여천NCC㈜

Material Safety Data

Product Name :BUTENE-1

긴급전화번호 (Emerhency Telephone Number)
061 - 688 - 6117 (24 hours)

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

1. Product
   ○ Product Name : BUTENE-1
   ○ UN NO. : 1012
2. Advisable use and Restriction
   ○ Advisable use : Raw Material of Rubber, Polybutene, ABS
   ○ Restriction : Do not handle until all safety precautions have been read and understood.
3. Manufacturer information
   ○ Manufacture company : YEOCHUN NCC
   ○ Address: 2 Yeosusandan-3ro(205-6,Pyeongyeo-dong), Yeosu, Jeollanam-Do, Korea (555-210)
   ○ Telephone: 82-61-688-6117

2. HAZARD IDENTIFICATION

1. Hazard classification
   - FLAMMABLE GASES Category 1
   - GASES UNDER PRESSURE Liqueied gas
2. Allocation label elements
   ○ Symbol

   ○ Signal Word : Danger
   ○ Hazard statements

   H220 Extremely flammable gas.
   H280 Contains gas under pressure; may explode if heated.

   ○ Precautionary statements

   - Prevention

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

   - Response

     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.

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

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

Chemical Name	NFPA Level		
	Health	Flamm abliity	Reactivity
BUTENE 1	1	4	0

3. INGREDIENT INFORMATION

Components	Common name	CAS No.	PCT(M%)
BUTENE 1	1-BUTENE	106-98-9	99 ~ 100

4. FIRST AID MEASURES

1. Following eye contact
   - It is unlikely that emergency treatment will be required for contact with the gas form.
   - If contact with liquefied or compressed gas occurs, flush eyes with large amounts of water for at least 15-20 minutes until no evidence of chemical remains.
   - Get medical attention immediately.
2. Following skin contact
   - It is unlikely that emergency treatment will be required for contact with the gas form.
   - If contact with liquefied or compressed gas occurs, flush skin with large amounts of water for at least 15-20 minutes until no evidence of chemical remains.
   - Get medical aid immediately.
   - Wash skin with soap and water.
   - If frostbite or cryogenic burns occur, warm affected area in warm water at a temperature of 107°F(41.7℃).
   - Seek immediate medial assistance.
3. Following inhalation
   - Administer oxygen if breathing is difficult.
   - Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
   - Give artificial respiration if victim is not breathing.
   - Keep victim warm and quiet.
   - Move to fresh air.
   - Seek immediate medial assistance.
4. Following ingestion
   - It is unlikely that emergency treatment will be required for contact with the gas form..
5. Advice to physician
   - Do not apply drugs of the adrenaline ephedrine group.

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

5. FIRE FIGHTING MEASURES

1. Suitable/Unsuitable extinguishing media

○ Suitable extinguishing media

- CO_2.
- Dry chemical.
- Use alcohol foam, carbon dioxide, or water spray when fighting fires involving this material.
- Use dry sand or earth to smother fire.

○ Unsuitable extinguishing media

2. Specific hazards arising from the chemical

○ Pyrolytic product

○ Risk of fire and explosion

- Containers may explode when heated.
- Cylinders exposed to fire may vent and release flammable gas through pressure relief devices.
- Extremely flammable gas.
- Extremely flammable.
- Fire may produce irritating and/or toxic gases.
- May ignited from heat, friction or contamination.
- May violently polymerize and result in fire and explosion.
- Some may burn but none ignite readily.
- When heated, vapors may form explosive mixtures with air: indoors, outdoors and sewers explosion hazards.
- Will be easily ignited by heat, sparks or flames.
- Will form explosive mixtures with air.

3. Special protective equipment for firefighters

- Contact may cause burns to skin and eyes.
- DO NOT EXTINGUISH A LEAKING GAS FIRE UNLESS LEAK CAN BE STOPPED.
- Evacuate area and fight fire from a safe distance.
- Fire involving Tanks: ALWAYS stay away from tanks engulfed in fire.
- Fire involving Tanks: Cool containers with flooding quantities of water until well after fire is out.
- 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: For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.
- Fire involving Tanks: Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- Move containers from fire area if you can do it without risk.
- Runoff may cause pollution.
- Ruptured cylinders may rocket.
- Substance may be transported hot.

6. ACCIDENTAL RELEASE MEASURES

1. Health considerations and protective equipment
   - All equipment used when handling the product must be grounded.
   - Do not direct water at source of leak.
   - Do not enter areas which have more than 23.5% oxygen in the atmosphere, without respirator or air supplied mask.
   - Do not touch or walk through spilled material.
   - ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
   - If possible, turn leaking containers so that gas escapes rather than liquid.
   - Isolate area until gas has dispersed.
   - Please note that materials and conditions to be avoided.
   - Stop leak if you can do it without risk.
   - The very fine particles can cause a fire or explosion, eliminate all ignition sources.
   - Ventilate the contaminated area.
2. Environmental precautions
   - Prevent entry into waterways, sewers, basements or confined areas.
3. For cleaning up
   - Dike and collect water used to fight fire.
   - Small Spill: Flush area with flooding quantities of water.

