

# SAFETY DATA SHEET

Version 8.6  
Revision Date 21.03.2023  
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## SECTION 1: Identification of the substance/mixture and of the company/undertaking

### 1.1 Product identifiers

Product name : Dibutyl ether for synthesis

Product Number : 8.02892  
Catalogue No. : 802892  
Brand : Millipore  
CAS-No. : 142-96-1

### 1.2 Other means of identification

No data available

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

Identified uses : Chemical for synthesis

### 1.4 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Pte Ltd  
(Co. Registration No. 199403788W)  
2 Science Park Drive  
#05-01/12 Ascent Building  
SINGAPORE 118222  
SINGAPORE

Telephone : +65 6890 6633  
Fax : +65 6890 6639  
E-mail address : TechnicalService@merckgroup.com

### 1.5 Emergency telephone

Emergency Phone # : 1-800-262-8200

## SECTION 2: Hazards identification

### 2.1 GHS Classification

Flammable liquids (Category 3), H226  
Skin corrosion/irritation (Category 2), H315  
Serious eye damage/eye irritation (Category 2A), H319  
Specific target organ toxicity - single exposure (Category 3), Respiratory system, H335

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

### 2.2 GHS Label elements, including precautionary statements

Pictogram



Signal Word

Warning

Hazard statement(s)  
H226

Flammable liquid and vapor.

H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
Precautionary statement(s)	
Prevention	
P210	Keep away from heat/ sparks/ open flames/ hot surfaces. No smoking.
P261	Avoid breathing mist or vapors.
P264	Wash skin thoroughly after handling.
P280	Wear protective gloves/ eye protection/ face protection.
Response	
P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P304 + P340 + P312	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor if you feel unwell.
P337 + P313	If eye irritation persists: Get medical advice/ attention.
P370 + P378	In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.
Storage	
P403 + P233	Store in a well-ventilated place. Keep container tightly closed.
P403 + P235	Store in a well-ventilated place. Keep cool.

### 2.3 Other hazards - none

## SECTION 3: Composition/information on ingredients

Substance / Mixture : Substance

### 3.1 Substances

Formula : C<sub>8</sub>H<sub>18</sub>O  
Molecular weight : 130.23 g/mol  
CAS-No. : 142-96-1  
EC-No. : 205-575-3  
Index-No. : 603-054-00-9

#### Hazardous ingredients

Component	Classification	Concentration
<b>1,1'-Oxybis(butane)</b>	Flam. Liq. 3; Skin Corr./Irrit. 2; Eye Dam./Irrit. 2A; STOT SE 3; H226, H315, H319, H335 Concentration limits: >= 10 %: STOT SE 3, H335;	<= 100 %

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

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## SECTION 4: First aid measures

### 4.1 Description of first-aid measures

#### General advice

Show this material safety data sheet to the doctor in attendance.

#### If inhaled

After inhalation: fresh air.

#### In case of skin contact

In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower.

#### In case of eye contact

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

#### If swallowed

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

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

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

No data available

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## SECTION 5: Firefighting measures

### 5.1 Extinguishing media

#### Suitable extinguishing media

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

Carbon oxides

Combustible.

Vapors are heavier than air and may spread along floors.

Forms explosive mixtures with air at elevated temperatures.

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

### 5.3 Advice for firefighters

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

### 5.4 Further information

Remove container from danger zone and cool with water. Prevent fire extinguishing water from contaminating surface water or the ground water system.

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## **SECTION 6: Accidental release measures**

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

Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Keep away from heat and sources of ignition. Evacuate the danger area, observe emergency procedures, consult an expert. For personal protection see section 8.

### **6.2 Environmental precautions**

Do not let product enter drains. Risk of explosion.

### **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 and 10). Take up with liquid-absorbent material (e.g. Chemizorb® ). Dispose of properly. Clean up affected area.

### **6.4 Reference to other sections**

For disposal see section 13.

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## **SECTION 7: Handling and storage**

### **7.1 Precautions for safe handling**

#### **Advice on protection against fire and explosion**

Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharge.

