

MATERIAL SAFETY DATA SHEET

1. Identification of the substance or mixture and of the supplier

A. GHS product identifier RainOK EXTREME RAIN REPELLENT FOR SIDE MIRROR

B. Recommended use of the chemical and restrictions on use

Recommended use side mirror

Restrictions on use Don't use this for the other purpose

C. Manufacturers

Company name Bullstone

Address 7F, Dabong Tower, 418, Teheran-ro Gangnam-gu, Seoul, 135-839, Korea

Emergency phone number 822-2106-7777

Respondent Han Dong Jin

Fax 822-2106-7911

2. Hazards identification

A. GHS classification of the substance/mixture

Flammable liquids : Category 2

Gases under pressure : Liquefied gas

Specific target organ toxicity (single exposure) : Category 3 (respiratory irritation)

B. GHS label elements, including precautionary statements

Pictogram and symbol :



Signal word : Danger

Hazard statements :

H225 Highly flammable liquid and vapour

H280 Contains gas under pressure; may explode if heated.

H335 May cause respiratory irritation.

Precautionary statements

Precaution

P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

P233 Keep container tightly closed.

P240 Ground/bond container and receiving equipment.

P241 Use explosion-proof electrical/ventilating/lighting equipment.

P242 Use only non-sparking tools.

P243 Take precautionary measures against static discharge.

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.

P271 Use only outdoors or in a well-ventilated area.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

Treatment

P303+P361+P353 If on skin (or hair): Remove/Take off immediately all contaminated clothing.

Rinse skin with water/shower.

P304+P340 If inhaled: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P312 Call a poison center or doctor/physician if you feel unwell.

P370+P378 In case of fire: Use alcohol foam, carbon dioxide, or water spray for extinction.

Storage

P403+P233 Store in a well-ventilated place. Keep container tightly closed.

P403+P235 Store in a well-ventilated place. Keep cool.

P405 Store locked up.

P410+P403 Protect from sunlight. Store in a well-ventilated place.

Disposal

P501 Dispose the contents/container in accordance with local/regional/national/international regulations.

C. Other hazard information not included in hazard classification (NFPA)

Health 2

Flammability 1

Reactivity Not available

3. Composition/information on ingredients

Chemical Name	Common Name(Synonyms)	CAS number	EC number	Content (%)
Ethanol mixture	Silica(Silicon dioxide)(CAS No. 7631-86-9) + Ethyl alcohol(CAS No. 64-17-5)			80~90 %
Butane	Butan Butano n-Butan xutane pure	106-97-8	203-448-7	10~20 %
Propane	Dimethylmethan	74-98-6	200-827-9	1~5 %

4. First aid measures

A. Eye contact

- Call emergency medical service.
- Call emergency medical service.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.

B. Skin contact

- If on skin (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
- If on skin (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
- Call a poison center or doctor/physician if you feel unwell.
- Call a poison center or doctor/physician if you feel unwell.
- Call emergency medical service.
- Call emergency medical service.
- Remove and isolate contaminated clothing and shoes.
- Remove and isolate contaminated clothing and shoes.
- For minor skin contact, avoid spreading material on unaffected skin.
- For minor skin contact, avoid spreading material on unaffected skin.
- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
- Wash skin with soap and water.
- Wash skin with soap and water.
- In case of contact with liquefied gas, thaw frosted parts with lukewarm water.
- In case of contact with liquefied gas, thaw frosted parts with lukewarm water.

C. Inhalation

- If exposed to excessive levels of dusts or fumes, remove to fresh air and get medical attention if cough or other symptoms develop.
- If exposed to excessive levels of dusts or fumes, remove to fresh air and get medical attention if cough or other symptoms develop.
- Give artificial respiration if victim is not breathing.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Administer oxygen if breathing is difficult.

D. Ingestion

- Call emergency medical service.
- Call emergency medical service.

