



Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH)

SIDI KERIR PETROCHEMICALS (SIDPEC)
MARKETING GENERAL MANAGEMENT
Customer & Technical Service Management

Version: 1

Language: EN

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1. Identification of the substance/mixture and of the Company/Undertaking

1.1 Product identifier

But-1-ene

Trade name:	Butene-1
CAS-No.:	106-98-9
EC-No.:	203-449-2
REACH registration number:	01-2119456615-34-0033

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses of the substance/mixture:	Chemical feedstock
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Not recommended uses of the substance/mixture:	None
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1.3 Details of the supplier of the Safety Data Sheet

Manufacturer

Sidi Kerir Petrochemicals Co. (SIDPEC)
Alex.: Km. 36 Alex / Cairo Desert Road
Al Nahda - Al Ameria
Alexandria - Egypt

Telephone: + 203 4770131
Fax: + 203 4770900
E-mail: Marketingspc@sidpec.com
(for technical information)

Only Representative

BiPRO GmbH
Grauertstr. 12
81545 München, Germany

Telephone: +49 89 189 790 50
Fax: +49 89 189 790 52

E-mail (competent person): mail@bipro.de

1.4 Emergency telephone number

GIZ Nord, Göttingen, Germany

Telephone: +49 511 19 240

2. Hazards identification

2.1 Classification of the substance or mixture

2.1.1 Classification according to Regulation (EC) No. 1272/2008 (CLP)

Flam. Gas 1; H220
Press. Gas; H280

2.1.2 Classification according to Directive 67/548/EEC and 1999/45/EC

F+; R12

2.1.3 Additional information

For full text of R-phrases and Hazard- and EU Hazard-statements: see section 16.

2.2 Label elements

2.2.1 Labelling according to Regulation (EC) No 1272/2008

Hazard pictograms:



Signal word: Danger

H phrases: 220 Extremely flammable Gas.
280 Contains gas under pressure; may explode if heated.

P-Phrases: 210 Keep away from heat/sparks/open flames/hot surfaces. – No smoking.
243 Take precautionary measures against static discharge.

377 Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
381 Eliminate all ignition sources if safe to do so.

410 + 403 Protect from sunlight. Store in a well-ventilated place.

2.3 Other hazards

This substance does not meet the criteria for classification as PBT or vPvB.

3. Composition/information on ingredients

3.1 Substance

But-1-ene

Substance name	EC No	CAS No	REACH registration No	Degree of purity (% Vol)	Classification according to Regulation (EC) No. 1272/2008 (CLP):		Classification according to Directive 67/548/EEC and 1999/45/EC:
					Hazard Class and Category Code	Hazard statement Code	
But-1-ene	203-449-2	106-98-9	01-2119456615-34-0033	> 99	Flam. Gas 1	H220 H280	F+; R12

4. First aid measures

4.1 Description of first aid measures

General information: In case of accident or if you feel unwell, seek medical advice immediately (show safety data sheet if possible).

Following inhalation: Remove from exposure – keep warm and at rest. If there is respiratory distress give oxygen. If breathing stops or shows signs of failing, apply artificial respiration. Obtain medical attention.

Following skin contact: Immediately wash the skin with warm water. Remove contaminated clothing which should be decontaminated by allowing the hydrocarbon to evaporate in a

- Following eye contact:** safe place. Obtain medical attention if redness or blistering occurs and persists. In case of contact with eyes, rinse immediately with plenty of flowing water for 10 to 15 minutes holding eyelids apart. Obtain medical attention if soreness or redness persists.
- Following ingestion:** Not applicable.
- Self-protection:** First aid assistant: Pay attention to self-protection.

4.2 Most important symptoms and effects, both acute and delayed

- Symptoms:** Eyes: liquid may cause frostbite damage. Vapour may cause slight irritation.
Skin: liquid may cause frostbite burns on prolonged or occluded contact. Vapour will have little or no effect.
Inhalation: acts as a asphyxiant causing dizziness and drowsiness. At concentrations above about 10 % the vapour will cause anaesthesia.
- Nature of Hazard:** Liquid contact may produce a burn due to freezing effect.