#### **Hygiene measures**

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

For precautions see section 2.2.

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

#### **Storage conditions**

Protected from light. Keep container tightly closed in a dry and well-ventilated place. Keep away from heat and sources of ignition.

Recommended storage temperature see product label.

#### **Storage class**

Storage class (TRGS 510): 3: Flammable liquids

### **7.3 Specific end use(s)**

Apart from the uses mentioned in section 1.3 no other specific uses are stipulated.

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## **SECTION 8: Exposure controls/personal protection**

### **8.1 Control parameters**

#### **Ingredients with workplace control parameters**

Contains no substances with occupational exposure limit values.

### **8.2 Exposure controls**

#### **Appropriate engineering controls**

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

## Personal protective equipment

### Eye/face protection

Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses

### Skin protection

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)).

Full contact

Material: Viton®

Minimum layer thickness: 0.7 mm

Break through time: 480 min

Material tested: Vitoject® (KCL 890 / Aldrich Z677698, Size M)

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)).

Splash contact

Material: Nitrile rubber

Minimum layer thickness: 0.2 mm

Break through time: 10 min

Material tested: Dermatrill® P (KCL 743 / Aldrich Z677388, Size M)

### Body Protection

Flame retardant antistatic protective clothing.

### Respiratory protection

required when vapours/aerosols are generated. Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

### Control of environmental exposure

Do not let product enter drains. Risk of explosion.

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## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

- |  |                                      |
|--|--------------------------------------|
| a) Physical state                          | liquid                               |
| b) Color                                   | colorless                            |
| c) Odor                                    | No data available                    |
| d) Melting point/freezing point            | Melting point: -95.2 °C at 1,013 hPa |
| e) Initial boiling point and boiling range | 140.2 °C at 1,013.25 hPa             |
| f) Flammability (solid, gas)               | No data available                    |

g) Upper/lower flammability or explosive limits	Upper explosion limit: 8.5 %(V) Lower explosion limit: 0.9 %(V)
h) Flash point	28 °C - closed cup - ASTM D 93
i) Autoignition temperature	194 °C at 1,013.25 hPa
j) Decomposition temperature	No data available
k) pH	5.2
l) Viscosity	Viscosity, kinematic: No data available Viscosity, dynamic: 0.637 mPa.s at 25 °C
m) Water solubility	0.113 g/l at 20 °C - OECD Test Guideline 105
n) Partition coefficient: n-octanol/water	log Pow: 3.35 - - Bioaccumulation is not expected.
o) Vapor pressure	4.6 hPa at 20 °C - Regulation (EC) No. 440/2008, Annex, A.4 6.4 hPa at 25 °C - Regulation (EC) No. 440/2008, Annex, A.4
p) Density	0.768 g/cm <sup>3</sup> at 20 °C
Relative density	0.77
q) Relative vapor density	4.5 - (Air = 1.0)
r) Particle characteristics	No data available
s) Explosive properties	No data available
t) Oxidizing properties	none

## 9.2 Other safety information

Relative vapor density	4.5 - (Air = 1.0)
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## SECTION 10: Stability and reactivity

### 10.1 Reactivity

Vapor/air-mixtures are explosive at intense warming.

### 10.2 Chemical stability

The product is chemically stable under standard ambient conditions (room temperature) .

### 10.3 Possibility of hazardous reactions

Exothermic reaction with:

Oxidizing agents

Strong acids

Risk of explosion with:

nitrogen trichloride

### 10.4 Conditions to avoid

Forms explosive peroxides on prolonged storage Air Light.

Heating.

## 10.5 Incompatible materials

various plastics

## 10.6 Hazardous decomposition products

Peroxides

In the event of fire: see section 5

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## SECTION 11: Toxicological information

### 11.1 Information on toxicological effects

#### Acute toxicity

LD50 Oral - Rat - male - 7,400 mg/kg

(OECD Test Guideline 401)

LC50 Inhalation - Rat - male - 4 h - 21.6 mg/l - vapor

(OECD Test Guideline 403)

LD50 Dermal - Rabbit - male - 7,741 mg/kg

(OECD Test Guideline 402)

#### Skin corrosion/irritation

Skin - Rabbit

Result: Mild skin irritation - 4 h

(OECD Test Guideline 404)

Remarks: (Regulation (EC) No 1272/2008, Annex VI)

Remarks: Drying-out effect resulting in rough and chapped skin.

