

# Safety Data Sheet according to Regulation (EC)

## No. 1907/2006 (REACH)

Printed 03.12.2008

Revision 02.12.2008 (GB) Version 8.1

### 1,3-Butadiene



## 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

<b>Name of product</b>	<b>1,3-Butadiene</b> Art-Nr.: 2200
<b>Manufacturer/distributor</b>	GHC Gerling, Holz & Co. Handels GmbH Ruhrstraße 113, D-22761 Hamburg Phone +49 (0) 40 853 123-0, Fax +49 (0) 40 853 123-66  E-Mail <a href="mailto:msds@ghc.de">msds@ghc.de</a> Internet <a href="http://www.ghc.de">www.ghc.de</a>
<b>Advice</b>	Phone +49 (0) 40 853 123-0 Fax +49 (0) 40 853 123-66
<b>Emergency advice</b>	GHC Gerling, Holz & Co. Handels GmbH Phone +49 (0) 40 853 123-0
<b>Recommended intended purpose(s)</b>	Basic substance.

## ! 2. HAZARDS IDENTIFICATION

### Classification

F+; R12

Carc. Cat. 1; R45

Muta. Cat. 2; R46

### R-phrases

45 May cause cancer.

46 May cause heritable genetic damage.

12 Extremely flammable.

### Special hazards information for humans and environment

Extremely flammable liquefied gas.

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.

Receptacle under pressure.

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

### ! Hazardous ingredients

CAS No	EC No	Name	[% weight]	Classification
106-99-0	203-450-8	Buta-1,3-diene	>= 99,5	F+ R12; Carc.Cat.1 R45; Muta.Cat.2 R46
98-29-3	202-653-9	4-tert-butylpyrocatechol	< 0,5	Xn R20/21; C R34; R43; N R51/53

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## 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.  
In the event of pulmonary irritation treat initially with corticoid spray, e.g. Ventolair- or Pulmicort- metered-dose aerosol (Ventolair and Pulmicort are registered trademarks).  
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

Eye rinsing with water carefully while protecting unhurt eye.  
Call for a doctor immediately.

### In case of ingestion

Ingestion is not considered a potential route of exposure.

### Treatment (Advice to doctor)

Treat symptoms.

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## 5. FIRE-FIGHTING MEASURES

### Suitable extinguishing media

Foam  
Dry powder  
Carbon dioxide

### Extinguishing media which must not be used for safety reasons

Full water jet

### Special exposure hazards arising from the substance or preparation itself, combustion products, resulting gases

In case of fire formation of dangerous gases possible.  
Risk of formation of explosive gas air mixtures.  
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.

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## 6. ACCIDENTAL RELEASE MEASURES

### Personal precautions

See chapter 8.

Warn affected surroundings.

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.

Suppress gases/vapours/mists with water spray jet

Do not discharge into the subsoil/soil.

### Methods for cleaning up

Ensure adequate air ventilation.

### 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.

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.

### 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.

Protect of heat.

Storage temperature may not exceed 50°C (=122°F).

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#### 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

CAS No	Name	Code	[mg/m3]	[ml/m3]	Spitzenb.	Remark
106-99-0	Buta-1,3-diene	WEL, 8 hours	22	10		HSE EH40/2005

#### 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

Short-term: filter apparatus, filter AX, otherwise environment-independent breathing apparatus.

#### Hand protection

Leather gloves

#### Eye protection

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

#### Skin protection

flame-stopping and antistatic 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

Gaseous / liquefied under pressure.

#### Colour

colourless

#### Odour

sweetish

### Important health, safety and environmental information

	Value	Temperature	at	Method	Remark
pH value in delivery state	not applicable				
boiling point	-4,4 °C		1013 hPa		
melting point	-109 °C				
Flash point	-85 °C			DIN 51755	
Ignition temperature	415 °C			DIN 51794	
Lower explosion limit	1,4 Vol-%				
Upper explosion limit	16,3 Vol-%				

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	Value	Temperature	at	Method	Remark
<b>Vapour pressure</b>	2351 hPa	20 °C			
<b>Density</b>	631 kg/m <sup>3</sup>	285 K			information concerns to liquid phase
<b>Rel. vapour density</b>	1,92				
<b>Solubility in water</b>	0,5 g/l	20 °C			
<b>Solubility/other</b>					soluble in organic solvent
<b>Partition coefficient (log p<sub>OW</sub>)</b>	1,99				
<b>Viscosity 1 dynamic</b>	0,2 mPa*s	268,69 K			information concerns to liquid phase
<b>Viscosit 2 dynamic</b>	0,117 mPa*s	315 K			information concerns to 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.

