

# SAFETY DATA SHEET

**PRODUCT NAME**

**BUTANE GAS CARTRIDGE**

## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

- A. PRODUCT NAME 100g Isobutane Camping Fuel Blend Canister
- B. RECOMMENDED USE OF PRODUCT AND LIMITATIONS  
 USE OF PRODUCT For use Only in Portable Gas Appliances  
 LIMITATIONS Extremely flammable
- C. MANUFACTURER,SUPPLIER  
 COMPANY DAE RYUK CAN CO.,LTD. ,MAXSUN CO.,LTD  
 ADDRESS 5th Floor, Korean Women Entrepreneurs Asso, Bldg., 221, Yeoksam-ro, Kangnam-Ku, Seoul, KOREA  
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## 2. HAZARDS IDENTIFICATION

- A. CLASSIFICATION  
 Flammable gases : Category 1  
 Gases under pressure : Liquefied gas  
 Specific target organ toxicity – single exposure : Category 3(Anesthesia effects)

- B. LABEL ELEMENTS, INCLUDING PRECAUTIONARY STATEMENTS  
 SYMBOLS



- SIGNAL WORDS DANGER
- HAZARD STATEMENTS  
 H220 Extremely flammable gas  
 H280 Contains gas under pressure ; May explode if heated  
 H336 May cause drowsiness or dizziness
- PRECAUTIONARY STATEMENTS  
 PREVENTION  
 P210 Keep away from heat/sparks/open flames/hot surface – No smoking  
 P251 ressurized container : Do not pierce or burn, even after use  
 P261 Avoid breathing dust/fume/gas/mist/vapours/spray  
 P271 Use only outdoors or in a well-ventilated area
- RESPONSE  
 P304+P340 IF INHALED : Remove victim to fresh air and keep at rest in a position comoptable for breath  
 P312 Call a POISON CENTER or doctor/physician if you feel unwell  
 P377 Leaking gas fire : Do not extinguish, unless leak can be stopped safely  
 P381 Eliminate all ignition sources if safe to do so
- STORAGE  
 P403 Store in a well-ventilated place  
 P403+P233 Store in a well-ventilated place. Keep container tightly closed  
 P405 Store locked up  
 P410+P403 Protect from sunlight. Store in a well ventilated place
- DISPOSAL  
 P501 Depose of contents/container in accordance with local/regional/national regulations

### C. OTHER HAZARDS WHICH DO NOT RESULT IN CLASSIFICATION (NFPA)

|           | HEALTH | FIRE | REACTIBILITY |
|-----------|--------|------|--------------|
| ISOBUTANE | 0      | 4    | 0            |
| BUTANE    | 1      | 4    | 0            |
| PROPANE   | 1      | 4    | 0            |

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

### A. MIXTURE

| CHEMICAL NAME | SYNONYM                         | CAS No./ID | CONTENT(w%) |
|---------------|---------------------------------|------------|-------------|
| ISO-BUTANE    | 2-METHYL PROPANE                | 75-28-5    | 25 ~35      |
| N-BUTANE      | Butane, Liquefied Petroleum Gas | 106-97-8   | 50 ~70      |
| PROPANE       | n-Propane, Propylhydride        | 74-98-6    | 0 ~ 5       |

## 4. FIRST AID MEASURES

- A. EYE CONTACT  
 Get emergency a medical treatment
- B. SKIN CONTACT  
 Wash skin and eyes with plenty of flowing water over 20 minutes  
 If suffer from frostbite,flush with plenty of lukewarm water immediately.  
 cover up contaminated skin with a blanket. seek medical attention if ill effect or irritation develops
- C. INHALATION  
 Get medical advice/attention if you feel unwell  
 Ventilate with fresh air if open exceed mist and fume, get a medical treatment if have a cough and  
 Prompt medical action is essential.
- D. INGESTION  
 Use a breathing equipment if get breathless by ingestion and inhalation
- E. MOST IMPORTANT  
 CONTACT WITH SKIN OR EYES CAN CAUSE FROSTBITE.
- SYMPTOMS/EFFECT,  
 F. INDICATION OF IMMEDIATE MEDICAL  
 ATTENTION AND SPECIAL TREATMENT  
 NEEDED. IF NECESSARY  
 In case of inhalation, consider supplying oxygen.

