1. Identification

Product identifier: Butane / A-46

Other means of identification:

- SDS number: WC053
- Recommended use: Hand Torch Fuel
- Recommended restrictions: None known.

Manufacturer/Importer/Supplier/Distributor information:

- Manufacturer/Supplier: Worthington Industries Incorporated
- Address: 200 Old Wilson Bridge Road, Columbus, OH 43085, United States
- E-mail address: cylinders@worthingtonindustries.com
- Telephone number: 866-928-2657
- CHEMTREC - 24 HOURS: Within US and Canada 800-424-9300, Outside US and Canada +1 703-741-5970 (collect calls accepted)

2. Hazard(s) identification

Physical hazards:
- Flammable gases: Category 1
- Gases under pressure: Liquefied gas
- Simple asphyxiants: Category 1

Health hazards: Not classified.

Environmental hazards: Not classified.

Label elements:

Signal word: Danger

Hazard statement: Extremely flammable gas. Contains gas under pressure; may explode if heated. May displace oxygen and cause rapid suffocation.

Precautionary statement:

Prevention: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep container tightly closed. Use only outdoors or in a well-ventilated area. Wear respiratory protection.

Response: Leaking gas fire: Do not extinguish, unless leak can be stopped safely. Eliminate all ignition sources if safe to do so. 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

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isobutane</td>
<td>75-28-5</td>
<td>83</td>
</tr>
<tr>
<td>Propane</td>
<td>74-98-6</td>
<td>15</td>
</tr>
<tr>
<td>Butane</td>
<td>106-97-8</td>
<td>2</td>
</tr>
</tbody>
</table>
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 vaporizing 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.

**Indication of 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**

**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.

**Specific hazards arising from the chemical**

Extremely flammable gas. 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 with flooding quantities of water until well after fire is out.

**General fire hazards**

Extremely flammable gas. Contents under pressure. Pressurized 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. 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**

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).

8. Exposure controls/personal protection

**Occupational exposure limits**

**US. ACGIH Threshold Limit Values**

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butane (CAS 106-97-8)</td>
<td>STEL</td>
<td>1000 ppm</td>
</tr>
<tr>
<td>Isobutane (CAS 75-28-5)</td>
<td>STEL</td>
<td>1000 ppm</td>
</tr>
</tbody>
</table>

**Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2)**

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butane (CAS 106-97-8)</td>
<td>TWA</td>
<td>1000 ppm</td>
</tr>
<tr>
<td>Propane (CAS 74-98-6)</td>
<td>TWA</td>
<td>1000 ppm</td>
</tr>
</tbody>
</table>

**Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)**

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butane (CAS 106-97-8)</td>
<td>STEL</td>
<td>750 ppm</td>
</tr>
<tr>
<td>Isobutane (CAS 75-28-5)</td>
<td>TWA</td>
<td>600 ppm</td>
</tr>
<tr>
<td>Propane (CAS 74-98-6)</td>
<td>TWA</td>
<td>1000 ppm</td>
</tr>
</tbody>
</table>

**Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act)**

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butane (CAS 106-97-8)</td>
<td>STEL</td>
<td>1000 ppm</td>
</tr>
<tr>
<td>Isobutane (CAS 75-28-5)</td>
<td>STEL</td>
<td>1000 ppm</td>
</tr>
</tbody>
</table>

**Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents)**

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butane (CAS 106-97-8)</td>
<td>TWA</td>
<td>800 ppm</td>
</tr>
<tr>
<td>Isobutane (CAS 75-28-5)</td>
<td>TWA</td>
<td>800 ppm</td>
</tr>
<tr>
<td>Propane (CAS 74-98-6)</td>
<td>TWA</td>
<td>1000 ppm</td>
</tr>
</tbody>
</table>

**Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment)**

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butane (CAS 106-97-8)</td>
<td>TWA</td>
<td>1900 mg/m³</td>
</tr>
<tr>
<td>Propane (CAS 74-98-6)</td>
<td>TWA</td>
<td>1800 mg/m³</td>
</tr>
</tbody>
</table>

**Biological limit values**

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

**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.

**Skin protection**
Wear appropriate chemical resistant gloves. Nitrile, butyl rubber or neoprene gloves are recommended.

**Hand protection**
Wear appropriate chemical resistant gloves. Nitrile, butyl rubber or neoprene 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. Wear air supplied respiratory protection. Selection and use of respiratory protective equipment should be in accordance with OSHA General Industry Standard 29 CFR 1910.134; or in Canada with CSA Standard Z94.4.

