



## MSDS (MATERIAL DATA SAFETY SHEET)



### SECTION 1. CHEMICAL PRODUCT AND GENERAL INFORMATION

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PRODUCT AND BRAND NAME : WHIP-IT! BUTANE 9X lighter gas 300ml

D.O.T SHIPMENT NAME : GAS CARTRIDGES

CLASS 2.1, GAS CARTRIDGES : UN2037

CREATION DATE : APR 2013

FORMULA: C<sub>4</sub>H<sub>10</sub> & C<sub>3</sub>H<sub>8</sub>

EMERGENCY CONTACT: CHEMTREC: 800-424-9300

### SECTION 2. COMPOSITION & INGREDIENTS DATA

Butane Composition:	N-Butane, Iso-Butane	
Contaminants	NONE	
Chemical Ingredients	Trade Term	Cas No.
N-Butane	butane, liquefied petroleum gas	106-97-8/44%
Iso-Butane	2-methylpropane, trimethylmethane	75-28-5/32%
Propane	n-propane, propylhydride	74-98-6/24%

### SECTION 3. HAZARD IDENTIFICATION

Dangerous Goods Class and Subsidiary Risk: 2.1

HSNO Classification: 2.1.1 A

#### Emergency overview

- Colorless and odorless but may affect central nervous system
- If inhaled, it may cause anoxia symptoms
- Need to be separated from the ignition source
- Avoid gas inhalation
- Closed well with a container's cap
- Physical hazard : Flammable gas, and it may cause a spark and explode if exposed to heat
- Occasionally smells like rotten garlic
- Flammable gas and may cause a fire
- Shall not be contacted with eye, skin, and clothes
- Used under proper ventilation

#### Potential health effects

##### Inhalation

- Short term exposure : Irritation, nausea, vomiting, difficulty in breathing, headache, drowsiness, symptoms of drunkenness, tingling, suffocation, coma
- Long term exposure : No data on adverse effects

##### Skin contact

- Short term exposure : May cause blister, frostbite or paralysis
- Long term exposure : No data on adverse effects.

##### Eye contact

- Short term exposure : May cause Frostbite or vision problem
- Long term exposure : No data

##### Ingestion

- Short term exposure : May cause frostbite
- Long term exposure : No data

#### Carcinogenic status

Industry safety and health law : Not specified

Occupational Safety and Health Administration (OSHA) : Not specified

National Toxicology Program (NTP) : Not specified

CERCLA Index (0~3) : health=1, fire=3, reactivity=0, durability=0

NFPA Index (0~4) : health=1, fire=4, reactivity=0

#### SECTION 4. FIRST AID MEASURES

##### Inhalation

- Move from the exposed areas immediately.
- Secure airway, maintain blood pressure, and inhale oxygen if possible
- Keep a patient in a warm and comfortable condition
- Take a proper medical action
- Artificial respiration if needed
- Keep a patient in a warm and comfortable condition
- Treat appropriately depending on the symptoms

##### Skin contact

- Thoroughly wash off with soft detergent and much water (15~20 minutes)
- If there are symptoms such as frostbite and freezing, take the following process  
Warm the affected part with warm water of 107F(41.7°C), Gently wrap the affected part in blanket, Take an immediate medical action

##### Eye contact

- Wash eyes immediately with much water or saline solution until no chemicals remain
- Take an immediate medical action

##### Ingestion

- Treat properly based on the symptoms
- Take an immediate medical action
- Take an immediate medical action

##### Information on doctor

- Antidote : No specific antidote exists (General or supportive therapy may be done based on the symptoms)

#### SECTION 5. MEASURES FOR EXPLOSION & FIRE

##### Explosion & fire hazard

- May burst or explode if exposed to heat or spark
- Container may explode by heat or fire
- Low electrical conduction may cause static electricity, and ignited by a spark
- Heavier than the air, and there is a possibility of ignition and backfire
- Mixture of gas & air may explode

##### Fire extinguisher - Powder fire extinguisher, carbondioxide (Use water or fog in case of a blaze)

##### Extinguishing a fire

- If not dangerous, remove from a fire area
- After putting out a fire, sprinkle a cooling water in the side of the container which is exposed by heat
- Escape from the end of tank
- Use a fire hose or monitor nozzle if a blaze occurs in the stored area, and leave it burned if difficult
- Immediately remove if the size of blaze grows bigger or the tank is discolored by heat
- Leave it burned and isolate by more than 1 mile if we cannot stop the spills from gas tank, and tank lorry
- Extinguish it if the gas spills can be stopped
- Use much water in a form of fog from a long distance
- Don't inhale the smoke from the burning materials with one's back against the wind
- Keep away outside a 5-mile radius (1/3 mile) if fire is out of control or the container is exposed to a flame

##### Harmful combustion product

- Pyrolysis product may include a harmful carbon oxidized substance

#### SECTION 6. MEASURES FOR LEAKAGE ACCIDENT

##### Occupational leakage

- Avoid heat, flame, spark and other source of ignition
- Do it if you can stop a spilled material with safety
- Isolate the area until the gas disperses
- No entry to unauthorized persons, isolate dangerous area
- Do not touch a spilled material
- Sprinkle water in order to reduce vapor
- Prohibit smoke, flame or fire at the dangerous area
- Ventilate the closed place before entering