## 5. FIRE FIGHTING MEASURES

|  |   |
|--|---|
| A. SUITABLE EXTINGUISH MEDIA                                     | Water spray or Fog for surrounding area. Standard form, Special Alcohol-stable foam, Carbon Use dried sand and soil if have extinguishment by smothering  |
| B. SPECIFIC HAZARDS ARISING FROM THE CHEMICAL                    | May burst or explode if exposed to heat or spark.<br>Thermal decomposition may produce carbon monoxide and other toxic vapors<br>Heavier than the air, and there is a possibility of ignition and backfire.<br>May cause explosion if heat up cylinder.<br>Low electrical conduction may cause static electricity, and ignited by spark.<br>Mixture of gas & air may explode. |
| C. SPECIAL PROTECTIVE EQUIPMENT AND PRECAUTIONS FOR FIRE FIGHTER | Fire fighters/rescues must put on apposive protector<br>Get fire fighting on safty distance<br>May be damaged if skin and eyes contact<br>May cause pollution by opened contents<br>Warning, becouse contents are lighter than water<br>Remove cylinder from danger distance if not be dangerous  |
| D.SPECIAL FIREFIGHTING PROCEDURES                                | Use Equipment or Shielding required to protect personnel against bursting, rupturing or venting containers.   |
| E.UNSUAL FIRE AND EXPLISION HAZARDS                              | At elevated temperatures(over 54°C/130°F) CRV of containers will be operated, but rapidly excess heating or fire will be caused burst or rupture of a container.<br>Extremely Flammable. Do not use near fire or flame.   |

## 6. ACCIDENTAL RELEASE MEASURE

|  |   |
|--|---|
| A. PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES | Avoid heat, flames, sparks and other sources of ignition.<br>Do not touch spilled material.<br>Stop leak if possible without personal risk.<br>Reduce vapors with water spray.<br>Keep unnecessary people away, isolate hazard area deny entry. Remove sources of ignition.       |
| B. ENVIRONMENTAL PRECAUTIONS   | Prevent flow to sewer/public waters. stop release   |
| C. METHOD AND MATERIALS FOR CONTAINMENT AND CLEANING UP                | Stop leak if you can do it without risk<br>Absorb leaked materials with soil and sand, and throw away it to waste treatment container<br>If spill is indoors, remove all possible sources of ignition and ventilate area immediately until all gases and vapors have been removed |

## 7. HANDLING AND STORAGE

|                                  |  |
|----------------------------------|--|
| A. PRECAUTIONS FOR SAFE HANDLING | Get handling after read all precautionary statements<br>Avoid breathing dust/fume/gas/mist/vapours/spray<br>Do not spray to flash resource point or flammable<br>Avoid contact with skin and eyes<br>Empty containers should not be re-used<br>Protect cylinders from physical damage<br>Use in a well-ventilated area |
| B. CONDITIONS FOR SAFE STORAGE   | Keep away from heat/sparks/open flames/hot surface – No smoking<br>Store in locking machanism system and not youth handling<br>Store in cool, well-ventilated area away from heat, spark or fire<br>Keep away from foods and drinks<br>Protect against direct sun radiation and storage under 40°C                     |

## 8. EXPOSURE CONTROLS/PESONAL PROTECTION

|   |  |
|---|--|
| A. EXPOSURE LIMITS IN THE AIR OF THE WORKPLACE, BIOLOGICAL LIMIT VALUES |  |
| Iso-Butane:   |  |
| OSHA TWA  | No data  |
| ACGIH TWA   | 800ppm(1900mg/m <sup>3</sup> )   |
| NIOSH recommended TWA 10 hour(s)  | 800ppm(1900mg/m <sup>3</sup> )   |
| Propane:  |  |
| OSHA TWA  | 1000ppm(1800mg/m <sup>3</sup> )  |
| ACGIH TWA   | 2500ppm  |
| NIOSH recommended TWA   | 1000ppm(1800mg/m <sup>3</sup> )  |
| N-Butane:   |  |
| OSHA TWA  | 800ppm(1900mg/m <sup>3</sup> )   |
| ACGIH TWA   | 800ppm   |
| NIOSH recommended TWA   | 800ppm(1900mg/m <sup>3</sup> )   |
| EXPOSURE STANDARD   | Industry safety & health law   |
| B. APPROPRIATE ENGINEERING CONTROLS                                     | Provide adequate ventilation<br>Ventilation equipment should be explosion-resistant if explosive concentrations of material are present.<br>Fnsure compliance with applicabile exposure limits |
| C. INDIVIDUAL PROTECTION MEASURE RESPIRATORY PROTECTION                 | An approved breathing apparatus may be appropriate. in case of emergency or leak, use a respirator   |

|                 |  |
|-----------------|--|
| Eye Protection  | For the gas: Eye protection not required, but recommended.<br>For the liquid: Wear splash resistant safety goggles. Contact lenses should not be worn. |
| Body Protection | For the gas: Protective clothing is not required.<br>For the liquid: Wear appropriate protective, cold insulating clothing.                            |
| Hand Protection | Wear insulated gloves.   |

