# SAFETY DATA SHEET

## 1. Identification

| | |
|---|---|
| **Product identifier** | **Butane** |
| **Other means of identification** | None. |
| **Recommended use** | Industrial use. |
| **Recommended restrictions** | None known. |

**Manufacturer/Importer/Supplier/Distributor information**

| | |
|---|---|
| **Manufacturer/Supplier** | Devon Energy Production Company, L.P.<br>333 W. Sheridan Avenue<br>Oklahoma City, OK 73102-5010 |
| **Telephone** | (405) 235-3611 |
| **Emergency** | CHEMTREC 24 Hour Emergency<br>Within the USA (800) 424-9300<br>Outside the USA +1 703-527-3887 |

## 2. Hazard(s) identification

| | | |
|---|---|---|
| **Physical hazards** | Flammable gases | Category 1 |
| | Gases under pressure | Compressed gas |
| **Health hazards** | Not classified. | |
| **OSHA defined hazards** | Not classified. | |

**Label elements**

| | |
|---|---|
| **Signal word** | Danger |
| **Hazard statement** | Extremely flammable gas. Contains gas under pressure; may explode if heated. |
| **Precautionary statement** | |
| **Prevention** | Keep away from heat/sparks/open flames/hot surfaces. - No smoking. |
| **Response** | Leaking gas fire: Do not extinguish, unless leak can be stopped safely. Eliminate all ignition sources if safe to do so. |
| **Storage** | Protect from sunlight. Store in a well-ventilated place. |
| **Disposal** | Dispose of contents/container in accordance with local/regional/national/international regulations. |
| **Hazard(s) not otherwise classified (HNOC)** | None known. |
| **Supplemental information** | None. |

## 3. Composition/information on ingredients

**Mixtures**

| Chemical name | CAS number | % |
|---|---|---|
| Butane | 106-97-8 | 60 - 100 |
| Isobutane | 75-28-5 | 0 - 35 |
| Propane | 74-98-6 | 0 - 3 |

## 4. First-aid measures

**Inhalation** — If symptomatic, move to fresh air. Get medical attention if symptoms persist.

**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.

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

**Most important symptoms/effects, acute and delayed** — Due to oxygen deficiency inhalation of gas may cause dizziness, light-headedness, headache, nausea and loss of coordination. Continued inhalation may result in unconsciousness. Exposure to rapidly expanding gas or vaporizing liquid may cause frostbite ("cold burn").

**Indication of immediate medical attention and special treatment needed** — Treat symptomatically.

**General information** — Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

## 5. Fire-fighting measures

**Suitable extinguishing media** — Water fog. Carbon dioxide (CO2). Foam. Dry chemical powder.

**Unsuitable extinguishing media** — Not applicable.

**Specific hazards arising from the chemical** — Extremely flammable gas. Containers may explode when heated. Fire may produce irritating, corrosive and/or toxic gases.

**Special protective equipment and precautions for firefighters** — Self-contained breathing apparatus, operated in positive pressure mode and full protective clothing must be worn in case of fire.

**Fire fighting equipment/instructions** — Stop leak if you can do so without risk.

**Specific methods** — Evacuate area. Check oxygen content before entering area. Stop leak if you can do so without risk. Use water spray to keep fire-exposed containers cool.

## 6. Accidental release measures

**Personal precautions, protective equipment and emergency procedures** — Eliminate all sources of ignition in vicinity of released vapors. Evacuate all non-essential personnel to an area upwind. Stop leak if possible without any risk. Ventilate enclosed areas to prevent formation of toxic, flammable or oxygen deficient atmospheres. Water spray may be used to reduce vapors. Avoid vapor cloud even with proper respiratory protective equipment. Use suitable protective equipment (section 8). Follow all fire-fighting procedures (section 5).

**Methods and materials for containment and cleaning up** — Eliminate all ignition sources. Stop the flow of gas. Allow to dissipate with adequate ventilation.

**Environmental precautions** — Attempt to stop the gas leak, if no risk is involved.

## 7. Handling and storage

**Precautions for safe handling** — Eliminate all sources of ignition. Before entering storage tanks and commencing any operation in a confined area, check the atmosphere for oxygen content and flammability.
Valve protection caps must remain in place unless container is secured with valve outlet piping to use point. Close valve after each use and when container is empty. Do not drop, drag, slide or roll cylinders on their sides. Use a suitable hand truck to move gas containers. Use a pressure reducing regulator when connecting container to piping or systems. Never insert an object (e.g. wrench, screwdriver, pry bar) into cap openings. Use an adjustable strap wrench to remove over-tight or rusted caps. Open valve slowly. Do not use gas directly from containers. Do not heat container by any means to increase the discharge rate of product from the container.

