

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Revision Date 21.11.2010

Version 8.9

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

### 1.1 Product identifier

Catalogue No.	820665
Product name	1,4-Butanesultone for synthesis
REACH Registration Number	A registration number is not available for this substance as the substance or its use are exempted from registration according to Article 2 REACH Regulation (EC) No 1907/2006, the annual tonnage does not require a registration or the registration is envisaged for a later registration deadline.

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

Identified uses	Chemical for synthesis For additional information on uses please refer to the Merck Chemicals portal ( <a href="http://www.merck-chemicals.com">www.merck-chemicals.com</a> ).
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### 1.3 Details of the supplier of the safety data sheet

Company	Merck KGaA * 64271 Darmstadt * Germany * Phone:+49 6151 72-0
Responsible Department	LS-QHC * e-mail: <a href="mailto:prodsafe@merckgroup.com">prodsafe@merckgroup.com</a>

1.4 Emergency telephone number	Please contact the regional company representation in your country.
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## 2. Hazards identification

### 2.1 Classification of the substance or mixture

#### Classification (REGULATION (EC) No 1272/2008)

Carcinogenicity, Category 2, H351  
Specific target organ toxicity - single exposure, Category 3, H335  
Acute toxicity, Category 4, Oral, H302  
Skin irritation, Category 2, H315  
Eye irritation, Category 2, H319  
Skin sensitization, Category 1, H317

For the full text of the H-Statements mentioned in this Section, see Section 16.

#### Classification (67/548/EEC or 1999/45/EC)

R43  
Carc.Cat.3; R40  
Xn; R22  
Xi; R36/37/38

For the full text of the R-phrases mentioned in this Section, see Section 16.

### 2.2 Label elements

#### Labelling (REGULATION (EC) No 1272/2008)

##### Hazard pictograms



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*Signal word*

Warning

*Hazard statements*

H302 Harmful if swallowed.  
H351 Suspected of causing cancer.  
H315 Causes skin irritation.  
H317 May cause an allergic skin reaction.  
H319 Causes serious eye irritation.  
H335 May cause respiratory irritation.

*Precautionary statements*

P281 Use personal protective equipment as required.  
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.  
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P308 + P313 IF exposed or concerned: Get medical advice/ attention.

**Reduced labelling (≤125 ml)**

*Hazard pictograms*



*Signal word*

Warning

*Hazard statements*

H351 Suspected of causing cancer.  
H317 May cause an allergic skin reaction.

*Precautionary statements*

P281 Use personal protective equipment as required.  
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.  
P308 + P313 IF exposed or concerned: Get medical advice/ attention.

CAS-No. 1633-83-6

**Labelling (67/548/EEC or 1999/45/EC)**

Symbol(s)	Xn	Harmful
R-phrases(s)	22-36/37/38-40-43	Harmful if swallowed. Irritating to eyes, respiratory system and skin. Limited evidence of a carcinogenic effect. May cause sensitization by skin contact.
S-phrases(s)	26-36/37	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing and gloves.
EC-No.	216-647-9	
<b>Reduced labelling (≤125 ml)</b>		
Symbol(s)	Xn	Harmful
R-phrases(s)	22-40-43	Harmful if swallowed. Limited evidence of a carcinogenic effect. May cause sensitization by skin contact.
S-phrases(s)	36/37	Wear suitable protective clothing and gloves.

**2.3 Other hazards**

None known.

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### 3. Composition/information on ingredients

Formula	C <sub>4</sub> H <sub>8</sub> O <sub>3</sub> S (Hill)
CAS-No.	1633-83-6
EC-No.	216-647-9
Molar mass	136,16 g/mol

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### 4. First aid measures

#### 4.1 Description of first aid measures

After inhalation: fresh air. Get medical attention.

After skin contact: wash off with plenty of water. Remove contaminated clothing. Get medical attention.

After eye contact: rinse out with plenty of water. Call in ophthalmologist.

After swallowing: immediately make victim drink water (two glasses at most). Consult a physician.

