



**Safety Data Sheet**  
according to 1907/2006/EC, Article 31

Printing date: 01.12.2016

Version number 3

Revision: 01.12.2016

**SECTION 1: Identification of the substance/mixture and of the company/undertaking****1.1. Product identifier****Trade name: But-1-ene****CAS Number:**

106-98-9

**EC number:**

203-449-2

**Index number:**

601-012-00-4

**Registration number:** 01-2119456615-34-0033**1.2. Relevant identified uses of the substance or mixture and uses advised against****Application of the substance / the mixture:** Chemical feedstock**Uses advised against:** Other uses than the identified uses indicated above.**1.3. Details of the supplier of the safety data sheet****Manufacturer/Supplier:**

Sidi Kerir Petrochemicals Co. (SIDPEC)  
Alex.: Km. 36 Alex / Cairo Desert Road  
Al Nahda - Al Ameria  
Alexandria - Egypt  
Tel.: + 203 4770131  
Fax: + 203 4770900

**Only Representative:**

BiPRO GmbH  
Grauertstr. 12  
81545 Munich, Germany  
Tel.: +49 (0)89 189 790 50  
Fax: +49 (0)89 189 790 52  
E-mail: SDS@bipro.de (competent person)

**Further information obtainable from:** Marketingspc@sidpec.com (technical information)**1.4. Emergency telephone number**

GIZ-Nord, Göttingen, Germany (Member of EPECS Network)  
+49 (0)551 19240

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**Trade name: but-1-ene****SECTION 2: Hazards identification****2.1. Classification of the substance or mixture****Classification according to Regulation (EC) No 1272/2008:**

GHS02

Flam. Gas 1 H220 Extremely flammable gas.

Press. Gas C H280 Contains gas under pressure; may explode if heated.

**2.2. Label elements****Labelling according to Regulation (EC) No 1272/2008:**

The substance is classified and labelled according to the CLP regulation.

**Hazard pictograms:**

GHS02

**Signal word:** Danger**Hazard statements:**

H220 Extremely flammable gas.

H280 Contains gas under pressure; may explode if heated.

**Precautionary statements:**

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P377 Leaking gas fire: Do not extinguish, unless leak can be stopped safely.

P381 Eliminate all ignition sources if safe to do so.

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

**2.3. Other hazards****Results of PBT and vPvB assessment:** This substance does not meet the criteria for classification as PBT or vPvB.**SECTION 3: Composition/information on ingredients****3.1. Substances****CAS No. Description**

106-98-9 but-1-ene (&gt; 99%)

**Identification number(s):****EC number:** 203-449-2**Index number:** 601-012-00-4

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**Trade name: but-1-ene****Additional information:** REACH registration number: 01-2119456615-34-0033**SECTION 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).

**After inhalation:**

Supply fresh air. If required, provide artificial respiration. Keep patient warm.  
Seek immediate medical advice.

**After skin contact:**

Immediately wash with water and soap and rinse thoroughly.  
Take off all contaminated clothing.  
In cases of frost bites, rinse with plenty of water. Do not remove clothing.  
If skin irritation is experienced, consult a doctor.

**After eye contact:**

Rinse opened eye for several minutes under running water.  
Remove contact lenses, if present and easy to do. Continue rinsing.  
Seek medical attention in case of problems or if problems persist.

**After swallowing:** Not applicable.

**4.2. Most important symptoms and effects, both acute and delayed**

Irritating to eyes  
Frost bites  
Burns  
Dizziness  
Drowsiness  
Choking  
Anaesthetic state (at vapour concentrations above about 10%)

**Hazards:**

Risk of suffocation (asphyxiation)  
Risk of burns due to freezing effect

**4.3. Indication of any immediate medical attention and special treatment needed**

First Aid, decontamination, treatment of symptoms.

**SECTION 5: Firefighting measures****5.1. Extinguishing media****Suitable extinguishing agents:**

Foam  
Carbon dioxide (CO<sub>2</sub>)  
Water  
Water spray

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Fire-extinguishing powder

**For safety reasons unsuitable extinguishing agents:** Water with full jet**5.2. Special hazards arising from the substance or mixture**

The product is highly flammable.

Vapours may form explosive mixtures with air.

Vapours are heavier than air and will spread at floor level. Reignition possible at long range.

