

SAFETY DATA SHEET

1. Identification

Product identifier	Butane - MT42B and BF10
Other means of identification	
SDS number	WC057
Recommended use	Butane refill cylinder.
Recommended restrictions	None known.
Manufacturer/Importer/Supplier/Distributor information	
Manufacturer/Supplier	Worthington Cylinder Corporation
Address	200 Old Wilson Bridge Road Columbus, OH 43085 United States
Email	SDSRequest@worthingtonindustries.com
Telephone	1-800-359-9678
Emergency telephone	1-703-527-3887 International / CHEMTREC 1-800-424-9300 Domestic (CCN 628056)

2. Hazard identification

Physical hazards	Flammable gases	Category 1
	Gases under pressure	Liquefied gas
	Simple asphyxiants	Category 1
Health hazards	Health hazards not otherwise classified	Category 1

Label elements



Signal word	Danger
Hazard statement	Extremely flammable gas. Contact with liquefied gas may cause frostbite. Contains gas under pressure; may explode if heated. May displace oxygen and cause rapid suffocation.
Precautionary statement	
Prevention	Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Keep container tightly closed. Use only with adequate ventilation.
Response	Leaking gas fire: Do not extinguish, unless leak can be stopped safely. In case of leakage, eliminate all ignition sources.
Storage	Protect from sunlight. Store in a well-ventilated place.
Disposal	Dispose of waste and residues in accordance with local authority requirements.
Other hazards	None known.
Supplemental information	None.

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
Butane		106-97-8	42 - 52
Isobutane		75-28-5	23 - 33
Propane		74-98-6	20 - 30

Composition comments Gas concentrations are in percent by volume.

4. 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.
Most important symptoms/effects, acute and delayed	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 themselves.
Indication of immediate medical attention and special treatment needed	Exposure may aggravate pre-existing respiratory disorders. Provide general supportive measures and treat symptomatically.
General information	First aid personnel must be aware of own risk during rescue. 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.

5. Fire-fighting measures

Suitable extinguishing media	Dry chemical powder. Carbon dioxide (CO ₂). Water fog. Foam.
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical	Extremely flammable gas. May form explosive mixtures with air. Gas may travel considerable distance to a source of ignition and flash back. During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire fighting equipment/instructions	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.
General fire hazards	Extremely flammable gas. Contents under pressure. Pressurised container may explode when exposed to heat or flame.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	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).
Methods and materials 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. For waste disposal, see section 13 of the SDS.
Environmental precautions	Should not be released into the environment. Prevent further leakage or spillage if safe to do so.

7. Handling and storage

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. Do not smoke. 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.

Conditions for safe storage, including any incompatibilities

Do not store, incinerate, or heat this material above 120 degrees Fahrenheit. Keep away from heat, sparks and open flame. This material can accumulate static charge which may cause spark and become an ignition source. 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. Store in a well-ventilated place. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits

No exposure limits noted for ingredient(s).

Biological limit values

No biological exposure limits noted for the ingredient(s).

Exposure guidelines

Follow standard monitoring procedures.

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

Eye/face protection

Wear approved safety glasses or goggles. Face shield is recommended.

Skin protection

Hand protection

Wear cold insulating gloves.

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. Selection and use of respiratory protective equipment should be in accordance with CSA Standard Z94.4.

WARNING! Air-purifying respirators do not protect workers in oxygen deficient atmospheres.

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.

9. Physical and chemical properties

Appearance

Physical state

Gas.

Form

Compressed liquefied gas.

Colour

Colourless.

Odour

Butane - odorless.
Isobutane - odorless.
Propane - odorless.

Odour threshold

Not available.

pH

Not available.

Melting point/freezing point

-187.7 °C (-305.86 °F) (Propane)
-160 °C (-256 °F) (Isobutane)
-138.3 °C (-216.94 °F) (Butane)

Initial boiling point and boiling range

-42.1 °C (-43.78 °F) (Propane)
-11.5 °C (11.3 °F) (Isobutane)
-0.5 °C (31.1 °F) (Butane)

Flash point

-104.4 °C (-155.9 °F) (Propane)