E. Indication of immediate medical attention and notes for physician

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

5. Fire fighting measures

A. Suitable (and unsuitable) extinguishing media

- Use alcohol foam, carbon dioxide, or water spray when fighting fires involving this material.
- Use dry sand or earth to smother fire.

B. Specific hazards arising from the chemical

- Highly flammable liquid and vapour
- Contains gas under pressure; may explode if heated.
- May violently polymerize and result in fire and explosion.
- Vapors may travel to a source of ignition and ignite.
- May form explosive mixtures at temperatures at or above the flashpoint.
- Containers may explode when heated.
- HIGHLY FLAMMABLE: Will be easily ignited by heat, sparks or flames.
- Spilled material may create fire or explosion hazard.
- May cause vapor explosion hazard indoors, outdoors or in sewers.
- Some of these materials may burn, but none ignite readily.
- Vapors may form explosive mixtures with air.
- Non-combustible, substance itself does not burn but may decompose upon heating, then produce corrosive and/or toxic fumes.
- Fire will produce irritating, corrosive and/or toxic gases.
- Some of these materials, if spilled, may leave a flammable residue after evaporation

C. Special protective equipment and precautions for fire-fighters

- Rescuers should put on appropriate protective gear.
- Evacuate area and fight fire from a safe distance.
- Many liquids are lighter than water.
- Most vapors are heavier than air. They will spread along ground and collect in low or confined areas
- Substance may be transported hot.
- Vapors from liquefied gas are initially heavier than air and spread along ground.
- Substance may be transported in a molten form.
- Ruptured cylinders may rocket.
- Dike fire-control water for later disposal; do not scatter the material.
- Move containers from fire area if you can do it without risk.
- Fire involving Tanks; Do not direct water at source of leak or safety devices; icing may occur.
- Fire involving Tanks; Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Fire involving Tanks; Cool containers with flooding quantities of water until well after fire is out.
- Fire involving Tanks; Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- Fire involving Tanks; Always stay away from tanks engulfed in fire.
- Fire involving Tanks; For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

- Damaged cylinders should be handled only by specialists.
- Use extinguishing agent suitable for type of surrounding fire.

6. Accidental release measures

A. Personal precautions, protective equipment and emergency procedures

- Avoid breathing dust/fume/gas/mist/vapours/spray.
- Avoid breathing dust/fume/gas/mist/vapours/spray.
- The very fine particles may cause a fire or explosion, eliminate all ignition sources.
- The very fine particles may cause a fire or explosion, eliminate all ignition sources.
- Clean up spills immediately, observing precautions in Protective Equipment section.
- Clean up spills immediately, observing precautions in Protective Equipment section.
- If possible, turn leaking containers so that gas escapes rather than liquid.
- If possible, turn leaking containers so that gas escapes rather than liquid.
- Do not direct water at spill or source of leak.
- Do not direct water at spill or source of leak.
- Eliminate all ignition sources.
- Eliminate all ignition sources.
- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
- All equipment used when handling the product must be grounded.
- All equipment used when handling the product must be grounded.
- Allow substance to disperse
- Allow substance to disperse
- Ventilate the area.
- Ventilate the area.
- Stop leak if you can do it without risk.
- Stop leak if you can do it without risk.
- Some of these materials, if spilled, may leave a flammable residue after evaporation
- Some of these materials, if spilled, may leave a flammable residue after evaporation
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- A vapor suppressing foam may be used to reduce vapors.
- A vapor suppressing foam may be used to reduce vapors.
- Cover with plastic sheet to prevent spreading.
- Cover with plastic sheet to prevent spreading.
- Please note that there are materials and conditions to avoid.
- Please note that there are materials and conditions to avoid.

B. Environmental precautions and protective procedures

- Prevent entry into waterways, sewers, basements or confined areas.
- Prevent entry into waterways, sewers, basements or confined areas.