Heating causes rise in pressure with risk of bursting.

In certain fire conditions, traces of other toxic gases cannot be excluded, e.g.:

Carbon monoxide (CO)

Carbon dioxide (CO<sub>2</sub>)**5.3. Advice for firefighters****Protective equipment:** Wear a self-contained breathing apparatus and chemical resistant suit.**Additional information:**

Use water spray jet to protect personnel and to cool endangered containers.

Move undamaged containers from immediate hazard area if it can be done safely.

**SECTION 6: Accidental release measures****6.1. Personal precautions, protective equipment and emergency procedures**

Keep away from ignition sources.

Avoid skin contact with the liquefied material.

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

**6.2. Environmental precautions** Dumping into the environment must be prevented.**6.3. Methods and material for containment and cleaning up**

Keep away from ignition sources.

Use only non-sparking tools.

Ensure adequate ventilation.

In case of inadequate ventilation wear respiratory protection.

Allow to evaporate.

**6.4. Reference to other sections**

See Section 7 for information on safe handling.

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

**SECTION 7: Handling and storage****7.1. Precautions for safe handling**

Handle with care. Avoid jolting, friction and impact.

Do not inhale gas/vapours/aerosols.

Ensure adequate ventilation.

Use process enclosures, local exhaust ventilation or other engineering controls to keep airborne levels low.

Purge air from system before introducing gas.

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**Trade name: but-1-ene**

Use only properly specified equipment which is suitable for this product, its supply pressure and temperature.

**Information about fire - and explosion protection:**

Keep ignition sources away - Do not smoke.  
Use explosion-proof apparatus / fittings and spark-proof tools.  
Take precautionary measures against electrostatic discharges.  
Ground/bond container and receiving equipment.

**7.2. Conditions for safe storage, including any incompatibilities****Storage:****Requirements to be met by storerooms and receptacles:**

Store in a cool and dry location.  
Store only in the original container.  
Keep container tightly closed in a well-ventilated place.  
Keep ignition sources away.

**Information about storage in one common storage facility:**

Keep away from food, drink and animal feeding stuffs.  
Oxidising agents

**Further information about storage conditions:**

Observe instructions for use if available.  
Ensure that local, federal and national legislation on storage conditions are observed.

**Storage class:** 2A Gases**7.3. Specific end use(s)** See section 1.**SECTION 8: Exposure controls/personal protection****Additional information about design of technical facilities:**

Technical measures and the application of adequate working methods take priority over the use of personal protection equipment.

**8.1. Control parameters****Ingredients with limit values that require monitoring at the workplace:** Not required.**DNELs**

Inhalative	DNEL - long term - local	918 mg/m <sup>3</sup> (consumer) 1530 mg/m <sup>3</sup> (worker)
	DNEL - long term - systemic	163 mg/m <sup>3</sup> (consumer) 769 mg/m <sup>3</sup> (worker)

**PNECs** Not applicable.**Additional information:** The lists valid during the making were used as basis.

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**Trade name: but-1-ene****8.2. Exposure controls****Personal protective equipment:****General protective and hygienic measures:**

Do not eat, drink, smoke or sniff while working.  
Ensure adequate ventilation.  
Wash hands before breaks and at the end of work.  
Install eye wash possibilities and showers for emergency use.

**Respiratory protection:**

If technical suction or ventilation measures are not possible or are insufficient, protective breathing apparatus must be worn.  
Suitable respiratory protective equipment:  
Self-contained respiratory protective device.

**Protection of hands:**

Tested protective gloves are to be worn. When handling chemical substances, chemical protective gloves must be worn with CE label including a four digit code. Type of chemical protective gloves to choose depends on the concentration and quantity of dangerous substances as well as on work place specifications. In the cases of special applications, it is recommended to check the chemical resistance with the manufacturer of the gloves.

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

**Material of gloves:**

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

Recommendation:

Leather gloves  
(EN 388, EN 511)

**Penetration time of glove material:**

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

**Eye protection:** Safety glasses

**Body protection:** Select body protection specific to the task and event.

**Limitation and supervision of exposure into the environment:** Dumping into the environment must be prevented.

**SECTION 9: Physical and chemical properties****9.1. Information on basic physical and chemical properties****General Information****Appearance:**

<b>Form:</b>	Gaseous
<b>Colour:</b>	Colourless
<b>Odour:</b>	Nearly odourless
<b>Odour threshold:</b>	Not determined.

