7. Transport in bulk according to Annex II of Marpol and the IBC Code	Not applicable.
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.	
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 Not listed. 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.	



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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.

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

Information on evaluation method leading to the classification of mixture

The classification for health and environmental hazards is derived by a combination of calculation methods and test data, if available.

Full text of any H-statements not written out in full under Sections 2 to 15

H220 Extremely flammable gas.
H280 Contains gas under pressure; may explode if heated.

Training information

Follow training instructions when handling this material.

Disclaimer

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.

* Data compared to the previous version altered.

The asterisk (*) on the left side indicate the respective changes from the previous version.

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