1,4-Butanediol  
CAS No 110-63-4  

MATERIAL SAFETY DATA SHEET  
SDS/MSDS

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name : 1,4-Butanediol

CAS-No. : 110-63-4

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

Identified uses : Laboratory chemicals, Industrial & for professional use only.

1.3 Details of the supplier of the safety data sheet

Company : Central Drug House (P) Ltd
          7/28 Vardaan House
          New Delhi-10002
          INDIA

Telephone : +91 11 49404040
Email : care@cdhfinechemical.com

1.4 Emergency telephone number

Emergency Phone # : +91 11 49404040 (9:00am - 6:00 pm) [Office hours]

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008
Acute toxicity, Oral (Category 4), H302
Specific target organ toxicity - single exposure (Category 3), Central nervous system, H336

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

2.2 Label elements

Labelling according Regulation (EC) No 1272/2008

Pictogram

Signal word : Warning

Hazard statement(s)
H302 : Harmful if swallowed.
H336 : May cause drowsiness or dizziness.
Precautionary statement(s)
P301 + P312 + P330
IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell.
Rinse mouth.

Supplemental Hazard
none

2.3 Other hazards
This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

SECTION 3: Composition/information on ingredients

3.1 Substances

Synonyms:
1,4-Butylene glycol
Tetramethylene glycol

Formula:
C\textsubscript{4}H\textsubscript{10}O\textsubscript{2}

Molecular weight:
90.12 g/mol

CAS-No.:
110-63-4

EC-No.:
203-786-5

Registration number:
01-2119471849-20-XXXX

Hazardous ingredients according to Regulation (EC) No 1272/2008

<table>
<thead>
<tr>
<th>Component</th>
<th>Classification</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butane-1,4-diol</td>
<td>Acute Tox. 4; STOT SE 3;</td>
<td>&lt;= 100 %</td>
</tr>
<tr>
<td>CAS-No.</td>
<td>110-63-4</td>
<td></td>
</tr>
<tr>
<td>EC-No.</td>
<td>203-786-5</td>
<td>H302, H336</td>
</tr>
</tbody>
</table>

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

SECTION 4: First aid measures

4.1 Description of first aid measures

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Wash off with soap and plenty of water. Consult a physician.

In case of eye contact
Flush eyes with water as a precaution.

If swallowed
Never give anything by mouth to an unconscious person. Rinse mouth with water. 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

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
5.2 Special hazards arising from the substance or mixture
Carbon oxides

5.3 Advice for firefighters
Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information
No data available

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Use personal protective equipment. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. For personal protection see section 8.

6.2 Environmental precautions
Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up
Soak up with inert absorbent material and dispose of as hazardous waste. Keep in suitable, closed containers for disposal.

6.4 Reference to other sections
For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling
Avoid contact with skin and eyes. Avoid inhalation of vapour or mist. For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities
Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Storage class (TRGS 510): Combustible liquids

7.3 Specific end use(s)
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

<table>
<thead>
<tr>
<th>Derived No Effect Level (DNEL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application Area</td>
</tr>
<tr>
<td>-------------------</td>
</tr>
<tr>
<td>Workers</td>
</tr>
<tr>
<td>Workers</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Predicted No Effect Concentration (PNEC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compartment</td>
</tr>
<tr>
<td>Soil</td>
</tr>
<tr>
<td>Marine water</td>
</tr>
<tr>
<td>Fresh water</td>
</tr>
<tr>
<td>Marine sediment</td>
</tr>
<tr>
<td>Fresh water sediment</td>
</tr>
<tr>
<td>Onsite sewage treatment plant</td>
</tr>
<tr>
<td>Aquatic intermittent release</td>
</tr>
</tbody>
</table>

8.2 Exposure controls

Appropriate engineering controls
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

Personal protective equipment
Eye/face protection
Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove’s outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Body Protection
Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use (US) or type ABEK (EN 14387) respirator cartridges as a backup to enginee protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure
Do not let product enter drains.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a) Appearance
   Form: viscous
   Colour: colourless

b) Odour
   No data available

c) Odour Threshold
   No data available

d) pH
   No data available

e) Melting point/freezing point
   Melting point/range: 16 °C - lit.

f) Initial boiling point and boiling range
   230 °C - lit.

g) Flash point
   134 °C - closed cup

h) Evaporation rate
   No data available

i) Flammability (solid, gas)
   No data available

j) Upper/lower flammability or explosive limits
   No data available

k) Vapour pressure
   0.019 hPa at 25 °C - OECD Test Guideline 104

l) Vapour density
   3.11 - (Air = 1.0)

m) Relative density
   1.017 g/cm3 at 25 °C - lit.