4.3 Indication of any immediate medical attention and special treatment needed

- Emergency aid:** First Aid, decontamination, treatment of symptoms.
- Treatment:** No specific antidotal treatment, symptomatic support required.

5. Fire fighting measures

5.1 Extinguishing media

- Suitable:** Foam. Carbon dioxide (CO₂). Water. Atomized water. Extinguishing powder.
- Unsuitable:** High power water jet.

5.2 Special hazards arising from the substance or mixture

Incomplete combustion may form carbon monoxide. Flammable - vapours may form explosive mixtures with air. Heating causes rise in pressure with risk of bursting.

5.3 Advice for fire fighters

Special protective equipment for fire-fighters

In case of fire: Wear self-contained breathing apparatus. Full protective suit.

Additional information

Use water spray/stream to protect personnel and to cool endangered containers. Concentrated vapours are heavier than air. Vapours may form explosive mixtures with air.

6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Avoid contact with the liquid. Allow liquid spills to evaporate and disperse vapour with water spray.

6.2 Environmental precautions

Do not empty into drains or the aquatic environment. Explosion hazard.

6.3 Methods and material for containment and cleaning up

Ventilate affected area.

6.4 Reference to other sections

Waste disposal according to official state regulations. See chapter 13.

7. Handling and storage

7.1 Precautions for safe handling

Information for safe handling

Keep container dry. Store in a well-ventilated place. Purge air from system before introducing gas. Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Keep away from ignition sources (including static discharges).

Technical measures

Provide for sufficient ventilation and punctiform suction at critical points. Use process enclosures, local exhaust ventilation or other engineering controls to keep airborne levels below recommended exposure limit.

Precautions against fire and explosion

Keep away from sources of ignition – No smoking!

7.2 Conditions for safe storage, including any incompatibilities

Technical measures and storage conditions

Keep container dry. Store in a well-ventilated place.

Packaging materials

Keep/Store only in original container.

Requirements for storerooms and containers

Remove all sources of ignition.

Information about storing together in storage facility

Keep away from food, drink and animal feedingstuffs.
Segregate from oxidant gases and other oxidants in store.

Further information concerning storage conditions

Observe instructions for use if available.

Storage class: 2A Compressed, liquefied and dissolved gases.

7.3 Specific end use(s)

Observe instructions for use if available.

8. Exposure controls / Personal protection

8.1 Control parameters

8.1.1 Limits for occupational exposure

Substance name	EC No	CAS No	Type of limit value (Country)	Occupational exposure limit value				Limitation of exposure peaks	Source / Remark
				long term		short term			
				mg/m ³	ppm	mg/m ³	ppm		
But-1-ene	203-449-2	106-98-9	No indication of a standardized occupational limit value						GESTIS International Limit Values
			TWA		250				ACGIH TLV (United States, 1/2009).

8.1.2 DNEL and PNEC values

DNEL Values

Inhalation (long- term systemic effects) on workers: 769 mg/m³ (335 ppm)

Inhalation (long-term local effects) on workers: 1530 mg/m³ (667 ppm)

Inhalation (long- term systemic effects) on general population: 163 mg/m³ (71 ppm)

Inhalation (long-term local effects) on general population: 918 mg/m³ (400 ppm)

PNEC Values

Substance is a gas and is extremely unlikely to reside in the aquatic/sediment/terrestrial compartment. Deriving a(n) aquatic/sediment/soil PNEC for a gas is unreasonable and technically of little use for risk assessment as the substance will not be present in the aquatic/sediment/terrestrial environment.

8.1.3 Control-Banding

No information available.

8.2 Exposure controls

Occupational exposure controls

Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. Do not eat, drink, smoke or sneeze at the workplace.

Chemical handling

Keep away from sources of ignition - No smoking.

Personal protection equipment

Wear personal protection equipment.

Respiratory protection

If technical suction or ventilation measures are not possible or are insufficient, protective breathing apparatus must be worn.

Hand protection

Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products.

Eye protection

Safety eyewear complying with an approved standard should be to avoid exposure to liquid splashes or

mists.

Skin protection

Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Environmental exposure controls

Refer to chapter 6.

Consumer exposure controls

Refer to chapter 7.