#### 9. PHYSICAL AND CHEMICAL PROPERTIES

| PROPERTIES                         | N-Butane                | Iso-Butane              | Propane                 |
|------------------------------------|-------------------------|-------------------------|-------------------------|
| A. APPEARANCE FORM                 | liquid & vapor          | liquid & vapor          | liquid & vapor          |
| APPEARANCE COLOR                   | colorless               | colorless               | colorless               |
| B. ODOR                            | faint odor              | faint odor              | faint odor              |
| C. ODOR THRESHOLD                  | No data                 | No data                 | No data                 |
| D. pH                              | Not applicable          | Not applicable          | Not applicable          |
| E. MELTING/FREEZING POINT          | -138°C                  | -160°C                  | -187°C                  |
| F. INITIAL BOILING POINT AND RANGE | -1°C                    | -12°C                   | -42°C                   |
| G. FLASH POINT                     | -60 °C (c.c.)           | -88°C                   | -104°C                  |
| H. EVAPORATION RATE                | No data                 | No data                 | No data                 |
| I. FLAMMABILITY(SOLID, GAS)        | flammable gas           | flammable gas           | flammable gas           |
| J. UPPER/LOWER FLAMMABILITY OR     | 1.8-8.4 vol%            | 1.8-8.4 vol%            | 2.2-9.5 vol%            |
| K. VAPOR PRESSURE                  | 1557mmHg (at 20°C)      | 2280mmHg (at 20°C)      | 5625mmHg (at 20°C)      |
| L. SOLUBILITY                      | 3.25mL/100mL(at 20°C)   | No data                 | 0.007g/100mL (at 20°C)  |
| M. VAPOR DENSITY                   | 2.10 g/cm3(air=1)       | 2.59 g/cm3(air=1)       | 1.55 g/cm3(air=1)       |
| N. RELATIVE DENSITY                | 0.578 (20°C/4°C liquid) | 0.578 (20°C/4°C liquid) | 0.501 (20°C/4°C liquid) |
| O. PARTITION COEFFICIENT OF        | log Pow 2.89            | log Pow 2.80            | log Pow 2.36            |
| P. AUTO-IGNITION TEMPERATURE       | 287°C                   | 460°C                   | 466°C                   |
| Q. DECOMPOSITION TEMPERATURE       | No data                 | No data                 | No data                 |
| R. VISCOSITY                       | No data                 | No data                 | No data                 |
| S. EXPLOSIVE PROPERTIES            | No data                 | No data                 | No data                 |

#### 10. STABILITY AND REACTIVITY

|                             |   |
|-----------------------------|---|
| A. CHEMICAL STABILITY       | Material is stable under normal conditions.   |
| B. POSSIBILITY OF HAZARDOUS | Stable at a normal temperature and pressure.  |
| C. CONDITION TO AVOID       | Avoid heat, flames, sparks and other sources of ignition. Minimize contact with material. |
| D. INCOMPATIBLE MAERIALS    | Strong oxidizers such as hydrogen peroxide,nitric acid,sulphuric acid,etc.                |
| E. HAZARDROUS DECOMPOSITION | Toxic carbon compounds(CO2,etc)   |

#### 11. TOXICOLOGICAL INFORMATION

##### A. INFORMATION ON THE LIKELY ROUTES

|                     |  |
|---------------------|--|
| INHALATION EXPOSURE | Irritation, vomiting, difficulty in breathing, irregular heart beating, headache, sleepiness, dizziness. |
| INGESTION EXPOSURE  | May cause ingestion irritation.  |
| SKIN EXPOSURE       | Frostbite.   |
| EYE EXPOSURE        | Frostbite.   |

##### B. DELAYED AND IMMEDIATE EFFECTS AND ALSO CHRONIC EFFECTS FROM SHORT AND LONG TERM EXPOSURE

###### ACUTE TOXIC

|            |   |
|------------|---|
| ORAL       | LD50(rat) :No data                                |
| SKIN       | LD50(rabbit) :No data                             |
| INHALATION | LD50(rat) :658,000mg/m3,LD50(mouse) :680,000mg/m3 |

|                             |         |
|-----------------------------|---------|
| SKIN CORROSION/IRRITATION   | No data |
| SERIOUS EYE DAMAGE/IRRITANT | No data |
| RESPIRATORY SENSITIZATION   | No data |
| SKIN SENSITIZATION          | No data |

###### CARCINOGENICITY

|                            |         |
|----------------------------|---------|
| KOREAN INDUSTRIAL RAW OF   | No data |
| KOREAN DEPARTMENT OF LABOR | No data |
| IARC                       | No data |
| OSHA                       | No data |
| ACGIH                      | No data |
| NTP                        | No data |
| EU CLP                     | No data |
| GERM-CELL MUTAGENICITY     | No data |
| GENERATIVE TOXICITY        | No data |
| SPECIFIC TARGET ORGAN      | No data |
| SPECIFIC TARGET ORGAN      | No data |
| ASPIRATION HAZARD          | No data |