**Conditions for safe storage, including any incompatibilities** — Eliminate sources of ignition. Protect from heat and direct sunlight. Secure cylinders in an upright position at all times, close all valves when not in use. Keep in a cool, well-ventilated place.

## 8. Exposure controls/personal protection

**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/m3 |

**US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)**

| Components | Type | Value |
|---|---|---|
| | | 1000 ppm |

**US. ACGIH Threshold Limit Values**

| Components | Type | Value |
|---|---|---|
| Butane (CAS 106-97-8) | STEL | 1000 ppm |
| Isobutane (CAS 75-28-5) | STEL | 1000 ppm |

**US. NIOSH: Pocket Guide to Chemical Hazards**

| Components | Type | Value |
|---|---|---|
| Butane (CAS 106-97-8) | TWA | 1900 mg/m3 |
| | | 800 ppm |
| Isobutane (CAS 75-28-5) | TWA | 1900 mg/m3 |
| | | 800 ppm |
| Propane (CAS 74-98-6) | TWA | 1800 mg/m3 |
| | | 1000 ppm |

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

**Appropriate engineering controls** Explosion proof exhaust ventilation should be used. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Provide adequate ventilation and minimize the risk of inhalation of gas.

**Individual protection measures, such as personal protective equipment**

**Eye/face protection** If eye contact is likely, safety glasses with side shields or chemical type goggles should be worn.

**Skin protection**

**Hand protection** Risk of contact: Wear cold insulating gloves.

**Skin protection**

**Other** No special requirements under ordinary conditions of use.

**Respiratory protection** Wear approved respiratory protection when working with this material unless ventilation is adequate to keep airborne concentrations below recommended exposure standards.

**Thermal hazards** Wear appropriate thermal protective clothing, when necessary.

**General hygiene considerations** Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

## 9. Physical and chemical properties

**Appearance** Colorless gas.

**Physical state** Gas.

**Form** Compressed gas.

**Color** Colorless.

**Odor** Not available.

**Odor threshold** Not available.

**pH** Not available.

**Melting point/freezing point** Not available.

**Initial boiling point and boiling range** 31.1 °F (-0.5 °C) (Butane)

**Flash point** -76.0 °F (-60.0 °C) (Butane)

**Evaporation rate** Not available.

**Flammability (solid, gas)** Not available.

**Upper/lower flammability or explosive limits**

**Flammability limit - lower (%)** 1.9 % (Butane)

| | |
|---|---|
| **Flammability limit - upper (%)** | 8.5 % (Butane) |
| **Explosive limit - lower (%)** | Not available. |
| **Explosive limit - upper (%)** | Not available. |
| **Vapor pressure** | 56.9 psi |
| **Vapor density** | Not available. |
| **Relative density** | 0.58 |
| **Solubility(ies)** | |
| **Solubility (water)** | Not available. |
| **Partition coefficient (n-octanol/water)** | No data available. |
| **Auto-ignition temperature** | 548.6 °F (287 °C) (Butane) |
| **Decomposition temperature** | Not available. |
| **Viscosity** | Not available. |
| **Other information** | |
| **Bulk density** | 4.85 lb/gal |

## 10. Stability and reactivity

| | |
|---|---|
| **Reactivity** | Not available. |
| **Chemical stability** | Stable under normal temperature conditions. |
| **Possibility of hazardous reactions** | Hazardous polymerization does not occur. |
| **Conditions to avoid** | Heat, flames and sparks. Exposure to sunlight. |
| **Incompatible materials** | Strong oxidizing agents. |
| **Hazardous decomposition products** | No hazardous decomposition products are known. |

## 11. Toxicological information

**Information on likely routes of exposure**

| | |
|---|---|
| **Inhalation** | May cause drowsiness or dizziness. Inhalation of high concentrations may result in central nervous system depression and reduce the ability of the blood to carry oxygen to body tissues. |
| **Skin contact** | Exposure to rapidly expanding gas or vaporizing liquid may cause frostbite ("cold burn"). |
| **Eye contact** | Exposure to rapidly expanding gas or vaporizing liquid may cause frostbite ("cold burn"). |
| **Ingestion** | This material is a gas under normal atmospheric conditions and ingestion is unlikely. |
| **Symptoms related to the physical, chemical and toxicological characteristics** | May cause drowsiness or dizziness. Exposure to rapidly expanding gas or vaporizing liquid may cause frostbite ("cold burn"). |

**Information on toxicological effects**

| | |
|---|---|
| **Acute toxicity** | Based on available data, the classification criteria are not met. |
| **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 or skin sensitization** | |
| **Respiratory sensitization** | Not a respiratory sensitizer. |
| **Skin sensitization** | Not a skin sensitizer. |
| **Germ cell mutagenicity** | Based on available data, the classification criteria are not met. |
| **Carcinogenicity** | This product is not considered to be a carcinogen by NTP, IARC, or OSHA. |

**IARC Monographs. Overall Evaluation of Carcinogenicity**

Not listed.