**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**
- **Gas.**

**Physical state**
- Compressed liquefied gas.

**Color**
- Colorless.

**Odor**
- Faint. Gasoline-like.

**Odor threshold**
- Not available.

**pH**
- Not available.

**Melting point/freezing point**
- -216.76 °F (-138.2 °C)

**Initial boiling point and boiling range**
- -11.7 °F (-24.28 °C)

**Flash point**
- -76.3 °F (-60.2 °C)

**Evaporation rate**
- Not available.

**Flammability (solid, gas)**
- Extremely flammable gas.

**Upper/lower flammability or explosive limits**
- Flammability limit - lower (%)
  - 1.8 %
- Flammability limit - upper (%)
  - 8.4 %

**Vapor pressure**
- 28 psig (Approximate)

**Vapor density**
- > 2 (Air = 1)

**Relative density**
- 0.57 (H2O = 1)

**Solubility(ies)**
- Solubility (water)
  - < 0.1 % w/w
- Solubility temp. (water)
  - 70 °F (21.11 °C)

**Partition coefficient (n-octanol/water)**
- Not available.

**Auto-ignition temperature**
- 548.33 °F (286.85 °C)

**Decomposition temperature**
- Not available.

**Viscosity**
- Not available.

**Other information**
- Explosive properties
  - Not explosive.
- Oxidizing properties
  - Not oxidizing.
- 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**

**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 coordination. 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 vaporizing liquid may cause frostbite ("cold burn"). Very high exposure can cause sufocation 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.

**Information on toxicological effects**

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

<table>
<thead>
<tr>
<th>Components</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Propane (CAS 74-98-6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Acute</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Inhalation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Gas</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LC50</td>
<td>Rat</td>
<td>&gt; 80000 ppm, 15 Minutes</td>
</tr>
<tr>
<td><strong>Skin corrosion/irritation</strong></td>
<td>Not classified.</td>
<td></td>
</tr>
<tr>
<td><strong>Serious eye damage/eye irritation</strong></td>
<td>Not classified.</td>
<td></td>
</tr>
</tbody>
</table>

**Respiratory or skin sensitization**

**Respiratory sensitization**
Not a respiratory sensitizer.

**Skin sensitization**
This product is not expected to cause skin sensitization.

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

**Carcinogenicity**
This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

**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 likely, 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**
The product is readily biodegradable.

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

**Partition coefficient n-octanol / water (log Kow)**
- Butane (CAS 106-97-8) 2.89
- Isobutane (CAS 75-28-5) 2.76
- Propane (CAS 74-98-6) 2.36
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: UN1011
UN proper shipping name: BUTANE
Transport hazard class(es): Class 2.1
Subsidiary risk: -
Label(s): 2.1
Packing group: Not applicable.
Environmental hazards: No
Special precautions for user: Read safety instructions, SDS and emergency procedures before handling.

IATA

UN number: UN1011
UN proper shipping name: Butane
Transport hazard class(es): Class 2.1
Subsidiary risk: -
Label(s): 2.1
Packing group: Not applicable.
Environmental hazards: No
ERG Code: 10L
Special precautions for user: Read safety instructions, SDS and emergency procedures before handling.

IMDG

UN number: UN1011
UN proper shipping name: BUTANE
Transport hazard class(es): Class 2.1
Subsidiary risk: -
Packing group: Not applicable.
Environmental hazards: 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

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

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**

<table>
<thead>
<tr>
<th>Country(s) or region</th>
<th>Inventory name</th>
<th>On inventory (yes/no)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>Australian Inventory of Chemical Substances (AICS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada</td>
<td>Domestic Substances List (DSL)</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada</td>
<td>Non-Domestic Substances List (NDSL)</td>
<td>No</td>
</tr>
<tr>
<td>China</td>
<td>Inventory of Existing Chemical Substances in China (IECSC)</td>
<td>Yes</td>
</tr>
<tr>
<td>Europe</td>
<td>European Inventory of Existing Commercial Chemical Substances (EINECS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Europe</td>
<td>European List of Notified Chemical Substances (ELINCS)</td>
<td>No</td>
</tr>
<tr>
<td>Japan</td>
<td>Inventory of Existing and New Chemical Substances (ENCS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Korea</td>
<td>Existing Chemicals List (ECL)</td>
<td>Yes</td>
</tr>
<tr>
<td>New Zealand</td>
<td>New Zealand Inventory</td>
<td>Yes</td>
</tr>
<tr>
<td>Philippines</td>
<td>Philippine Inventory of Chemicals and Chemical Substances (PICCS)</td>
<td>Yes</td>
</tr>
<tr>
<td>United States &amp; Puerto Rico</td>
<td>Toxic Substances Control Act (TSCA) Inventory</td>
<td>Yes</td>
</tr>
</tbody>
</table>

*A "Yes" indicates this product complies 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

**Issue date**
02-April-2017

**Revision date**
-

**Version #**
01

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

**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
EPA: AQUIRE database
NLM: Hazardous Substances Data Base
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.