C. The methods of purification and removal

- Dike and collect water used to fight fire.
- Dike and collect water used to fight fire.
- Absorb spills with inert material (e.g., dry sand or earth), then place in a chemical waste container.
- Absorb spills with inert material (e.g., dry sand or earth), then place in a chemical waste container.
- Absorb the liquid and scrub the area with detergent and water.
- Absorb the liquid and scrub the area with detergent and water.
- Large Spill; Dike far ahead of liquid spill for later disposal.
- Large Spill; Dike far ahead of liquid spill for later disposal.
- Use clean non-sparking tools to collect absorbed material.
- Use clean non-sparking tools to collect absorbed material.

7. Handling and storage

A. Precautions for safe handling

- Use explosion-proof electrical/ventilating/lighting equipment.
- Use only non-sparking tools.
- Take precautionary measures against static discharge.
- Avoid breathing dust/fume/gas/mist/vapours/spray.
- Use only outdoors or in a well-ventilated area.
- Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, static electricity, or other sources of ignition.
- Follow all MSDS/label precautions even after container is emptied because they may retain product residues.
- Use carefully in handling/storage.
- Loosen closure cautiously before opening.
- All equipment used when handling the product must be grounded.
- Please note that there are materials and conditions to avoid.
- Please work with reference to engineering controls and personal protective equipment.
- Be careful to heat.
- You need measurement of air concentration and ventilation in low, closed and confined areas due to lack of oxygen.

B. Conditions for safe storage

- Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
- Store in a well-ventilated place. Keep container tightly closed.
- Store in a well-ventilated place. Keep cool.
- Protect from sunlight. Store in a well-ventilated place.
- Empty drums should be completely drained, properly bunged, and promptly returned to a drum reconditioner, or properly disposed of.
- Containers can build up pressure if exposed to heat (fire).

8. Exposure controls/personal protection**A. Occupational Exposure limits****Korea regulation**

Ethanol mixture CAS No. 7631-86-9; TWA = 10 mg/m³ / CAS No. 64-17-5; TWA = 1000 ppm (1900 mg/m³)

ACGIH regulation

Ethanol mixture Silica(Amorphous fused); TWA: 0.1 mg/m³(Respirable), TWA: 2.0 mg/m³(Respirable) / Tin; TWA: 2.0 mg/m³

Butane STEL 1000 ppm

Biological exposure index : Not available

OSHA regulation

Ethanol mixture Silica(Amorphous fused); TWA: 0.1 mg/m³(total dust), 20mppcf Tin; TWA: 8 mg/m³(total dust)

Butane TWA = 800 ppm, (1900 mg/m³)

Propane TWA=1000 ppm (1800 mg/m³)

NIOSH regulation

Butane TWA = 800 ppm, (1900 mg/m³)

Propane TWA=1000 ppm (1800 mg/m³)

EU regulation : Not available

Other

Butane Germany : TWA=1000ppm(2400 mg/m³) Greece : TWA=1000ppm(2350 mg/m³) Hong Kong : TWA=800ppm(1900 mg/m³)

Propane Finland:TWA=800 ppm(1500 mg/m³) Germany:TWA=1000 ppm(1800 mg/m³)

Greece:TWA=1000 ppm(1800 mg/m³) Hong Kong:TWA-2500 ppm(4508 mg/m³)

B. Appropriate engineering controls

- If user operations generate dust, fume, or mist, use ventilation to keep exposure to airborne contaminants below the recommended exposure limit.

C. Personal protective equipment**Respiratory protection**

- Wear NIOSH or European Standard EN 149 approved full or half face piece (with goggles) respiratory protective equipment when necessary.
- In case exposed to gaseous/liquid material, the respiratory protective equipments as follow are recommended. escape full facepiece gas mask (of use for acid gas, in case of acid gas for organic compounds) or escape half facepiece gas mask (of use for acid gas, in case of acid gas for organic compounds) or direct full facepiece gas mask (of use for acid gas, in case of acid gas for organic compounds) half facepiece gas mask (of use for acid gas, in case of acid gas for organic compounds) or powered air-purifying gas mask.
- In lack of oxygen(< 19.5%), wear the supplied-air respirator or self-contained breathing apparatus.oxygen

Eye protection

- Wear enclosed safety goggles to protect from gaseous state organic material causing eye irritation or other disorder.
- An eye wash unit and safety shower station should be available nearby work place.

