

SAFETY DATA SHEET

PRODUCT NAME

BUTANE GAS CARTRIDGE

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

- A. PRODUCT NAME BUTANE GAS CARTRIDGE
- 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,WARNING
- 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
 Wash skin and eyes with plenty of flowing water over 20 minutes
- B. SKIN CONTACT
 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.
Thermal decomposition may produce carbon monoxide and other toxic vapors
Heavier than the air, and there is a possibility of ignition and backfire.
May cause explosion if heat up cylinder.
Low electrical conduction may cause static electricity, and ignited by spark.
Mixture of gas & air may explode.
- C. SPECIAL PROTECTIVE EQUIPMENT AND PRECAUTIONS FOR FIRE FIGHTER Fire fighters/rescues must put on apposive protector
Get fire fighting on safty distance
May be damaged if skin and eyes contact
May cause pollution by opened contents
Warning, becouse contents are lighter than water
Remove cylinder from danger distance if not be dangerous
- D. SPECIAL FIRE FIGHTING 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.
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.
Do not touch spilled material.
Stop leak if possible without personal risk.
Reduce vapors with water spray.
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
Absorb leaked materials with soil and sand, and throw away it to waste treatment container
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
Avoid breathing dust/fume/gas/mist/vapours/spray
Do not spray to flash resource point or flammable
Avoid contact with skin and eyes
Empty containers should not be re-used
Protect cylinders from physical damage
Use in a well-ventilated area
- B. CONDITIONS FOR SAFE STORAGE Keep away from heat/sparks/open flames/hot surface – No smoking
Store in locking machanism system and not youth handling
Store in cool, well-ventilated area away from heat, spark or fire
Keep away from foods and drinks
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 ³)
NIOSH recommended TWA 10 hour(s)	800ppm(1900mg/m ³)

Propane:

OSHA TWA	1000ppm(1800mg/m ³)
ACGIH TWA	2500ppm
NIOSH recommended TWA	1000ppm(1800mg/m ³)

N-Butane:

OSHA TWA	800ppm(1900mg/m ³)
ACGIH TWA	800ppm
NIOSH recommended TWA	800ppm(1900mg/m ³)

EXPOSURE STANDARD Industry safety & health law

B. APPROPRIATE ENGINEERING CONTROLS

Provide adequate ventilation
Ventilation equipment should be explosion-resistant if explosive concentrations of material are present.
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. For the liquid: Wear splash resistant safety goggles. Contact lenses should not be worn.
Body Protection	For the gas: Protective clothing is not required. 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 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	UN1075
B. UN PROPER SHIPPING NAME	PETROLEUM GASES, LIQUEFIED, class 2.1, F-D, S-U
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 S9:Keep container in a well-ventilated place 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

The information contained herein is to the best of our knowledge and belief accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee for result obtained, and assume no responsibility for damages incurred by use of this product. It is the responsibility of the user to comply with all federal, state and local laws and regulations.