#### 4.2 Most important symptoms and effects, both acute and delayed

irritant effects, Allergic reactions, Cough, Shortness of breath

#### 4.3 Indication of immediate medical attention and special treatment needed

No information available.

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### 5. Fire-fighting measures

#### 5.1 Extinguishing media

*Suitable extinguishing media*

Water, Carbon dioxide (CO<sub>2</sub>), Foam, Dry powder

*Unsuitable extinguishing media*

For this substance/mixture no limitations of extinguishing agents are given.

#### 5.2 Special hazards arising from the substance or mixture

Combustible material

Vapours are heavier than air and may spread along floors.

Forms explosive mixtures with air on intense heating.

Development of hazardous combustion gases or vapours possible in the event of fire.

Fire may cause evolution of:

Sulphur oxides

#### 5.3 Advice for firefighters

*Special protective equipment for fire-fighters*

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

*Further information*

Suppress (knock down) gases/vapours/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

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### 6. Accidental release measures

#### 6.1 Personal precautions, protective equipment and emergency procedures

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Advice for non-emergency personnel: Avoid substance contact. Do not breathe vapours, aerosols. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.

Advice for emergency responders: Protective equipment see section 8.

## 6.2 Environmental precautions

Do not empty into drains.

## 6.3 Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills.

Observe possible material restrictions (see sections 7.2 and 10.5).

Take up with liquid-absorbent material (e.g. Chemizorb®). Dispose of properly. Clean up affected area.

## 6.4 Reference to other sections

Indications about waste treatment see section 13.

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## 7. Handling and storage

### 7.1 Precautions for safe handling

Work under hood. Do not inhale substance. Avoid generation of vapours/aerosols.

Observe label precautions.

### 7.2 Conditions for safe storage, including any incompatibilities

Tightly closed.

Store at +15°C to +25°C.

### 7.3 Specific end uses

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.

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## 8. Exposure controls/personal protection

### 8.1 Control parameters

### 8.2 Exposure controls

#### Engineering measures

Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.

See section 7.1.

#### Individual protection measures

Protective clothing needs to be selected specifically for the workplace, depending on concentrations and quantities of the hazardous substances handled. The chemical resistance of the protective equipment should be enquired at the respective supplier.

#### *Hygiene measures*

Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

#### *Eye/face protection*

Safety glasses

#### *Hand protection*

full contact:

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                    Glove material: Nitrile rubber  
                    Glove thickness: 0,40 mm  
                    Break through time: > 480 min

splash contact:

                    Glove material: Nitrile rubber  
                    Glove thickness: 0,11 mm  
                    Break through time: > 30 min

The protective gloves to be used must comply with the specifications of EC Directive 89/686/EEC and the related standard EN374, for example KCL 730 Camatril® -Velours (full contact), KCL 741 Dermatril® L (splash contact).

The breakthrough times stated above were determined by KCL in laboratory tests acc. to EN374 with samples of the recommended glove types.

This recommendation applies only to the product stated in the safety data sheet(>,<)> supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: [www.kcl.de](http://www.kcl.de)).

*Other protective equipment:*  
protective clothing

*Respiratory protection*

required when vapours/aerosols are generated.

Recommended Filter type: Filter A-(P3)

The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.

*Environmental exposure controls*

Do not empty into drains.

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## 9. Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

Form	viscous liquid
Colour	colourless
Odour	odourless
Odour Threshold	No information available.
pH	No information available.
Melting point	12,5 - 15,0 °C
Boiling point/boiling range	153 °C at 19 hPa
Flash point	154 °C
Evaporation rate	No information available.
Flammability (solid, gas)	No information available.

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Lower explosion limit	No information available.
Upper explosion limit	No information available.
Vapour pressure	No information available.
Relative vapour density	No information available.
Relative density	1,34 g/cm <sup>3</sup> at 20 °C
Water solubility	54 g/l at 20 °C (decomposition)
Partition coefficient: n-octanol/water	log Pow: 0,21 Bioaccumulation is not expected (log Pow <1). (Lit.)
Autoignition temperature	No information available.
Decomposition temperature	No information available.
Viscosity, dynamic	No information available.
Explosive properties	No information available.
Oxidizing properties	No information available.