9. Physical and chemical properties

9.1 Information on the basic physical and chemical properties

Appearance

State of matter:	Gas
Colour:	Colourless
Odour:	It is normally transported unstenched but the introduction of odorants may give it a characteristic smell
Odour threshold:	No data available

Safety relevant basis data	Value	Unit	Remark
Density vapour:			No data available
Density liquid:	595	kg/m ³	20 °C
Package density:			Not applicable
pH:			Not applicable
Freezing point/Melting point:	- 186	°C	
Boiling point:	- 6	°C	
Flash point:	- 80	°C	Approximately
Flammability:			Flammable
Lower flammability limit:	1.6	% V/V	
Upper flammability limit:	9.3	% V/V	
Explosion hazard:			Not explosive
Lower explosion limit:			No data available
Upper explosion limit:			No data available
Autoignition temperature:	384	°C	
Decomposition temperature:			No data available
Oxidizing characteristics:			No data available
Vapour pressure:	1.8	bar	10 °C
	2.5	bar	20 °C
Relative vapour density:	1.95		Air = 1

Speed of vaporization/evaporation rate:			No data available
Solubility in water:	231	ppm	25 °C
Fat solubility:			No data available
log Pow (n-octanol / water):			No data available
Viscosity:	0.174	cP	0 °C
Solvent content:			Not relevant

9.2 Other information

Molar weight	56.1	g/mol
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10. Stability and reactivity

10.1 Reactivity

Reactivity expected as for a low molecular weight olefin.

10.2 Chemical stability

Chemically stable.

10.3 Possibility of hazardous reactions

Under normal conditions of storage and use, neither hazardous decomposition products should be produced nor hazardous polymerization should occur.

10.4 Conditions to avoid

Heat, flames, sparks, high temperatures, UV light.

10.5 Incompatible materials

Certain plastics, strong oxidizing agents, halogens

10.6 Hazardous decomposition products

Combustion will generate oxides of carbon.

11. Toxicological information

11.1 Information on toxicological effects

Acute toxicity

According to the Chemical Safety Report for but-1-ene, members of the butene category are flammable gases at room temperature and therefore the requirement for data on acute oral and dermal toxicity is waived in accordance with REACH Annex XI. Members of the butene category have low acute inhalation toxicity. The LC50 for 2-butene is excess of 10,000 ppm (22,948 mg/m³).

Specific symptoms in laboratory animals

No data available.

11.2 Irritation and etching

Irritant effect on the skin

Not irritating.

Irritant effect on the eye

Not irritating.

Irritant effect on the respiratory tract

No data available.

Etching

No data available.

11.3 Sensitization

No data available since, according to Annex VII, column 2 of the REACH Regulation studies on skin sensitisation do not need to be conducted as members of the butene category are flammable gases at room temperature.

Regarding respiratory sensitisation no studies have been conducted with the members of the butene category but there is no data to indicate that any of the butene would cause respiratory sensitisation. (Cited from the Chemical Safety Report for but-1-ene)

11.4 Repeated dose toxicity

Members of the butene category are flammable gases at room temperature and therefore the requirement for data on oral and dermal repeat dose toxicity is waived in accordance with REACH Annex XI. No significant exposure-related toxicological effects or target organ toxicity have been observed in inhalation studies of up to 2 years in rats or mice.

(Cited from the Chemical Safety Report for but-1-ene).

11.5 CMR effects**Carcinogenicity**

Low potential for human carcinogenicity.

Mutagenicity

Not mutagenic.

Reproductive toxicity

Not toxic to reproduction and have no effect on fertility or development.

12. Ecological information**12.1 Toxicity****Aquatic toxicity**

Measured ecotoxicity data are not available for the aquatic toxicity endpoints. Butenes are gases at standard temperature and pressure and are expected to partition primarily to air, therefore aquatic toxicity tests may not be relevant. In addition, it is technically difficult to maintain aqueous concentrations of gases for toxicity testing. Therefore, in the absence of measured data, the toxicity of butenes has been estimated using a suitable QSAR. (Cited from the Chemical Safety Report for but-1-ene).

