



# MATERIAL SAFETY DATA SHEET

according to the Hazard Communication Standard (29 CFR 1910.1200)

Revision Date 10/31/2012

Version 1.1

## SECTION 1. Identification

### Product identifier

Product number 801964  
Product name 1,3-Butanediol for synthesis

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

Identified uses Chemical for synthesis

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

Company EMD Millipore Corporation | 290 Concord Road, Billerica, MA 01821, United States of America | SDS Phone Support: +1-978-715-1335 | General Inquiries: +1-978-751-4321 | Monday to Friday, 9:00 AM to 4:00 PM Eastern Time (GMT-5)  
e-mail: mm\_sds@merckgroup.com

Emergency telephone 800-424-9300 CHEMTREC (USA)  
+1-703-527-3887 CHEMTREC (International)  
24 Hours/day; 7 Days/week

## SECTION 2. Hazards identification

### GHS-Labeling

Not a hazardous substance or mixture according to Regulation (EC) No 1272/2008.

### OSHA Hazards

While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this MSDS contains valuable information critical to the safe handling and proper use of the product. This MSDS should be retained and available for employees and other users of this product.

### Other hazards

None known.

## SECTION 3. Composition/information on ingredients

Formula  $\text{CH}_3\text{CH}(\text{OH})\text{CH}_2\text{CH}_2\text{OH}$   $\text{C}_4\text{H}_{10}\text{O}_2$  (Hill)  
CAS-No. 107-88-0  
Molar mass 90.12 g/mol

# MATERIAL SAFETY DATA SHEET

according to the Hazard Communication Standard (29 CFR 1910.1200)

Product number  
Product name

801964  
1,3-Butanediol for synthesis

Version 1.1

---

Remarks	No hazardous ingredients according to the OSHA Hazard Communication Standard 29 CFR 1910.1200.
---------	--

---

## SECTION 4. First aid measures

### Description of first-aid measures

#### *Inhalation*

After inhalation: fresh air.

#### *Skin contact*

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

#### *Eye contact*

After eye contact: rinse out with plenty of water.

#### *Ingestion*

After swallowing: make victim drink water (two glasses at most). Consult doctor if feeling unwell.

Never give anything by mouth to an unconscious person.

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

We have no description of any toxic symptoms.

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

No information available.

---

## SECTION 5. Fire-fighting measures

### 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.

### Special hazards arising from the substance or mixture

Combustible.

Vapors are heavier than air and may spread along floors.

Forms explosive mixtures with air on intense heating.

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

### Advice for firefighters

#### *Special protective equipment for fire-fighters*

In the event of fire, wear self-contained breathing apparatus.

#### *Further information*

Prevent fire extinguishing water from contaminating surface water or the ground water system.

Cool closed containers exposed to fire with water spray.

---

## SECTION 6. Accidental release measures

### Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Do not breathe vapors, aerosols. Evacuate the danger area, observe emergency procedures, consult an expert.

# MATERIAL SAFETY DATA SHEET

according to the Hazard Communication Standard (29 CFR 1910.1200)

Product number

801964

Version 1.1

Product name

1,3-Butanediol for synthesis

---

Advice for emergency responders: Protective equipment see section 8.

## Environmental precautions

Do not empty into drains.

## 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.

---

## SECTION 7. Handling and storage

### Precautions for safe handling

Observe label precautions.

### Conditions for safe storage, including any incompatibilities

Tightly closed.

Store at +15°C to +25°C (+59°F to +77°F).

---

## SECTION 8. Exposure controls/personal protection

### Exposure limit(s)

Contains no substances with occupational exposure limit values.

### Engineering measures

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

### Individual protection measures

Protective clothing should be selected specifically for the workplace, depending on concentration and quantity of the hazardous substances handled. The chemical resistance of the protective equipment should be inquired at the respective supplier.

#### *Hygiene measures*

Change contaminated clothing. Wash hands after working with substance.

#### *Eye/face protection*

Safety glasses

#### *Hand protection*

Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Recommended:

full contact:

Glove material:	Nitrile rubber
Glove thickness:	0.11 mm
Break through time:	> 480 min

splash contact:

Glove material:	Nitrile rubber
Glove thickness:	0.11 mm
Break through time:	> 480 min

---

MATERIAL SAFETY DATA SHEET  
according to the Hazard Communication Standard (29 CFR 1910.1200)

Product number 801964  
Product name 1,3-Butanediol for synthesis

Version 1.1

*Respiratory protection*

not required under normal use

Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

**SECTION 9. Physical and chemical properties**

Physical state	liquid
Color	colorless
Odor	odorless
Odor Threshold	not applicable
pH	6 - 7 at 1 g/l
Melting point	< -58 °F ( < -50 °C)
Boiling point/boiling range	405.5 °F ( 207.5 °C) at 1.013 hPa
Flash point	228 °F ( 109 °C) Method: c.c.
Evaporation rate	No information available.
Flammability (solid, gas)	No information available.
Lower explosion limit	1.8 %(V)
Upper explosion limit	9.4 %(V)
Vapor pressure	0.08 hPa at 68 °F ( 20 °C)
Relative vapor density	3.2
Relative density	1.00 g/cm <sup>3</sup> at 68 °F ( 20 °C)
Water solubility	at 68 °F ( 20 °C) soluble
Partition coefficient: n-octanol/water	log Pow: -0.29 (calculated) Bioaccumulation is not expected (log Pow <1). (Lit.)