Hand protection

- Wear appropriate protective gloves by considering physical and chemical properties of chemicals.

Body protection

- Wear appropriate protective clothing by considering physical and chemical properties of chemicals.

9. Physical and chemical properties

A. Appearance

Description Liquid

Color Colorless opaque

B. Odor solvent odor

C. Odor threshold Not available

D. pH 6 ~ 8

E. Melting point/freezing point Not available

F. Initial boiling point and boiling range Not available

G. Flash point Not available

H. Evaporation rate Not available

I. Flammability (solid, gas) Flammable Aerosol

J. Upper/lower flammability or explosive limits Not available

K. Vapor pressure Not available

L. Solubility (ies) Not available

M. Vapor density Not available

N. Specific gravity 0.80~0.82

O. Partition coefficient: n-octanol/water Not available

P. Auto ignition temperature Not available

Q. Decomposition temperature Not available

R. Viscosity Not available

S. Molecular weight Not available

10. Stability and reactivity

A. Chemical stability and Possibility of hazardous reactions:

- Highly flammable liquid and vapour
- Contains gas under pressure; may explode if heated.
- May violently polymerize and result in fire and explosion.
- May form explosive mixtures at temperatures at or above the flashpoint.
- Containers may explode when heated.
- HIGHLY FLAMMABLE: Will be easily ignited by heat, sparks or flames.
- Spilled material may create fire or explosion hazard.
- May cause vapor explosion hazard indoors, outdoors or in sewers.
- Some of these materials may burn, but none ignite readily.
- Vapors may form explosive mixtures with air.

- Non-combustible, substance itself does not burn but may decompose upon heating, then produce corrosive and/or toxic fumes.
 - Fire will produce irritating, corrosive and/or toxic gases.
- B. Conditions to avoid:**
- Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
- C. Incompatible materials:**
- Combustibles, reducing agents
- D. Hazardous decomposition products:**
- Corrosive and/or toxic fume
 - Irritating, corrosive and/or toxic gases

11. Toxicological information

A. Information of Health Hazardous:

Acute toxicity

Oral [Not available]

- **Ethanol mixture** : Rat LD₅₀ = mg/kg Silica (Amorphous fused); 3160mg/kg (ingestion-rat:LD50)

Dermal [Not available]

Inhalation [Not available] (ATEmix = 1,601.24 mg/L)

- **Butane** : Rat LC₅₀ = 1,443 mg/L/15min
- **Propane** : Rat LC₅₀ = 280,000 mg/kg/10min

Skin corrosion/ irritation [Not classified]

Serious eye damage/ irritation [Not available]

Respiratory sensitization [Not available]

Skin sensitization [Not available]

Carcinogenicity [Not classified]

IARC

- **Ethanol mixture** : 3(CAS No. 7631-86-9) 1(CAS No. 64-17-5)

KOREA-ISHL

- **Ethanol mixture** : 1A (알코올 음주에 한정함/limited to alcoholic beverages)(CAS No. 64-17-5)

Ethanol mixture : Silica is Amorphous silicon dioxide and classified Class 3 on IARC.

Mutagenicity [Not classified]

- **Butane** : Negative reactions were observed with and without metabolic activation in vitro(mammalian chromosome aberration test(OECD TG 473, GLP), bacterial reverse mutation assay(OECD TG 471, GLP).
- **Propane** : Negative reactions were observed with and without metabolic activation in vitro(mammalian chromosome aberration test(OECD TG 473, GLP), bacterial reverse mutation assay(OECD TG 471, GLP).

