SAFETY DATA SHEET

PRODUCT NAME: BUTANE GAS CARTRIDGE MODEL BU-6 NET WEIGHT 8OZ (227G)

B. RECOMMENDED USE OF PRODUCT AND LIMITATIONS

USE OF PRODUCT: For use Only in Portable Gas Appliances
LIMITATIONS: Extremely flammable

C. IMPORTER

COMPANY: IWATANI CORPORATION OF AMERICA
ADDRESS: 2200 POST OAK BLVD. STE 1150 HOUSTON, TX 77056 (P) 713-965-9970
EMERGENCY PHONE NUMBER: 1-800-429-9300 (CHEM TREC)

E. MOST IMPORTANT SYMPTOMS/EFFECT, ACUTE AND DELAYS

A. MIXTURE

Contact with skin or eyes can cause frostbite.
If you 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

2-METHYL PROPANE
SYNONYM: n-Propane, Propylhydride
CAS No./ID: 74-98-6
CONTENT(w%): 0-5

3. COMPOSITION/INFORMATION ON INGREDIENTS

A. MIXTURE

<table>
<thead>
<tr>
<th>CHEMICAL NAME</th>
<th>SYNONYM</th>
<th>CAS No./ID</th>
<th>CONTENT(w%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISOBUTANE</td>
<td></td>
<td>75-28-5</td>
<td>25 ~35</td>
</tr>
<tr>
<td>BUTANE</td>
<td></td>
<td>106-97-8</td>
<td>50 ~70</td>
</tr>
<tr>
<td>PROPANE</td>
<td></td>
<td>74-98-6</td>
<td>0 ~ 5</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

A. EYE CONTACT

Get emergency medical treatment
Wash skin and eyes with plenty of flowing water for at least 20 minutes

B. SKIN CONTACT

If you 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 medical treatment if you have a cough or other

D. INGESTION

Prompt medical action is essential.
Use a breathing equipment if get breathless by ingestion and inhalation

E. MOST IMPORTANT SYMPTOMS/EFFECT, ACUTE AND DELAYS

Contact with skin or eyes can cause frostbite.
**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 Dioxide-CO2

Use dried sand and soil to extinguish 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 cylinder heats up.

Low electrical conduction may cause static electricity, and be ignited by spark.

Mixture of gas & air may explode.

**C. SPECIAL PROTECTIVE EQUIPMENT AND PRECAUTIONS FOR FIRE FIGHTER**

Fire fighters/rescues must put on appositive protector

Get fire fighting on safe distance

May be damaged if skin and eyes contact

May cause pollution by opened contents

Warning, because contents are lighter than water

Remove cylinder from danger distance as to not be dangerous

**D. SPECIAL FIREFIGHTING PROCEDURES**

Use Equipment or Shielding required to protect personnel against bursting, rupturing or venting containers.

Do not heat container. Store below 110℉ in a Ventilated area.

**E. UNSUAL FIRE AND EXPLOSION HAZARDS**

At elevated temperatures(over 54℃/130℉) CRV of containers will be operated,

but rapidly excess heating or fire will be cause 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 and deny entry. Remove sources of ignition.

**B. ENVIRONMENTAL PRECAUTIONS**

Prevent flow to sewer/public waters. stop release

Stop leak if you can do it without risk

Absorb leaked materials with soil and sand, and throw away in a waste treatment container

If spill is indoors, remove all possible sources of ignition and ventilate area immediately until all gasses and vapors have been removed

**C. METHOD AND MATERIALS FOR CONTAINMENT AND CLEANING UP**

Handle after reading 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

**7. HANDLING AND STORAGE**

**A. PRECAUTIONS FOR SAFE HANDLING**

Handle after reading all precautionary statements

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 and deny entry. Remove sources of ignition.

**B. CONDITIONS FOR SAFE STORAGE**

Keep away from heat/sparks/open flames/hot surface - No smoking

Store in locking mechanism system and no 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℃

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

**A. EXPOSURE LIMITS IN THE AIR OF THE WORKPLACE, BIOLOGICAL LIMIT VALUES**

<table>
<thead>
<tr>
<th>Chemical</th>
<th>OSHA TWA</th>
<th>ACGIH TWA</th>
<th>NIOSH recommended TWA 10 hour(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iso-Butane</td>
<td>No data</td>
<td>800ppm(1900mg/m³)</td>
<td>800ppm(1900mg/m³)</td>
</tr>
<tr>
<td>Propane</td>
<td>NOSHA TWA</td>
<td>1000ppm(1800mg/m³)</td>
<td></td>
</tr>
<tr>
<td>ACIGH TWA</td>
<td>2500ppm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NIOSH recommended TWA</td>
<td>1000ppm(1800mg/m³)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**B. APPROPRIATE ENGINEERING CONTROLS**

Provide adequate ventilation

Ventilation equipment should be explosion-resistant if explosive concentrations of material are present.

Ensure compliance with applicable exposure limits.
C. INDIVIDUAL PROTECTION MEASURE

RESPIRATORY PROTECTION

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

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

10. STABILITY AND REACTIVITY

A. CHEMICAL STABILITY
Material is stable under normal conditions.

B. POSSIBILITY OF HAZARDOUS REACTIVITY
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 MATERIALS
Strong oxidizers such as hydrogen peroxide, nitric acid, sulphuric acid, etc.

E. HAZARDOUS 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, spasm, coma

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
LD₅₀(rabbit) : No data

SKIN
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

CANCERGENICITY
No data

KOREAN INDUSTRIAL RAW OF SAFETY AND HEALTH
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

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
   - Absorbs to soil and has low mobility
E. OTHER HAZARDOUS EFFECTS
   - No data

13. DISPOSAL CONSIDERATIONS
A. DISPOSAL METHODS
   - All disposal practices must be in compliance with all laws and regulations
B. PRECAUTIONS
   - Consult local, state, and federal regulations for specific requirements
   - The contents of containers must be disposed according to related regulations

14. TRANSPORT INFORMATION
A. UN NUMBER
   - UN1075
B. UN PROPER SHIPPING NAME
   - UN PROPER SHIPPING NAME: PETROLÈUM GÁSES, 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 data sheet 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
   2) EU classification and labelling information
      - CLASSIFICATION: F
      - RISK PHRASES: R12: Extremely flammable
      - SAFETY 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)
   - IUCLID Chemical Data Sheet, EC-ECB
   - International Chemical Safety Cards (ICSC)
     - http://www.nema.go.kr/hazmat/
     - http://nics.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.nhs.go.jp/ICSC)
   - 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.

| 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.