Dermatitis

#### Serious eye damage/eye irritation

Eyes - Rabbit

Result: Moderate eye irritation

(OECD Test Guideline 405)

Remarks: (Regulation (EC) No 1272/2008, Annex VI)

#### Respiratory or skin sensitization

Open epicutaneous test - Guinea pig

Result: negative

(OECD Test Guideline 406)

#### Germ cell mutagenicity

Test Type: Ames test

Test system: Salmonella typhimurium

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 471

Result: negative

Test Type: In vitro mammalian cell gene mutation test

Test system: Chinese hamster ovary cells

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 476

Result: negative

Test Type: Mutagenicity (mammal cell test): chromosome aberration.

Test system: Human lymphocytes

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 473

Result: negative

#### Carcinogenicity

No data available

**Reproductive toxicity**

No data available

**Specific target organ toxicity - single exposure**

May cause respiratory irritation.

Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

**Specific target organ toxicity - repeated exposure**

No data available

**Aspiration hazard**

No data available

**11.2 Additional Information**

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

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**SECTION 12: Ecological information****12.1 Toxicity**

Toxicity to fish	flow-through test LC50 - Pimephales promelas (fathead minnow) - 32.3 mg/l - 96 h (OECD Test Guideline 203)
Toxicity to daphnia and other aquatic invertebrates	semi-static test EC50 - Daphnia magna (Water flea) - > 18.76 mg/l - 48 h (OECD Test Guideline 202)
Toxicity to algae	static test ErC50 - Pseudokirchneriella subcapitata (green algae) - ca. 19.1 mg/l - 72 h (OECD Test Guideline 201)
Toxicity to bacteria	static test EC50 - activated sludge - > 1,000 mg/l - 30 min (OECD Test Guideline 209) Remarks: (above the solubility limit in the test medium)

**12.2 Persistence and degradability**

Biodegradability aerobic - Exposure time 28 d  
Result: 5 % - Not readily biodegradable.  
(OECD Test Guideline 301D)

**12.3 Bioaccumulative potential**

Bioaccumulation Cyprinus carpio (Carp) - 42 d  
- 0.2 mg/l(1,1'-Oxybis(butane))  
  
Bioconcentration factor (BCF): 47 - 83  
(OECD Test Guideline 305C)

**12.4 Mobility in soil**

No data available

**12.5 Results of PBT and vPvB assessment**

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

**12.6 Endocrine disrupting properties**

No data available



## 12.7 Other adverse effects

Avoid release to the environment.

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## SECTION 13: Disposal considerations

### 13.1 Waste treatment methods

#### Product

Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself. 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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## SECTION 14: Transport information

### 14.1 UN number

ADR/RID: 1149

IMDG: 1149

IATA-DGR: 1149

### 14.2 UN proper shipping name

ADR/RID: DIBUTYL ETHERS

IMDG: DIBUTYL ETHERS

IATA-DGR: Dibutyl ethers

### 14.3 Transport hazard class(es)

ADR/RID: 3

IMDG: 3

IATA-DGR: 3

### 14.4 Packaging group

ADR/RID: III

IMDG: III

IATA-DGR: III

### 14.5 Environmental hazards

ADR/RID: no

IMDG Marine pollutant: no

IATA-DGR: no

### 14.6 Special precautions for user

None

### 14.7 Incompatible materials

various plastics

#### Other regulations

Hazchem Code : 3Y

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## SECTION 15: Regulatory information

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

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## SECTION 16: Other information

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

H226	Flammable liquid and vapor.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.

**Further information**

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See [www.sigma-aldrich.com](http://www.sigma-aldrich.com) and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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