Reproductive toxicity [Not classified]

- **Butane** : In reproduction/developmental toxicity screening test, there were no significant adverse effects on reproductive parameters and no evidence of malformations at any doses.(NOAEC=21641 mg/m³)(OECD TG 422, GLP)
- **Propane** : In reproduction/developmental toxicity screening test, there were no significant adverse effects on reproductive parameters and no evidence of malformations at any doses.(NOAEC = 9000 ppm)(OECD TG 422, GLP)

Specific target organ toxicity (single exposure) [null] [구분 3 (호흡기계 자극)]

- **Ethanol mixture** : Ingestion may cause inflammation and skin and throat irritation.
- **Propane** : In acute inhalation toxicity test with rats, acute toxic effects were not observed.

Specific target organ toxicity (repeat exposure) [Not classified]

- **Butane** : In repeated inhalation toxicity study with rats for 28 days, repeated toxicity related effects were not observed.(NOAEC = 9,000 ppm)(OECD TG 422, GLP)

- **Propane** : In repeated inhalation toxicity study with rats for 28 days, repeated toxicity related effects were not observed.(OECD TG 422, GLP)
- Aspiration Hazard** [Not available]

12. Ecological information

A. Ecological toxicity

- Acute toxicity : [Not classified] (ATEmix = 514.00000mg/ℓ)
- Chronic toxicity : [Not available]

Fish

- **Ethanol mixture** : Silica (Amorphous fused); 80,000mg/kg (ingestion-trout:LD50)
- **Propane** : 96hr-LC₅₀ (other) = 27.98 mg/L (Estimated)

crustacean

- **Propane** : 48hr-LC₅₀ (other) = 14.22 mg/L (Estimated)

Algae

- **Propane** : 96hr-EC₅₀ (other) = 7.71 mg/L (Estimated)

B. Persistence and degradability

Persistence

- **Propane** : Low persistency (log Kow is less than 4 estimated.) (Log Kow = 2.8) (pH 7)(20 °C)

Degradability

Not available

C. Bioaccumulative potential

Bioaccumulation

Not available

Biodegradation

- **Butane** : As well-biodegraded, it is expected to have low accumulation potential in living organisms (= 100% biodegradation was observed after 385 hrs)
- **Propane** : As not well-biodegraded, it is expected to have high accumulation potential in living organisms (= 50% biodegradation was observed after 2 days) (Q)SAR

D. Mobility in soil

Not available

E. Other hazardous effect

Not available

13. Disposal considerations

A. Disposal method

Waste must be disposed of in accordance with federal, state and local environmental control regulations.

B. Disposal precaution

Consider the required attentions in accordance with waste treatment management regulation.

14. Transport information

A. UN Number

1950

B. UN Proper shipping name

AEROSOLS

C. Transport Hazard class

2

D. Packing group

No

E. Marine pollutant

No

F. Special precautions

in case of fire F-D

in case of leakage S-U

15. Regulatory information

A. Occupational Safety and Health Regulation

Ethanol mixture : Occupational exposure limits listed ; CAS No. 7631-86-9 /CAS No. 64-17-5

Butane : Occupational exposure limits listed

B. Toxic Chemical Control Act

Ethanol mixture : Existing Chemical Substance ; CAS No. 7631-86-9; KE-31032 /CAS No. 64-17-5; KE-13217

C. Dangerous Material Safety Management Regulation

Ethanol mixture : Dangerous Material Safety Management Regulation CAS No. 7631-86-9; Non-dangerous goods / CAS No. 64-17-5; Alcohols class 4 400ℓ

D. Wastes Control Act Not regulated**E. Other regulation (internal and external)****Internal information**

Persistent Organic Pollutants Acts Not regulated

External information**EU classification(classification)**

Butane : Classification F+; R12

Propane : Classification F+; R12

EU classification(risk phrases)

Butane : Hazard statements R12

Propane : Hazard statements R12

EU classification(safety phrases)