#### 12. ECOLOGICAL INFORMATION

##### A. AQUATIC/TERRESTRIAL ECOLOGY TOXICITY

|                                  |                                      |
|----------------------------------|--------------------------------------|
| FISH                             | No data                              |
| DAPHNIA                          | No data                              |
| ALGAE                            | No data                              |
| B. PERSISTENCE AND DEGRADABILITY |                                      |
| PERSISTENCE                      | Not applicable                       |
| DEGRADABILITY                    | No data                              |
| C. BIOACCUMULATIVE POTENTIAL     |                                      |
| BIODEGRADATION                   | No data                              |
| BIOACCUMULATION                  | No data                              |
| D. MOVILITY IN SOIL              | Adsorbs to soil and has low mobility |
| E. OTHER HAZARDROUS EFFECTS      | No data                              |

#### 13. DISPOSAL CONSIDERATIONS

|                     |  |
|---------------------|--|
| A. DISPOSAL METHODS | All disposal practices must be in compliance with all law and regulations<br>Consult local, state, and federal regulations for specific requirements |
| B. PRECAUTIONS      | the contents of containers must be disposed according to related regulations   |

#### 14. TRANSPORT INFORMATION

|                                 |   |
|---------------------------------|---|
| A. UN NUMBER                    | UN2037  |
| B. UN PROPER SHIPPING NAME      | Receptacles, small, containing gas or gas cartridges (flammable) without release device, not refillable |
| C. HAZARD CLASS(ES)             | Class 2.1   |
| D. PACKING GROUP                | No data   |
| E. MARINE POLLUTANT SUBSTANCES  | Not applicable  |
| F. SPECIAL PRECAUTIONS FOR USER | Passenger plane or train:Prohibited   |

#### 15. REGULATORY INFORMATION

A. REGULATORY INFORMATION This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

B. SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS SPECIFIC FOR THE PRODUCT IN QUESTION:

1)USA

|                                    |   |
|------------------------------------|---|
| CERCLA SECTION 103 (40CFR302.4)    | Not regulated   |
| SARA SECTION 302(40CFR355.30)      | Not regulated   |
| SARA SECTION 304(40CFR355.40)      | Not regulated   |
| SARA SECTION 313(40CFR372.65)      | Not regulated   |
| SARA SECTION 311/312 (40CFR370.21) | Acute:Yes Chronic:No Fire:Yes Reactivity:No Sudden Pressure:Yes |
| OSHA PROCESS                       | Not regulated   |

2)EU classification and Labelling

|                |   |
|----------------|---|
| CLASSIFICATION | F   |
| RISK PHRASES   | R12:Extremely flammable   |
| SAFTY PHRASES  | S2:Keep out of the reach of children<br>S9:Keep container in a well-ventilated place<br>S16:Keep away from sources of ignition – No smoking |

#### 16. OTHER INFORMATION

A. SOURCE OF DATA

ECB-ESIS(European chemical Substances Information System)(<http://ecb.jrc.it/esis>)  
 ECOTOX Database, EPA(<http://cfpub.epa.gov/ecotox>)  
 HSDB, U.S. National Library of Medicine(<http://toxnet.nlm.nih.gov>)  
 IUCLID Chemical Data Sheet, EC-ECB  
 International Chemical Safety Cards(ICSC)  
<http://www.nema.go.kr/hazmat/>  
<http://ncis.nier.go.kr>  
 Corporate Solution From Thomson Micromedex(<http://csi.micromedex.com>)  
 ECB-ESIS(European chemical Substances Information System)(<http://ecb.jrc.it/esis>)  
 International Chemical Safety Cards(ICSC)(<http://www.nihs.go.jp/ICSC>)  
 TOXNET, U.S. National Library of Medicine(<http://toxnet.nlm.nih.gov>)  
 The Chemical Database, The Department of Chemistry at the University of Akron (<http://ull.chemistry.uakron.edu/erd>)  
 NLM:HSDB  
 NLM:ChemIDPlus  
 TOMES:Loli  
 TOPKAT:Skin Irritation  
 Ecological Structure Activity Relationships(ECOSAR)  
 Korea Occupational Safety & Health Agency  
 EPI Suite  
 Quantitative Structure Activity Relation(QSAR)  
 Globally Harmonized System of classification and labeling of chemical(GHS), United Nations.

B. THE DATE OF PREPARATION OF THE December. 22. 2012

C. THE NUMBER OF TIMES REVISED AND THE DATE OF PREPARATION OF THE LATEST REVISION

THE NUMBER OF TIMES REVISED No. 1

THE DATE OF PREPARATION OF January. 23. 2015

D. OTHERS

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