

Butene

C₄H₈

1. Identification of the substance/mixture and of the company/undertaking

Product identifier	
Name of product	Butene Art-Nr.: 2312 - 2316
Name of substance	butene
Index No	601-004-00-0
EC No	203-448-7
CAS No	106-97-8

Manufacturer / Distributor:

Ehsan International Gases
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#3, Karachi 74600, Pakistan.
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www.ehsan.com.pk

Recommended intended purpose(s) Basic substance.
Propellant.

2. Hazards identification

Classification according to 67/548/EEC or 1999/45/EC

F+; R12 **R-phrases** 12

Extremely flammable.

Classification according to Regulation (EC) No 1272/2008 [CLP/GHS]

Hazard classes and Hazard categories	Hazard Statements	Classification procedure
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Flam. Gas 1	H220
Liquef. Gas	H280

Hazard statements for physical hazards

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

Labelling according to Regulation (EC) No 1272/2008 [CLP/GHS]

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GHS02



GHS04

Signal word

Danger

Hazard statements for physical hazards

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.

Storage

P403 Store in a well-ventilated place.

Information pertaining to special dangers for human and environment

In high concentrations may cause asphyxiation.
Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below ground level.
Contact with liquid may cause cold burns/frostbite.

3. Composition/information on ingredients

CAS No 106-97-8

butane

EC No 203-448-7

Index No 601-004-00-0

4. First aid measures

General information

Remove contaminated soaked clothing immediately.
Adhere to personal protective measures when giving first aid. Seek medical advice immediately.

In case of inhalation

Remove the casualty into fresh air and keep him immobile.
Seek medical treatment immediately.
In case of respiratory standstill give artificial respiration by respiratory bag (Ambu bag) or respirator. Send for a doctor.

In case of skin contact

In case of contact with skin wash off with warm water.
In case of frostbite rinse with plenty of water. Don't remove clothing.
In case of frostbite spray with lukewarm (not hot) water for at least 15 minutes. Apply a sterile dressing. Obtain medical assistance.

In case of eye contact

Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call for a doctor immediately.

In case of ingestion

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Ingestion is not considered a potential route of exposure.

Physician's information / possible symptoms

Shortness of breath

Treatment (Advice to doctor)

Monitor circulation.

5. Firefighting measures

Suitable extinguishing media

Dry powder
Carbon dioxide

Extinguishing media which must not be used for safety reasons

Special hazards arising from the substance or mixture In case of fire formation of dangerous gases possible.

Formation of explosive gas mixtures in air.

In the event of fire the following can be released:

Carbon monoxide (CO)

Special protective equipment for fire-fighters

Use breathing apparatus with independent air supply (isolated). Wear full protective clothing.

Additional information

Cool endangered containers with water spray jet.

Exposure to fire may cause containers to rupture/explode.

Do not extinguish a leaking gas flame unless absolutely necessary. Spontaneous/explosive re-ignition may occur. Extinguish any other fire.

6. Accidental release measures

Personal

precautions

See

chapter 8.

Keep away sources of ignition.

Environmental precautions

If possible, stop flow of product.

Eliminate ignition sources.

Do not discharge into the drains/surface waters/groundwater. Do not discharge into the subsoil/soil.

Methods for cleaning up

Ensure adequate air

ventilation. Allow to

vaporise.

Additional Information

Informations for safe handling see chapter 7.

Informations for personal protective equipment see chapter 8.

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7. Handling and storage

! Advice on safe handling

- Use only in thoroughly ventilated areas.
- Transfer and handle only in enclosed systems.
- Take measures against electrostatically charging.
- Barrels and installations thoroughly earthing (grounding).
- Use antistatic tools.
- Treatment only in suitable rooms and systems.
- Provide good room ventilation even at ground level (vapours are heavier than air).
- Prevent cylinders from falling over.
- Ensure valve protection device is correctly fitted.
- Ensure valve outlet cap nut or plug (where provided) is correctly fitted.
- Open valve slowly to avoid pressure shock.
- Do not allow backfeed into the container.
- Suck back of water into the container must be prevented.
- No water to valves, flanges and other fittings.
- Purging of pipes and valves with inert gases - to avoid: water, solvents.

Advice on protection against fire and explosion

- The product is combustible.
- Because of risk of explosion avoid vapours getting into cellar, sewage system and holes. Take precautionary measures against static discharges.
- Formation of explosive gas mixtures in air.
- Use explosion-proof equipment / fittings and non-sparking tools.

Requirements for storage rooms and vessels

- Keep in closed original container.
- Ventilate store-rooms thoroughly.
- Use transportable pressure equipment.
- Suitable materials: Normalised steel and carbon steel, tempered steel, aluminium alloys, stainless steel.
- Valve: Suitable materials: Brass, copper alloys, carbon steels, aluminium alloys, stainless steel.

Advice on storage compatibility

- Do not store together with animal feedstuffs.
- Do not store together with food.
- Do not store together with oxidizing agents.