#### SECTION 7. HANDLING AND STORAGE MEASURES

- Store and handle in accordance with the regulations of a central government and local autonomous entity
- Store based on 29CFR 1910.106

##### Ground(Earth) connection

- Store the materials with low electric conductivity in the container which meets ground connection standards according to NFPA77-1983
- Recommend a practical training against static electricity
- Please isolate and store the materials separated from other materials which shall not be put together at the same time

## SECTION 8. EXPOSURE PREVENTION & PROTECTIVE DEVICE

### Exposure standard (TWA) / Industry safety & health law

#### Propane :

- 1000ppm(1800□/□) OSHA TWA
- 2500ppm ACGIH TWA
- 1000ppm(1800□/□) NIOSH recommendation TWA 10hours
- 1800□/□(1000□/□) DFG MAK (Peak limit assortment grade -, deviation factor 2)

#### N-Butane :

- TWA : 800ppm, 1900□/□
- STEL : -
- 800ppm(1900□/□) OSHA TWA (JUN. 30,1993, Invalid by 58 FR 35338)
- 800ppm ACGIH TWA
- 800ppm(1900□/□) NIOSH recommendation TWA 10hours
- 2400□/□(1000□/□) DFG MAK (Peak limit assortment grade -II, deviation factor 4)

#### ISO-Butane :

- 800ppm(1900□/□) ACGIH TWA
- 800ppm(1900□/□) NIOSH recommendation TWA 10hours
- 2400□/□(1000□/□) DFG MAK (Peak limit assortment grade -II, deviation factor 4)

#### LPG : Liquified Petroleum Gas

- 1000ppm(1800mg/m3) OSHA TWA
- 1000ppm ACGIH TWA
- 1000ppm(1800mg/m3) NIOSH recommendation TWA 10hours

### Ventilation

- Set up a partial ventilation or general diluted ventilation equipment.
- Install explosion-screening facilities for the relevant ventilation equipment if there is a possibility of explosion for the material

### Eye protection

- For the gas, eye protection not required, but recommended.
- For the liquid, spray or dust protective goggles are needed to avoid a direct contact with foreign materials
- Contact lense shall not be used

### Emergency eye washing

- Employer shall install a washing equipment and shower stall near the work place because possibly employee's eye can be exposed to foreign materials

### Protection clothes

- For gas, protective clothing is not necessary
- In case of possible contact with liquid, employee must wear proper protection clothes and equipment in order to prevent a skin from freezing

### Protection gloves

- Wear insulated gloves and gloves against the cold

### Respirator

- Below respirator and maximum use concentration is recommended by NIOSH guide or allowance standard report about chemical hazard established by America Health and Human Services Department
- Specifically-selected respirator shall be based on pollutant density in a work place, and does not exceed the operation limit of respirator, and finally approved by NIOSH and NSHA at the same time

#### LPG (Liquified Petroleum Gas)

10,000ppm : Air-supply respirator, self-support respirator

19,000ppm : Respirator operated by continuous flow form

Whole self-support respirator

Whole air-supply respirator

Whole air-supply respirator operated continuously by oil pressure

Shelter : Shelter-type self-support respirator

If there is a urgent danger to life or health,

- Operated by inhalation & ventilation resistance or positive pressurization as all of the self-support respirators
- Inhalation & ventilation resistance supportively equipped with self-support respirator operated by inhalation & ventilation resistance or positive pressurization
- Whole air-supply respirator operated by positive pressurization

**SECTION 9. PHYSICAL AND CHEMICAL DATA**

Component	N-Butane	Iso-Butane	Propane
Physical condition*1	liquid & vapor	liquid & vapor	liquid & vapor
Color	colorless	colorless	colorless
Smell*2	odorless	odorless	odorless
Time to smell	no way to know	no way to know	no way to know
PH	not applicable	not applicable	not applicable
Melting point	-138.3°C	-160°C	-187.7°C
Boiling point	-0.5°C	-11.5°C	-42.1°C
Flashing point	-73.3°C	-88.0°C	-104.4°C
Evaporation rate	100%	100%	100%
Flammability	no way to know	no way to know	no way to know
Explosion limit concentration	Upper 8.4 vol%	Upper 8.4 vol%	Upper 9.5 vol%
	Lower 1.9 vol%	Lower 1.8 vol%	Lower 2.2 vol%
Vapor pressure	0.214MPa @21.1°C	0.304MPa @20°C	0.75MPa @20°C
Vapor density	2.1(air=1)	2.595(air=1)	1.55(air=1)
Specific gravity	0.549(H2O=1)@20°C	0.549(H2O=1)@20°C	0.501(H2O=1)@20°C
Solubility	3.25ml/100ml(20°C, water)	no way to know	0.007g/100ml(20°C,water)
Partition factor N-octanol/water	2.89 as log POW	2.8 as log POW	2.36 as log POW
Ignition point	287°C	460°C	466.1°C
Decomposition temperature	no way to know	no way to know	no way to know