7. HANDLING AND STORAGE

1. Precautions for safe handling
   - Caution: Dangerous fire hazard when exposed to heat, or flame, sparks.
   - Use adequate machine for prevention when package handling.
   - Wear an appropriate Personal protection. (See Exposure Controls/Personal Protection section.)
2. Conditions for safe storage (including any incompatibilities)
   - Choose a place that can be protected from strong oxidizers and acid.
   - Store containers: AOID the place where can be damage and contamination.
   - Store in a cool/low-temperature, well-ventilated {dry} place {away from heat and ignition sources}

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

1. Exposure exposure limits, Biological exposure standard :

Components	Occupational exposure	ACGIH	Biological standard
BUTENE 1	No data available	TWA 250 ppm (Butenes, All isomers)	No data available

2. Appropriate engineering controls
   - Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.
3. Personal protection equipment

   ○ Respiratory protection
   - If high frequency of use or exposure, wear air respirator.
   - Wear breathing protection, which needs a confirmation from the Korea Occupational Safety and Health

- Agency.

○ Eye protection

- Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.
- Provide emergency showers and eyewash.
- Wear suitable protective goggles and face shields.

○ Hand protection

- Wear Non-moisture permeable chemical resistance protective gloves(latex, nitrile rubber, PC) for prevent skin contact.
- Wear insulated gloves.
- Wear suitable protective gloves.

○ Body protection

- Wear suitable protective clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Colorless combustible gas
Odour	Slightly aromatic odor
Odour threshold	No data available
pH Values	N/A
Melting point/freezing point	-185.3℃
Initial boiling point and boiling range	-6℃
Flash point	-80℃ (Closed cup)
Evaporation rate	N/A
Flammability(solid, gas)	Extremely flammable gas
Upper/lower flammability or explosive limits	1.6~10
Vapour pressure	8.3725 x 10^2 kPa @ 25 °C
Solubility(ies)	2.425 x 10^(-2)g/100㎖ (25℃, Water)
Vapor Densities	1.93 (Air = 1)
Relative density	0.595 g/cm3
n-octanol/water partition coefficient	2.4
Auto ignition temperature	385℃
Decomposition temperature	No data available
Viscosity	7.54 x 10^(-3)cP (7.5 μPa s, 27℃)
Molecular weight(mass)	56.11

10. STABILITY AND REACTIVITY

1. Stability and hazardous reactivity
   - Containers may explode when heated.
   - Cylinders exposed to fire may vent and release flammable gas through pressure relief devices.

- Extremely flammable gas.
- Extremely flammable.
- Fire may produce irritating and/or toxic gases.
- Fire may produce irritating, corrosive and/or toxic gases.
- May cause toxic effects if inhaled.
- May violently polymerize and result in fire and explosion.
- Some may burn but none ignite readily.
- Stable under normal temperatures and pressures.
- When heated, vapors may form explosive mixtures with air: indoors, outdoors and sewers explosion hazards.
- Will be easily ignited by heat, sparks or flames.
- Will form explosive mixtures with air.

2. Conditions to avoid
   - Ignition source(heat, spark, flame, etc.).
3. Materials to avoid
   - Combustibles.
   - Irritating and/or toxic gas.
4. Hazardous decomposition products
   - Irritating, corrosive and/or toxic gas.

11. TOXICOLOGICAL INFORMATION

1. Exposure route information

   ○ Dermal, Inhalation exposure is possible since GAS

2. Health hazard information
   ※ No data of the product. thus data was described by the product component

   ○ Acute toxicity

   ● Oral PRODUCT : No data.
   - BUTENE 1 : No data

   ● Dermal PRODUCT : No data
   - BUTENE 1 : No data

   ● Inhalation-Gases PRODUCT : No data
   - BUTENE 1 : No data

   ● Inhalation-Vapours PRODUCT : N/A
   - BUTENE 1 : N/A

   ● Inhalation-Dust/mist PRODUCT : N/A
   - BUTENE 1 : N/A

   ○ SKIN CORROSION/IRRITATION PRODUCT : No data
   - BUTENE 1 : No data

   ○ SERIOUS EYE DAMAGE/EYE IRRITATION PRODUCT : N/A
   - BUTENE 1 : N/A / Mild irritating Human