Further information on storage conditions

- Ensure valve protection device is correctly fitted.
- Keep container tightly closed and store at cool and aired place.
- Prevent cylinders from falling over. Keep container in a well-ventilated place Protect of heat.
- Storage temperature may not exceed 50°C (=122°F).

Information on storage stability

- At appropriate storage unlimited stability.

Recommendation(s) for intended use

no

8. Exposure controls/personal protection

Ingredients with occupational exposure limits to be monitored

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CAS No	Name	Code	[mg/m ³]	[ppm]	Remark
106-97-8	Butane	WEL, 8 hours	1450	600	EH40, United
		Short-term	1810	750	

Respiratory protection

Keep self contained breathing apparatus readily available for emergency use.

In case of rescue and maintenance activities in storage containers use environment-independent breathing apparatus because of risk of suffocation by edging out of air oxygen

Hand protection

chemical-resistant gloves

Leather gloves

Eye protection safety goggles, in case of increased risk
add protective face shield

Skin protection

protective clothing

General protective measures

Do not inhale
gases/vapours/aerosols.

Hygiene measures

At work do not eat, drink and smoke.

Limitation and surveillance of the environment See chapter 7.

9. Physical and chemical properties

Form	Colour	Odour
Gaseous / liquefied under pressure.	colourless	sweetish

Important health, safety and environmental information

	Value	Temperature	at	Method	Remark
pH value in delivery state	not applicable				
Acid number	not applicable				
boiling point	-0,5 °C		1013 hPa		
melting point	-138,3 °C				
Flash point	-60 °C				
Flammable solid	not applicable				

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Ignition temperature	365 °C		
Lower explosion limit	1,4 Vol-%		
Upper explosion limit	9,3 Vol-%		
Vapour pressure	2060 hPa	20 °C	
Density	0,5763 g/cm ³	295 K	liquid phase
Rel. vapour density	2,1		
Solubility in water	61 mg/l	20 °C	
Solubility/other			
Viscosity dynamic	0,164 mPa*s	295 K	liquid phase
Viscosit dynamic	0,13 mPa*s	320 K	liquid phase

Additional information

Vapours are heavier than air.

10. Stability and reactivity

Conditions to avoid

Formation of explosive gas/air mixtures.
Heat sources / heat - risk of bursting.
Sources of ignition.

Materials to avoid

Reactions with oxidising agents.

Hazardous decomposition products

No hazardous decomposition products known.

Thermal decomposition

Remark No decomposition if used as directed.

Additional information

Stable under normal conditions.

11. Toxicological information

Acute toxicity/Irritability/Sensitization

	Value/Validation	Species	Method	Remark
LC50 acute inhalation	658 mg/l (4 h)	rat		

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Irritability skin	no
Irritability eye	no
Skin sensitization	not determined
Sensitization respiratory system	not determined

Subacute Toxicity - Carcinogenicity

Value	Species	Method	Validation
Mutagenicity			No mutagenity, after different in-vitro studies. not determined
Reproduction-Toxicity			
Carcinogenicity			not determined
Toxicity test (Additional information)			
No experimental indication of genotoxicity in vitro (Ames-test negative).			
Experiences made from practice			
May cause frostbite.			
Gases have a suffocating effect.			
Inhalation causes narcotic effect/intoxication.			

12. Ecological information

Data on elimination (persistence and degradability)

Elimination rate	Method of analysis	Method	Validation
Physico-chemical			
degradability	At normal temperature very highly volatile or gaseous product that can be released to atmosphere. Elimination test cannot be employed.		
Biological degradability	not determined		
Biological eliminability	not determined		
Mobility and bioaccumulative potential			
Because of the n-octanol/water distribution coefficient (log K o/w) accumulation in organisms is possible.			
Ecotoxicological effects			

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Wastes marked with an asterisk are considered to be hazardous waste pursuant to Directive 91/689/EEC on hazardous

	Value	Species	Method	Validation
Fish	not determined			
Daphnia	not determined			
Algae	not determined			
Bacteria	not determined			

13. Disposal considerations

Waste code No.	Name of waste
16 05 04* waste.	gases in pressure containers (including halons) containing dangerous substances

Recommendations for the product
Dispose of as hazardous waste.

Recommendations for packaging
Transportable pressure equipment (empty, residual pressure): Return to supplier / manufacturer.

14. Transport information

Land and inland navigation transport ADR/RID
UN 1011 BUTANE, 2.1, (B/D), Classification code: 2F
Marine transport IMDG
UN 1011 BUTANE, 2.1 Air
transport ICAO/IATA-DGR
UN 1011 Butane, 2.1

15. Regulatory information

VOC standard
VOC content <=100 % 20 °C 2060 hPa

16. Other information

Recommend uses and restrictions
National and local regulations concerning chemicals shall be observed.

Further information
All declarations of safety-data-sheet refer to pure substance.
The information contained herein is based on the state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

Wording of the R/H-phrases specified in chapter 3 (not the classification of the mixture!)

R 12 Extremely flammable.
H220 Extremely flammable gas.