**9.2 Other data**

none

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**10. Stability and reactivity**

**10.1 Reactivity**

Forms explosive mixtures with air on intense heating.

**10.2 Chemical stability**

sensitive to moisture

**10.3 Possibility of hazardous reactions**

Water, Strong oxidizing agents, strong alkalis

**10.4 Conditions to avoid**

Strong heating.

A range from approx. 15 Kelvin below the flash point is to be rated as critical.

**10.5 Incompatible materials**

no information available

**10.6 Hazardous decomposition products**

in the event of fire: See chapter 5.

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**11. Toxicological information**

**11.1 Information on toxicological effects**

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*Acute oral toxicity*

LD50 rat

Dose: 500 mg/kg

(RTECS)

Symptoms: Irritations of mucous membranes in the mouth, pharynx, oesophagus and gastrointestinal tract.

absorption

*Acute inhalation toxicity*

Symptoms: Possible damages:, mucosal irritations

*Skin irritation*

Causes skin irritation.

*Eye irritation*

Causes serious eye irritation.

*Sensitisation*

May cause an allergic skin reaction.

*Genotoxicity in vitro*

Ames test

Result: positive

(External MSDS)

*CMR effects*

Carcinogenicity:

Suspected of causing cancer.

*Specific target organ toxicity - single exposure*

May cause respiratory irritation.

*Specific target organ toxicity - repeated exposure*

The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

*Aspiration hazard*

No aspiration toxicity classification

**11.2 Further information**

*Further information*

Other dangerous properties can not be excluded.

Handle in accordance with good industrial hygiene and safety practice.

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**12. Ecological information**

**12.1 Toxicity**

No information available.

**12.2 Persistence and degradability**

No information available.

**12.3 Bioaccumulative potential**

*Partition coefficient: n-octanol/water*

log Pow: 0,21

Bioaccumulation is not expected (log Pow <1). (Lit.)

**12.4 Mobility in soil**

No information available.

**12.5 Results of PBT and vPvB assessment**

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted.

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### 12.6 Other adverse effects

*Additional ecological information*

We have no quantitative data concerning the ecological effects of this product.

Further information on ecology

Do not allow to run into surface waters, wastewater, or soil.

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### 13. Disposal considerations

*Waste treatment methods*

See [www.retrologistik.com](http://www.retrologistik.com) for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

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### 14. Transport information

Not classified as dangerous in the meaning of transport regulations.

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### 15. Regulatory information

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

*EU regulations*

Major Accident Hazard	96/82/EC
Legislation	Directive 96/82/EC does not apply

Occupational restrictions	Take note of Dir 94/33/EC on the protection of young people at work. Take note of Dir 92/85/EEC on the safety and health at work of pregnant workers.
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*National legislation*

Storage class VCI	10 Combustible liquids not in Storage Class 3
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#### 15.2 Chemical Safety Assessment

For this product a chemical safety assessment was not carried out.

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### 16. Other information

#### Full text of H-Statements referred to under sections 2 and 3.

H302	Harmful if swallowed.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
H351	Suspected of causing cancer.

#### Full text of R-phrases referred to under sections 2 and 3

R22	Harmful if swallowed.
R36/37/38	Irritating to eyes, respiratory system and skin.
R40	Limited evidence of a carcinogenic effect.
R43	May cause sensitization by skin contact.

#### Training advice

Provide adequate information, instruction and training for operators.

Regional representation: This information is given on the authorised Safety Data Sheet for

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your country.

**Key or legend to abbreviations and acronyms used in the safety data sheet**

Used abbreviations and acronyms can be looked up at [www.wikipedia.org](http://www.wikipedia.org).

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*The information contained herein is based on the present state of our knowledge. It characterises the product with regard to the appropriate safety precautions. It does not represent a guarantee of any properties of the product.*