   ○ RESPIRATORY SENSITIZATION PRODUCT : No data
   - BUTENE 1 : No data

○ SKIN SENSITIZATION PRODUCT : No data

- BUTENE 1 : No data

○ CARCINOGENICITY PRODUCT : No data

- BUTENE 1 : No data
  · OSHA : No data
  · Notice of Employment and Labor : No data
  · NTP : No data
  · IARC : No data
  · EU CLP : No data
  · ACGIH : No data

○ GERM CELL MUTAGENICITY PRODUCT : N/A

- BUTENE 1 : N/A / Negative Rat lymphocytes

○ REPRODUCTIVE TOXICITY PRODUCT : N/A

- BUTENE 1 : N/A / Repeated inhalation exposure of 1-butene to female Sprague Dawley rats at levels of 0, 500, 2000, or 8000 ppm produced no evidence of adverse effects on any measures of reproductive function. Rat

○ SPECIFIC TARGET ORGAN TOXICITY SINGLE EXPOSURE PRODUCT : No data

- BUTENE 1 : No data

○ SPECIFIC TARGET ORGAN TOXICITY REPEATED EXPOSURE PRODUCT : N/A

- BUTENE 1 : N/A / Exposure of male and female rats to target concentrations of 500, 2000 and 8000 ppm of 1-butene resulted in no general systemic effects. ppm Rat

○ ASPIRATION HAZARD PRODUCT : No data

- BUTENE 1 : No data

12. ECOLOGICAL INFORMATION

1. Aquatic toxicity PRODUCT
- ACUTE AQUATIC HAZARD : Not classified, LONG-TERM AQUATIC HAZARD : Not classified

● Fish

- BUTENE 1 : LC50 19 mg/L Fish

● Crustacea

- BUTENE 1 : LC50 11 mg/L Aquatic invertebrates(Daphnia sp.)

● Aquatic algae

- BUTENE 1 : EC50 6.5 mg/L Aquatic algae(Green algae)

2. Persistence and degradation

● Degradation

- BUTENE 1 : No data

● n-octanol water partition coefficient

- BUTENE 1 : log Kow 2.4

3. Bioaccumulative potential

● Bioaccumulation

- BUTENE 1 : No data

● Biodegradation

- BUTENE 1 : No data

4. Mobility in soil

● Soil adsorption coefficient(Koc)

- BUTENE 1 : Koc 109.6

5. Other adverse effects

● Others

- BUTENE 1 : No data

● Hazardous to ozone layer

- BUTENE 1 : N/A

13. DISPOSAL CONSIDERATIONS

1. Disposal methods

– Dispose of container and unused contents in accordance with all applicable regulations.

2. Precautions (including disposal of contaminated container of package)

- Empty containers may explode and residues can be ignited when pressured, cut, weld, heated.
- Empty containers may rupture when pressured.
- Empty containers recycled under environmental laws.
- Wear an appropriate Personal protection. (See Exposure Controls/Personal Protection section.)

14. TRANSPORT INFORMATION

1. UN No : 1012
2. Proper shipping name : BUTYLENE
3. Class or division : 2.1
4. Packing group : Not established
5. Marine pollutant : Not established
6. Special safety response for transportation or transportation measure :

○ Emergency measures in case of fire : F-D

○ Emergency measures in the effluent : S-U

15. REGULATORY INFORMATION

● EU Classification (CLASSIFICATION) PRODUCT : Not established

- BUTENE 1 : F+; R12

● EU Classification (Risk Phrases) PRODUCT : Not established

- BUTENE 1 : R12

● EU Classification (Safety Phrases) PRODUCT : Not established

- BUTENE 1 : S:(2)-9-16-33

● 2006/507/EC PRODUCT : Not established

- BUTENE 1 : Not established

● 689/2008/EC PRODUCT : Not established
- BUTENE 1 : Not established

● Designation, Reportable Quantities, and Notification PRODUCT : Not established
- BUTENE 1 : Not established

● Emergency Planning and Notification PRODUCT : Not established
- BUTENE 1 : Not established

● Toxic Chemical Release Reporting - Community Right-to-Know PRODUCT : Not established
- BUTENE 1 : Not established

● Process Safety Management of Highly Hazardous Chemicals PRODUCT : Not established
- BUTENE 1 : Not established

16. OTHER INFORMATION

1. Reference

- ACGIH
- ECOWIN v1 ECOSAR Classes for Microsoft Windows
- EU CLP
- Exploring QSAR: Hydrophobic, Electronic, and Steric Constants.
- HSDB
- IARC
- IUCLID
- Mutation Research
- NTP
- OSHA
- Study report

2. Prepare date : 2000.01.01

3. Revised date

0.0.0 : 2000.01.01
1.0.0 : 2010.04.30
2.0.0 : 2017.03.16
3.0.0 : 2018.01.31
4.0.0 : 2020.12.01

4. Other

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information giv-en is designed only as a guidance for safe handling, use, processing, storage, trans-portation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.