Butane : Precautionary statements S2, S9, S16

Propane : Precautionary statements S2, S9, S16

EU SVHC list Not regulated**EU Authorisation List** Not regulated**EU Restriction list**

Propane : EU Restriction list Regulated

U.S.A management information (OSHA Regulation) Not regulated**U.S.A management information (CERCLA Regulation)** Not regulated**U.S.A management information (EPCRA 302 Regulation)** Not regulated**U.S.A management information (EPCRA 304 Regulation)** Not regulated**U.S.A management information (EPCRA 313 Regulation)** Not regulated**Substance of Roterdame Protocol** Not regulated**Substance of Stockholme Protocol** Not regulated**Substance of Montreal Protocol** Not regulated**Foreign Inventory Status****Butane**

U.S.A management information Section 8(b) Inventory (TSCA): Present

Japan management information Existing and New Chemical Substances (ENCS): (2)-4

China management information Inventory of Existing Chemical Substances (IECSC): Present 41372

Canada management information Domestic Substances List (DSL): Present

Australia management information Inventory of Chemical Substances (AICS): Present

New Zealand management information Inventory of Chemicals (NZIoC): HSNO Approval: HSR000989

Philippines management information Inventory of Chemicals and Chemical Substances (PICCS): Present

Propane

U.S.A management information Section 8(b) Inventory (TSCA): Present

Japan management information Existing and New Chemical Substances (ENCS): (2)-3

China management information Inventory of Existing Chemical Substances (IECSC): Present 03571

Canada management information Domestic Substances List (DSL): Present

Australia management information Inventory of Chemical Substances (AICS): Present

New Zealand management information Inventory of Chemicals (NZIoC): HSNO Approval: HSR001010

Philippines management information Inventory of Chemicals and Chemical Substances (PICCS): Present

16. Other information

A. Information source and references

Emergency Response Guidebook 2008;
http://phmsa.dot.gov/staticfiles/PHMSA/DownloadableFiles/Files/erg2008_eng.pdf
 National Emergency Management Agency-Korea dangerous material inventory management system;
<http://www.nema.go.kr/hazmat/main/main.jsp>
 Korea Occupational Health & Safety Agency; <http://www.kosha.net>
 IARC Monographs on the Evaluation of Carcinogenic Risks to Humans; <http://monographs.iarc.fr>
 Invent Co MSDS
 National Chemicals Information System; <http://ncis.nier.go.kr/ncis/>
 TOMES-LOLI@; <http://www.rightanswerknowledge.com/loginRA.asp>
 Waste Control Act enforcement regulation attached [1]
 National Toxicology Program; http://ntp-apps.niehs.nih.gov/ntp_tox/index.cfm
 American Conference of Governmental Industrial Hygienists TLVs and BEIs.
 NIOSH Pocket Guide; <http://www.cdc.gov/niosh/npg/npgdcas.html>
 REACH information on registered substances; <http://apps.echa.europa.eu/registered/registered-sub.aspx>
 EU CLP; <http://esis.jrc.ec.europa.eu/index.php?PGM=cla>
 UN Recommendations on the transport of dangerous goods 17th

B. Issuing date 2014.08.05.**C. Revision number and date****revision number****date of the latest revision****D. Others**

- Revised Material Safety Data Sheet based on the amendments made on the Ministry of Employment and Labor Public Notice on Standard for Classification Labeling of Chemical Substance and Material Safety Data Sheet.
- This MSDS is authored in pursuant to the Article 41 of the Occupational Safety and Health Act.
- The content is based on the latest information and knowledge that we currently possess.
- This MSDS was authored to aid buyer, processor or any other third person who handles the chemical of subject in the MSDS; additionally, it does not warrant suitability of the chemical for special purposes or the commercial use of statements that approves the use of it in combination with other chemicals as well as technical or legal liabilities.
- The content of the MSDS may vary depending on the country or the region and may not coincide with the actual regulations. Therefore, the buyer or the processor of the chemical is responsible for observing responsible government's or the region's regulations.