Short-term toxicity to fish: LC50 (96h) = 19 mg/l (estimated)

Long-term toxicity to fish: ChV (chronic value) (30 d) = 2 mg/L (estimated)

Short-term toxicity to aquatic invertebrates (*Daphnia sp.*): LC50 (48 h) = 11 mg/L (estimated)

Long-term toxicity to aquatic invertebrates (*Daphnia sp.*): ChV (30d) = 1.4 mg/L

Short-term toxicity to *Green algae* (algae): EC50 (96h) = 6.5 mg/L (estimated)

Long-term toxicity to *Green algae* (algae): ChV = 2.6 mg/L (estimated)

12.2 Persistence and degradability

Substance is predicted to be rapidly degraded and is not predicted to be persistent.

12.3 Bioaccumulative potential

Very low predicted potential for bioaccumulation.

12.4 Mobility in soil

No data available.

12.5 Results of PBT and vPvB assessment

This substance does not meet the criteria for classification as PBT or vPvB.

12.6 Other adverse effects

No information available.

13. Disposal considerations

13.1 Waste treatment methods

Appropriate disposal/product

Waste disposal according to official state regulations.

Appropriate disposal/packaging

Handle contaminated packaging in the same way as the substance itself.

Control report for waste code/ waste marking according to EWC

Refer to your local waste disposal company.

Remark

None

14. Transport information

14.1 UN Number

1012

14.2 UN proper shipping name

ADR/RID

BUT-1-EN

IMDG-Code / ICAO-TI / IATA-DGR

1-BUTYLENE

14.3 Transport hazard class(es)

2A Compressed, liquefied and dissolved gases.

14.4 Packing group

Not applicable.

14.5. Environmental hazards

Hazard code(s)

ADR/RID / IMDG-Code / ICAO-TI / IATA – DGR: No

Marine pollutant: No

14.6 Special precautions for users

Refer to chapters 6 – 8.

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not relevant.

14.8 Further limitations and legal requirements

Tunnel restriction code: 2 (B/D)

15. Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

EU-Regulations

Directive 1999/13/EC on the limitation of emissions of volatile organic compounds (VOC-RL)
Relevant.

Regulation (EC) No 2037/2000 on substances that deplete the ozone layer
Not relevant.

Regulation (EC) No 850/2004 on persistent organic pollutants
Not relevant.

Regulation (EC) No 689/2008 concerning the export and import of dangerous chemicals
Not relevant.

Regulation (EC) No 648/2004 (Detergents regulation)
Not relevant.

Restrictions under Title VIII of Regulation (EC) No 1907/2006
Not relevant.

National regulations

Moreover, national legislation has to be observed!

Informations on working limitations

Observe employment restrictions under the Maternity Protection Directive (92/85/EEC) for expectant or nursing mothers. Observe employment restrictions under the law for the protection of young people at work (94/33/EC). Observe regulation 98/24/EC for employee health protection against the threat of chemical substances in the workplace.

Major Accidents Ordinance

Relevant.

Storage class according to VCI (DE)

2A Compressed, liquefied and dissolved gases.

Water Hazard Class according to VwVwS (DE)

0 Not a water pollutant.

15.2 Chemical safety assessment

This substance is not classified for human health or the environment, is not a CMR and is not PBT or vPvB. An exposure assessment and the calculation of risk characterisation ratios are therefore not required.

16. Other information

16.1 Wording of the H and R-phrases under paragraph 2 and 3

According to Regulation (EC) No. 1272/2008 (CLP)

H220 Extremely flammable Gas.

H280 Contains gas under pressure; may explode if heated.

According to Directive 67/548/EEC and 1999/45/EC

R12 Extremely flammable.

16.2 Training instructions

The product should only be handled by persons over the age of 18, who were informed sufficiently about the dangerous nature of the product and about the necessary safety precautions.

16.3 Further remarks

The above information describes exclusively the safety requirements of the product and is based on our present-day knowledge. The information is intended to give you advice about the safe handling of the product named in this safety data sheet, for storage, processing, transport and disposal. The information cannot be transferred to other products. In the case of mixing the product with other products or in the case of processing, the information on this safety data sheet is not necessarily valid for the new made-up material.

16.4 Documentation of changes

None.

16.5 Data sources

Data arise from reference works and literature.

16.6 Key and definitionNone.