n) Water solubility
   100 g/l at 25 °C - OECD Test Guideline 105 - completely miscible

o) Partition coefficient: n-octanol/water
   log Pow: -0.88 at 25 °C - OECD Test Guideline 107

p) Auto-ignition temperature
   385 °C
   at 1,013 hPa

q) Decomposition temperature
   No data available

r) Viscosity
   83.2 mm2/s at 20 °C -

s) Explosive properties
   No data available

t) Oxidizing properties
   No data available
9.2 Other safety information

Dissociation constant  14.5
Relative vapour density  3.11 - (Air = 1.0)

SECTION 10: Stability and reactivity

10.1 Reactivity
No data available

10.2 Chemical stability
Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions
No data available

10.4 Conditions to avoid
No data available

10.5 Incompatible materials
Strong oxidizing agents, Acid chlorides, Acid anhydrides, Reducing agents

10.6 Hazardous decomposition products
Hazardous decomposition products formed under fire conditions. - Carbon oxides
Other decomposition products - No data available
In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
LD50 Oral - Rat - male and female - 1,500 mg/kg(Butane-1,4-diol)
LC50 Inhalation - Rat - male and female - 4 h - > 5.1 mg/l(Butane-1,4-diol)
(OECD Test Guideline 403)
LD50 Dermal - Rat - male and female - > 5,000 mg/kg(Butane-1,4-diol)

Skin corrosion/irritation
Skin - Rabbit(Butane-1,4-diol)
Result: No skin irritation - 24 h

Serious eye damage/eye irritation
Eyes - Rabbit(Butane-1,4-diol)
Result: No eye irritation

Respiratory or skin sensitisation
Maximisation Test - Guinea pig(Butane-1,4-diol)
Result: Does not cause skin sensitisation.

Germ cell mutagenicity
In vitro mammalian cell gene mutation test(Butane-1,4-diol)
Chinese hamster ovary cells
Result: negative

Carcinogenicity
IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

Reproductive toxicity
No data available(Butane-1,4-diol)

Specific target organ toxicity - single exposure
May cause drowsiness or dizziness.(Butane-1,4-diol)

Specific target organ toxicity - repeated exposure
No data available
Aspiration hazard
No data available (Butane-1,4-diol)

Additional Information
Repeated dose toxicity - Rat - male and female - Oral - No observed adverse effect level - 50 mg/kg - Lowest observed adverse effect level - 500 mg/kg (Butane-1,4-diol)
RTECS: Not available

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

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated. (Butane-1,4-diol)

SECTION 12: Ecological information

12.1 Toxicity
Toxicity to fish
static test LC50 - Pimephales promelas (fathead minnow) - > 30,000 mg/l - 96 h (Butane-1,4-diol)
(OECD Test Guideline 203)

Toxicity to daphnia and other aquatic invertebrates
static test EC50 - Daphnia magna (Water flea) - 813 mg/l - 48 h (Butane-1,4-diol)
(OECD Test Guideline 202)

Toxicity to algae
static test EC50 - Desmodesmus subspicatus (Scenedesmus subspicatus) - > 500 mg/l - 72 h (Butane-1,4-diol)

12.2 Persistence and degradability
Biodegradability aerobic - Exposure time 10 d (Butane-1,4-diol)
Result: 90 - 100 % - Readily biodegradable
(OECD Test Guideline 302B)

12.3 Bioaccumulative potential
No data available

12.4 Mobility in soil
No data available (Butane-1,4-diol)

12.5 Results of PBT and vPvB assessment
This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6 Other adverse effects
No data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods
Product
Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging
Dispose of as unused product.
SECTION 14: Transport information

14.1 UN number
ADR/RID: -  
IMDG: -  
IATA: -  

14.2 UN proper shipping name
ADR/RID: Not dangerous goods  
IMDG: Not dangerous goods  
IATA: Not dangerous goods  

14.3 Transport hazard class(es)
ADR/RID: -  
IMDG: -  
IATA: -  

14.4 Packaging group
ADR/RID: -  
IMDG: -  
IATA: -  

14.5 Environmental hazards
ADR/RID: no  
IMDG Marine pollutant: no  
IATA: no  

14.6 Special precautions for user
No data available  

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.  

15.2 Chemical safety assessment
A Chemical Safety Assessment has been carried out for this substance.  

SECTION 16: Other information

Full text of H-Statements referred to under sections 2 and 3.
H302 Harmful if swallowed.  
H336 May cause drowsiness or dizziness.  

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. Central Drug House (P) Ltd and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.cdhfinechemical.com for additional terms and conditions of sale.