MATERIAL SAFETY DATA SHEET  
according to the Hazard Communication Standard (29 CFR 1910.1200)

Product number 801964  
Product name 1,3-Butanediol for synthesis

Version 1.1

---

Autoignition temperature	No information available.
Decomposition temperature	No information available.
Viscosity, dynamic	96 mPa.s at 77 °F ( 25 °C)
Ignition temperature	824 °F ( 440 °C) DIN 51794

---

## SECTION 10. Stability and reactivity

### Reactivity

Forms explosive mixtures with air on intense heating.

### Chemical stability

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

### Possibility of hazardous reactions

Violent reactions possible with:

Oxidizing agents, Acid anhydrides, acid halides

### Conditions to avoid

Strong heating.

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

### Incompatible materials

no information available

### Hazardous decomposition products

no information available

---

## SECTION 11. Toxicological information

### Information on toxicological effects

#### *Likely route of exposure*

Eye contact, Skin contact

#### *Acute oral toxicity*

LD50 rat: 18,610 mg/kg (RTECS)

#### *Acute dermal toxicity*

LD50 rabbit: > 20,000 mg/kg  
(RTECS)

#### *Skin irritation*

rabbit

Result: No skin irritation  
(External MSDS)

---

MATERIAL SAFETY DATA SHEET  
according to the Hazard Communication Standard (29 CFR 1910.1200)

Product number 801964  
Product name 1,3-Butanediol for synthesis

---

Version 1.1

*Eye irritation*

rabbit

Result: No eye irritation  
(External MSDS)

*Sensitization*

Patch test: human

Result: negative  
(IUCLID)

*Specific target organ systemic toxicity - single exposure*

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

*Specific target organ systemic toxicity - repeated exposure*

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

*Aspiration hazard*

Regarding the available data the classification criteria are not fulfilled.

**Carcinogenicity**

IARC	No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
OSHA	No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.
NTP	No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
ACGIH	No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

**Further information**

Hazardous properties cannot be excluded but are unlikely when the product is handled appropriately.

Further data:

Handle in accordance with good industrial hygiene and safety practice.

---

**SECTION 12. Ecological information**

**Ecotoxicity**

*Toxicity to fish*

LC50 *Leuciscus idus* (Golden orfe): > 2,000 mg/l; 48 h

*Toxicity to bacteria*

EC50 Bacteria: 901 mg/l; 3 h

**Persistence and degradability**

MATERIAL SAFETY DATA SHEET  
according to the Hazard Communication Standard (29 CFR 1910.1200)

Product number 801964  
Product name 1,3-Butanediol for synthesis

---

Version 1.1

*Biodegradability*

99 %

OECD Test Guideline 301E

Readily biodegradable.

**Bioaccumulative potential**

*Partition coefficient: n-octanol/water*

log Pow: -0.29

(calculated)

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

**Mobility in soil**

No information available.

**Other adverse effects**

*Additional ecological information*

Discharge into the environment must be avoided.

---

**SECTION 13. Disposal considerations**

The information presented only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. Disposal should be in accordance with applicable regional, national and local laws and regulations.

---

**SECTION 14. Transport information**

**Land transport (DOT)**

Not classified as dangerous in the meaning of transport regulations.

**Air transport (IATA)**

Not classified as dangerous in the meaning of transport regulations.

**Sea transport (IMDG)**

Not classified as dangerous in the meaning of transport regulations.

---

**SECTION 15. Regulatory information**

**United States of America**

**OSHA Hazards**

No OSHA Hazards

This information is based on 29 CFR 1910.1200 criteria prior to adoption of the GHS, and may deviate from the GHS information on the label and in section 2.

**TSCA list**

Not relevant

**SARA 311/312 Hazards**

No SARA Hazards

---

MATERIAL SAFETY DATA SHEET  
according to the Hazard Communication Standard (29 CFR 1910.1200)

Product number 801964  
Product name 1,3-Butanediol for synthesis

Version 1.1

**Clean Water Act**

This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.

This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.

**US State Regulations**

**Massachusetts Right To Know**

Remarks

No components are subject to the Massachusetts Right to Know Act.

**Pennsylvania Right To Know**

*Ingredients*

butane-1,3-diol

**New Jersey Right To Know**

*Ingredients*

butane-1,3-diol

**California Prop 65 Components**

This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.

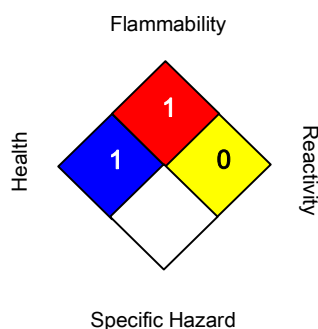
**Notification status**

TSCA: On TSCA Inventory

DSL: All components of this product are on the Canadian DSL.

**SECTION 16. Other information**

**National Fire Protection Association (U.S.A)**



**Training advice**

Provide adequate information, instruction and training for operators.

**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).



MATERIAL SAFETY DATA SHEET  
according to the Hazard Communication Standard (29 CFR 1910.1200)

Product number 801964  
Product name 1,3-Butanediol for synthesis

---

Version 1.1

---

The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to appropriate safety precautions. It does not represent a warranty of any product properties and we assume no liability for any loss or injury which may result from the use of this information. Users should conduct their own investigations to determine the suitability of the information.

*All rights reserved. Millipore and the "M" Mark are registered trademarks of Merck KGaA, Darmstadt, Germany.*