**Materials to avoid**

Reactions with oxidising agents.

Reactions with oxygen.

Reactions with peroxides and other radical components.

**Hazardous decomposition products**

Carbon monoxide

**Thermal decomposition**

Remark No decomposition if used as directed.

**Additional information**

if unstable product polymerisation possible

**11. TOXICOLOGICAL INFORMATION****Acute toxicity/Irritability/Sensitization**

	Value/Validation	Species	Method	Remark
<b>LD 50 acute oral</b>	5480 mg/kg	rat		

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	Value/Validation	Species	Method	Remark
<b>LC 50 acute inhalation</b>	285 mg/l (4 h)	rat		
<b>Irritability skin</b>		no		
<b>Irritability eye</b>		no		
<b>Skin sensitization</b>		not determined		
<b>Sensitization respiratory system</b>		not determined		

**Subacute Toxicity - Carcinogenicity**

	Value	Species	Method	Validation
<b>Mutagenicity</b>				Information on genotoxicity in vivo available.
<b>Carcinogenicity</b>				Indications of carcinogenic effects are available from long-term trials.

**Toxicity test (Additional information)**

In animal studies cancerogenic effects proved.

**Experiences made from practice**

May cause frostbite.

Gases have a suffocating effect.

Inhalation causes narcotic effect/intoxication.

**Additional information**

The product is a substance of Carc. Cat. 1

The product is a substance of Muta. Cat. 2.

**12. ECOLOGICAL INFORMATION****Data on elimination (persistence and degradability)**

	Elimination rate	Method of analysis	Method	Validation
<b>Physico-chemical degradability</b>	not determined			
<b>Biological degradability</b>	not determined			
<b>Degradability</b>	not determined			
<b>Biological eliminability</b>	not determined			

**Mobility and bioaccumulative potential**

Because of the n-octanol/water distribution coefficient (log K o/w) accumulation in organisms is possible.

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#### Ecotoxicological effects

	Value	Species	Method	Validation
<b>Fish</b>	LC50 71,5 mg/l (24 h)	Lagodon rhomboides		
<b>Daphnia</b>	EC50 24,8 mg/l (96 h)	Daphnia magna		
<b>Algae</b>	not determined			
<b>Bacteria</b>	not determined			

#### Additional ecological information

	Value	Method	Remark
<b>COD</b>	not determined		

#### General regulation

Product is not allowed to be discharged into aquatic environment, drains or sewage treatment plants.

### 13. DISPOSAL CONSIDERATIONS

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

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

#### 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 1010 BUTADIENES, STABILIZED (1,3-butadiene), 2.1

#### Marine transport IMDG

UN 1010 BUTADIENES, STABILIZED (1,3-butadiene), 2.1

#### Air transport ICAO/IATA-DGR

UN 1010 Butadienes, stabilized (1,3-butadiene), 2.1

### ! 15. REGULATORY INFORMATION

#### Remarks for classification

The product is classified and labelled in accordance with EC directives/German regulations on dangerous substances.  
EC-labelling

#### Classification

<b>F+</b>	Extremely flammable
<b>T</b>	Toxic

#### R-phrases

45	May cause cancer.
46	May cause heritable genetic damage.
12	Extremely flammable.

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**GERLING  
HOLZ+CO**



#### S-phrases

53 Avoid exposure - obtain special instructions before use.  
45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

#### ! Hazardous ingredients for labeling

Buta-1,3-diene

#### VOC standard

VOC content  $\geq 99,5\%$  20 °C 2351 hPa

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## 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-phrases specified in chapter 3 (not the classification of the formulation!)

R 12 Extremely flammable.

R 20/21 Harmful by inhalation and in contact with skin.

R 34 Causes burns.

R 43 May cause sensitisation by skin contact.

R 45 May cause cancer.

R 46 May cause heritable genetic damage.

R 51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.