	-88.0 °C (-126.4 °F) (Isobutane) -73.3 °C (-99.9 °F) (Butane)
Evaporation rate	Not available.
Flammability (solid, gas)	Extremely flammable gas.
Upper/lower flammability or explosive limits	
Explosive limit - lower (%)	1.8 % v/v (Isobutane) 1.9 % v/v (Butane) 2.2 % v/v (Propane)
Explosive limit – upper (%)	8.4 % v/v (Butane) 8.4 % v/v (Isobutane) 9.5 % v/v (Propane)
Vapour pressure	0.21 MPa @(68°F/20°C) (Butane) 0.3 MPa @(68°F/20°C) (Isobutane) 0.75 MPa @(68°F/20°C) (Propane)
Vapour density	1.55 (Air = 1) (Propane) 2.1 (Air = 1) (Butane) 2.595 (Air = 1) (Isobutane)
Relative density	0.501 (Water = 1) (Propane) 0.549 (Water = 1) (Butane) 0.549 (Water = 1) (Isobutane)
Solubility(ies)	
Solubility (water)	3.25 ml/100ml @ (68°F/20°C) (Butane) 0.007 g/100ml @ (68°F/20°C) (Propane)
Partition coefficient (n-octanol/water)	2.89 (Butane) 2.36 (Propane) 2.8 (Isobutane)
Auto-ignition temperature	287 °C (548.6 °F) (Butane) 460 °C (860 °F) (Isobutane) 466.1 °C (870.98 °F) (Propane)
Decomposition temperature	Not available.
Viscosity	Not applicable.
Other information	
Explosive properties	Not explosive.
Oxidising properties	Not oxidising.
Percent volatile	100 %

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Stable under normal temperature conditions and recommended use.
Possibility of hazardous reactions	Polymerization will not occur. May form explosive mixture with air. This product may react with oxidizing agents.
Conditions to avoid	Avoid heat, sparks, open flames and other ignition sources. Avoid temperatures exceeding the flash point. Contact with incompatible materials.
Incompatible materials	Strong oxidising agents. Halogens. Nitrates.
Hazardous decomposition products	Thermal decomposition of this product can generate carbon monoxide and carbon dioxide. Hydrocarbons.

11. Toxicological information

Information on likely routes of exposure

Inhalation	High concentrations: Suffocation (asphyxiant) hazard - if allowed to accumulate to concentrations that reduce oxygen below safe breathing levels. 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.

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

Symptoms related to the physical, chemical and toxicological characteristics 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 themselves.

Information on toxicological effects

Acute toxicity Not expected to be acutely toxic.

Components	Species	Test Results
Butane (CAS 106-97-8)		
Acute Inhalation		
LC50	Rat	658 mg/l, 4 Hours
Propane (CAS 74-98-6)		
Acute Inhalation		
Gas		
LC50	Rat	> 80000 ppm, 15 Minutes

Skin corrosion/irritation Not classified.

Serious eye damage/eye irritation Not classified.

Respiratory or skin sensitisation

Respiratory sensitisation Not a respiratory sensitiser.

Skin sensitisation This product is not expected to cause skin sensitisation.

Germ cell mutagenicity No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Carcinogenicity Not classifiable as to carcinogenicity to humans.

Reproductive toxicity This product is not expected to cause reproductive or developmental effects.

Specific target organ toxicity - single exposure Not classified.

Specific target organ toxicity - repeated exposure Not classified.

Aspiration hazard Not relevant, due to the form of the product.

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

12. Ecological information

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

Persistence and degradability Not relevant, due to the form of the product.

Bioaccumulative potential Not relevant, due to the form of the product.

Partition coefficient n-octanol / water (log Kow)

2.36, (Propane)

2.8, (Isobutane)

2.89, (Butane)

Mobility in soil Not relevant, due to the form of the product.

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

13. Disposal considerations

Disposal instructions 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.

Local disposal regulations Dispose of in accordance with local regulations.

Hazardous waste code The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Waste from residues / unused products Dispose in accordance with all applicable regulations.

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

14. Transport information

TDG

UN number UN2037
UN proper shipping name RECEPTACLES, SMALL, CONTAINING GAS OR GAS CARTRIDGES (FLAMMABLE)
Transport hazard class(es)
Class 2.1
Subsidiary risk -
Packing group -
Environmental hazards No
Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

IATA

UN number UN2037
UN proper shipping name Receptacles, small, containing gas or gas cartridges (flammable)
Transport hazard class(es)
Class 2.1
Subsidiary risk -
Label(s) 2.1
Packing group -
Environmental hazards No
ERG Code 10L
Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

IMDG

UN number UN2037
UN proper shipping name RECEPTACLES, SMALL, CONTAINING GAS OR GAS CARTRIDGES (FLAMMABLE)
Transport hazard class(es)
Class 2
Subsidiary risk -
Packing group -
Environmental hazards
Marine pollutant No
EmS F-D, S-U
Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable.

15. Regulatory information

Canadian regulations This product has been classified in accordance with the hazard criteria of the HPR and the SDS contains all the information required by the HPR.

Controlled Drugs and Substances Act

Not regulated.

Export Control List (CEPA 1999, Schedule 3)

Not listed.

Greenhouse Gases

Not listed.

Precursor Control Regulations

Not regulated.

International regulations

Stockholm Convention

Not applicable.

Rotterdam Convention

Not applicable.

Kyoto Protocol

Not applicable.

Montreal Protocol

Not applicable.

Basel Convention

Not applicable.

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Industrial Chemicals (AICIS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
Taiwan	Taiwan Chemical Substance Inventory (TCSI)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information

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Version No. 01

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.