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<b>pH-value:</b>	Not applicable.
<b>Change in condition</b>	
<b>Melting point/freezing point:</b>	-186 °C
<b>Initial boiling point and boiling range:</b>	-6 °C
<b>Flash point:</b>	-80 °C
<b>Flammability (solid, gas):</b>	Highly flammable.
<b>Ignition temperature:</b>	384 °C
<b>Decomposition temperature:</b>	No data available.
<b>Explosive properties:</b>	Product is not explosive. However, formation of explosive air/vapour mixtures are possible.
<b>Explosion limits:</b>	
<b>Lower:</b>	1.6 Vol %
<b>Upper:</b>	9.3 Vol %
<b>Oxidizing properties:</b>	No data available.
<b>Vapour pressure at 20 °C:</b>	2500 hPa
<b>Density at 20 °C:</b>	595 kg/m <sup>3</sup> (liquid)
<b>Relative density:</b>	1.95 (vapour; air=1)
<b>Vapour density:</b>	No data available.
<b>Evaporation rate:</b>	No data available.
<b>Solubility in / Miscibility with water at 25 °C:</b>	231 ppm
<b>Partition coefficient: n-octanol/water:</b>	No data available.
<b>Viscosity:</b>	
<b>Dynamic at 0 °C:</b>	0.174 cP
<b>9.2. Other information</b>	No further relevant information available.
<b>Molecular weight:</b>	56.1 g/mol

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Trade name: **but-1-ene****SECTION 10: Stability and reactivity**

**10.1. Reactivity** The product is stable under standard conditions (temperature, pressure) of storage and handling.

**10.2. Chemical stability** The product is stable under standard conditions (temperature, pressure) of storage and handling.

**10.3. Possibility of hazardous reactions**

Contains gas under pressure; may explode if heated.

Vapours may form explosive mixtures with air.

Vapour is heavier than air and spreads along the ground. Re-ignition possible at long-range.

**10.4. Conditions to avoid** Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

**10.5. Incompatible materials**

Oxidizing agents

Plastics / rubbers

Halogens

**10.6. Hazardous decomposition products**

In case of fire, the following products can be released:

Carbon monoxide (CO) and carbon dioxide (CO<sub>2</sub>)

**SECTION 11: Toxicological information****11.1. Information on toxicological effects**

**Acute toxicity:** Based on available data, the classification criteria are not met.

**LD/LC50 values:**

Inhalative	LC50/4h	> 10.000 ppm (rat) (OECD 403)
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**Primary irritant effect:**

**Skin corrosion/irritation:** Based on available data, the classification criteria are not met.

**Serious eye damage/irritation:** Based on available data, the classification criteria are not met.

**Respiratory or skin sensitisation:** Based on available data, the classification criteria are not met.

**Additional toxicological information:** Risk of suffocation (asphyxiation) after inhalation: acts as asphyxiant.

**CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction):**

**Germ cell mutagenicity:** Based on available data, the classification criteria are not met.

**Carcinogenicity:** Based on available data, the classification criteria are not met.

**Reproductive toxicity:** Based on available data, the classification criteria are not met.

**STOT-single exposure:** Based on available data, the classification criteria are not met.

**STOT-repeated exposure:** Based on available data, the classification criteria are not met.

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**Trade name: but-1-ene****Aspiration hazard:** Based on available data, the classification criteria are not met.**SECTION 12: Ecological information****12.1. Toxicity****Aquatic toxicity:**

NOEC	1.349 mg/L (Daphnia sp.) (21d, QSAR)
	2.286 mg/L (fish) (30d, QSAR)
EC50	6.5 mg/L (algae) (96h, QSAR)
LC50	11 mg/L (Daphnia sp.) (48h, QSAR)
	19 mg/L (fish) (96h, QSAR)

**12.2. Persistence and degradability** Expected to degrade rapidly in air.**12.3. Bioaccumulative potential** No indication of bio-accumulation potential.**12.4. Mobility in soil** No further relevant information available.**General notes:** Generally not hazardous for water**12.5. Results of PBT and vPvB assessment****PBT:** Not applicable.**vPvB:** Not applicable.**12.6. Other adverse effects** No further relevant information available.**SECTION 13: Disposal considerations****13.1. Waste treatment methods****Recommendation:**

Waste disposal according to official state regulations.