**NTP Report on Carcinogens**

Not listed.

**OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)**

Not regulated.

| | |
|---|---|
| **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 classified. |

## 12. Ecological information

| | |
|---|---|
| **Ecotoxicity** | The product contains volatile organic compounds which have a photochemical ozone creation potential. |
| **Persistence and degradability** | No data available. |
| **Bioaccumulative potential** | No data available. |
| **Mobility in soil** | Not available. |
| **Other adverse effects** | Not available. |

## 13. Disposal considerations

| | |
|---|---|
| **Disposal instructions** | Dispose of this material and its container at hazardous or special waste collection point. |
| **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 applicable federal, state, and local regulations. |
| **Contaminated packaging** | Since emptied containers may retain product residue, follow label warnings even after container is emptied. |

## 14. Transport information

**DOT**

| | |
|---|---|
| **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. |
| **Special precautions for user** | Read safety instructions, SDS and emergency procedures before handling. |
| **Special provisions** | 19, T50 |
| **Packaging exceptions** | 306 |
| **Packaging non bulk** | 304 |
| **Packaging bulk** | 314, 315 |

**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** | - |
| **Label(s)** | 2.1 |
| **Packing group** | Not applicable. |
| **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 available. |

## 15. Regulatory information

**US federal regulations** This product is hazardous according to OSHA 29 CFR 1910.1200.

**TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)**

Not regulated.

**OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)**

Not regulated.

**CERCLA Hazardous Substance List (40 CFR 302.4)**

| | |
|---|---|
| Butane (CAS 106-97-8) | LISTED |
| Isobutane (CAS 75-28-5) | LISTED |
| Propane (CAS 74-98-6) | LISTED |

**Superfund Amendments and Reauthorization Act of 1986 (SARA)**

**Hazard categories**
Immediate Hazard - No
Delayed Hazard - No
Fire Hazard - Yes
Pressure Hazard - Yes
Reactivity Hazard - No

**SARA 302 Extremely hazardous substance**

Not listed.

**SARA 311/312 Hazardous chemical** Yes

**SARA 313 (TRI reporting)**

Not regulated.

**Other federal regulations**

**Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List**

Not regulated.

**Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)**

Butane (CAS 106-97-8)
Isobutane (CAS 75-28-5)
Propane (CAS 74-98-6)

**Safe Drinking Water Act (SDWA)** Not regulated.

**US state regulations** This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

**US. Massachusetts RTK - Substance List**

Butane (CAS 106-97-8)
Isobutane (CAS 75-28-5)
Propane (CAS 74-98-6)

**US. New Jersey Worker and Community Right-to-Know Act**

Butane (CAS 106-97-8)
Isobutane (CAS 75-28-5)
Propane (CAS 74-98-6)

**US. Pennsylvania Worker and Community Right-to-Know Law**

Butane (CAS 106-97-8)
Isobutane (CAS 75-28-5)
Propane (CAS 74-98-6)

**US. Rhode Island RTK**

Butane (CAS 106-97-8)
Isobutane (CAS 75-28-5)
Propane (CAS 74-98-6)

**US. California Proposition 65**

Not Listed.

**International Inventories**

| Country(s) or region | Inventory name | On inventory (yes/no)* |
|---|---|---|
| Australia | Australian Inventory of Chemical Substances (AICS) | 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 |
| United States & Puerto Rico | Toxic Substances Control Act (TSCA) Inventory | Yes |

*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, including date of preparation or last revision

**Issue date** 27-March-2014

**Revision date** 27-March-2014

**Version #** 03

**NFPA ratings**


**References**

Registry of Toxic Effects of Chemical Substances (RTECS)
HSDB® - Hazardous Substances Data Bank
IARC Monographs. Overall Evaluation of Carcinogenicity
NTP - National Toxicology Program Abstract.

**Disclaimer**

This information is provided without warranty. The information is believed to be correct. This information should be used to make an independent determination of the methods to safeguard workers and the environment.