\* Component has no smell, but a little odorant is added

**SECTION 10. STABILITY AND REACTIVITY****Reactivity**

- Stable at a normal temperature and pressure

**Condition to be avoided**

- Avoid a contact with heat, flame, spark and other sources of ignition
- Vapor has a explosiveness
- Do not contact with a skin
- May cause frostbite
- Because of a pressure, containers may be burst if exposed to heat, and thus could move to a long distance

**Material to be avoided**

- Strong oxidizer : Hazard of fire, explosion
- Nitric acid, chlorine dioxide : Material to be avoided
- Carbonyl nickel & acid : Explode at 20~40°C

**Dangerous decomposition product**

- Pyrolysis product may contain poisonous carbon oxidized substance

**Polymerization reaction**

- No data at a normal temperature and pressure

## SECTION 11. TOXICOLOGICAL DATA

### Toxicological data

#### Propane :

- LA50 : 6960□/□, inhalation - rat

#### Iso-Butane :

- LC50 : 57pph/15min , inhalation - rat

#### N-Butane :

- LC50 : 658□/□/45min , inhalation - rat

- LC50 : 680□/□/2hours , inhalation - mouse

### Carcinogenicity

Industry safety & health law : No data

### Acute toxicity level

No toxicity by inhalation (little toxicity by ingestion)

### Effect on target organs

Simple asphyxiant, and central nervous system suppressant

### Additional data

Stimulant like epinephrine may cause ventricular fibrillation

### Effect on health

Inhalation : Asphyxiant/anesthetic

- Acute exposure

It may cause headache, dullness, difficulty in breathing, drowsiness, and losing consciousness

If exposed under 1% concentration for 10 minutes, it may cause drowsiness or dizziness

High concentration may cause suffocation, difficulty in breathing, nausea, vomiting, coma, spasm, and paralysis

19,000ppm concentration may cause immediate danger to life or health

- Chronic exposure : No data

### Skin contact

- Acute exposure : Contact with liquid may cause frostbite, ache, and water blister

- Chronic exposure : May cause symptoms the same as acute exposure

### Eye contact

- Acute exposure : Contact with liquid may cause frostbite, ache, and eyesight loss

- Chronic exposure : May cause symptoms the same as acute exposure

### Ingestion

- Acute exposure : Gas ingestion is not likely to occur, but if you swallow the liquid, it may cause frostbite on the lips, mouth, and membrane

- Chronic exposure : No data

## SECTION 12. ENVIRONMENTAL EFFECT

Environmental effect index (0~4) : No data

Acute water system toxicity : No data

Resolvability : No data

BCF : No data

Log water/octanium distribution index : No data

## SECTION 13. DIRECTIONS FOR DISPOSAL

- Comply with a central government and local autonomous entity regulations

- Disposal shall be executed by a standard of 40CFR 262 applied for hazardous waste generator

- EPA hazardous waste No. D001

## SECTION 14. INFORMATION FOR TRANSPORTATION

UN harmfulness grade classification : 2.1

UN packing group : -

UN DOT harmfulness grade classification (40CFR 172.101) : Flammable gas

UN DOT indication standard (40CFR 172.101 & Subpart): Flammable gas

UN DOT packing standard (40CFR 172.101)

UN DOT restriction quantity (40CFR 172.101)

Passenger plane or train : Prohibited

Cargo plane : 150kg

## SECTION 15. DETAILS ON LEGISLATION

Korea

Industry safety & health law : Allowable concentration

Control law of hazardous chemical materials : -

Fire Services Act : -

USA

TSCA : Stipulated

CERCLA clauses 103(40CFR 302.4) : Not stipulated

SARA clauses 302(40CFR 355.30) : Not stipulated

SARA clauses 304(40CFR 355.400) : Not stipulated

SARA clauses 313(40CFR 372.62) : Not stipulated

OSHA process safety management (29CFR 1910.119) : Not stipulated

California clause 65 (drinking water disposal regulation) : Not stipulated

SARA harmfulness category : SARA WP311/312 clause (40CFR 370.21)

- Acute harmfulness : Exist
- Chronic harmfulness : Not exist
- Fire hazard : Exist
- Reaction hazard : Not exist
- Sudden eruption hazard : Exist

## SECTION 16. DIRECTIONS FOR PRODUCT

### Precautions in handling and storage

- Do not expose to heat and store at below 40°C in an airy place
- Please pay attention in order to avoid a cut on the finger by groove
- In case the product drops on the ground, be careful about deformation of nozzle and gas leakage
- After use, please separate the product in order to avoid an explosion by radiant heat
- keep out of reach of children.
- Do not put such things as iron plate, stone plate, aluminum foil, which have much radiant heat, above the product covers
- Use in an airy place since a use in the airtight place may cause explosion and suffocation
- Do not spray or inhale to human body and avoid an impact on the product

\* Please read and follow the directions on the product label

## SECTION 17. OTHER REFERENCES

Data source : GS Caltex Corporation, Korea Petro Chemical Ind. Co., Ltd., Korea Occupational Safety & Health Agency

\* The above information is correct as far as we know.

The company has no responsibility for injuries or damages caused by an inappropriate use

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