Hand over to officially registered waste disposal company.

**Uncleaned packaging:****Recommendation:**

Disposal must be made according to official regulations.

Hand over to officially registered waste disposal company.

**SECTION 14: Transport information****14.1. UN-Number****ADR, IMDG, IATA**

UN1012

**14.2. UN proper shipping name****ADR**

1012 1-BUTYLENE

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<b>IMDG, IATA</b>	BUTYLENE
<b>14.3. Transport hazard class(es)</b>	
<b>ADR</b>	
<b>Class</b>	2 2F Gases.
<b>Label</b>	2.1
<b>IMDG</b>	
<b>Class</b>	2.1
<b>Label</b>	2.1
<b>IATA</b>	
<b>Class</b>	2 Gases.
<b>Label</b>	2.1
<b>14.4. Packing group</b>	
<b>ADR, IMDG, IATA</b>	Void.
<b>14.5. Environmental hazards</b>	Not applicable.
<b>14.6. Special precautions for user</b>	Warning: Gases.
<b>Danger code (Kemler):</b>	23
<b>EMS Number:</b>	2-07
<b>Stowage Category</b>	E
<b>Stowage Code</b>	SW2 Clear of living quarters.
<b>14.7. Transport in bulk according to Annex II of Marpol and the IBC Code</b>	Not applicable.
<b>Transport/Additional information:</b>	
<b>ADR</b>	
<b>Limited quantities (LQ)</b>	0
<b>Excepted quantities (EQ)</b>	Code: E0 Not permitted as Excepted Quantity
<b>Transport category</b>	2
<b>Tunnel restriction code</b>	B/D
<b>IMDG</b>	
<b>Limited quantities (LQ)</b>	0
<b>Excepted quantities (EQ)</b>	Code: E0 Not permitted as Excepted Quantity
<b>UN "Model Regulation":</b>	UN 1012 -BUTYLENE, 2.1

**SECTION 15: Regulatory information****15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture**

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**Trade name: but-1-ene****EU-Regulations**

Regulation (EC) No 1907/2006 (REACH)  
Regulation (EC) No 1272/2008 (CLP)  
Regulation 98/24/EC (employee health protection)  
Directive 1999/13/EC (VOC)  
Directive 2004/42/EC (VOC)

**Directive 2012/18/EU****Named dangerous substances - ANNEX I:** Substance is not listed.**Seveso category P2** FLAMMABLE GASES**Qualifying quantity (tonnes) for the application of lower-tier requirements** 10 t**Qualifying quantity (tonnes) for the application of upper-tier requirements** 50 t**REGULATION (EC) No 1907/2006 ANNEX XVII** Conditions of restriction: 40**National regulations:** National legislation has to be observed!**Information about limitation of use:**

Employment restrictions concerning juveniles must be observed.  
Employment restrictions concerning pregnant and lactating women must be observed.  
Employment restrictions concerning women of child-bearing age must be observed.

**Other regulations, limitations and prohibitive regulations:** Storage class (DE): 2A**15.2. Chemical safety assessment** A Chemical Safety Assessment has been carried out.**SECTION 16: Other information**

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.

**Training hints:**

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

**Abbreviations and acronyms:**

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)  
IMDG: International Maritime Code for Dangerous Goods  
IATA: International Air Transport Association  
GHS: Globally Harmonised System of Classification and Labelling of Chemicals  
EINECS: European Inventory of Existing Commercial Chemical Substances  
CAS: Chemical Abstracts Service (division of the American Chemical Society)  
DNEL: Derived No-Effect Level (REACH)  
PNEC: Predicted No-Effect Concentration (REACH)  
LC50: Lethal concentration, 50 percent  
LD50: Lethal dose, 50 percent  
PBT: Persistent, Bioaccumulative and Toxic  
vPvB: very Persistent and very Bioaccumulative  
Flam. Gas 1: Flammable gases – Category 1

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Press. Gas C: Gases under pressure – Compressed gas

**Sources:** Data arise from reference works and literature.**\* Data compared to the previous version altered.**

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