DIBUTYL ETHER
CAS NO 142-96-1

MATERIAL SAFETY DATA SHEET
SDS/MSDS

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

1.1 Product identifiers
Product name : Dibutyl ether
CAS-No. : 142-96-1

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 -110002
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
Flammable liquids (Category 3), H226
Skin irritation (Category 2), H315
Eye irritation (Category 2), H319
Specific target organ toxicity - single exposure (Category 3), Respiratory system, H335
Chronic aquatic toxicity (Category 3), H412

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)
H226 Flammable liquid and vapour.
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.
H412 Harmful to aquatic life with long lasting effects.
Precautionary statement(s)

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P273 Avoid release to the environment.

P280 Wear eye protection/ face protection.

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.

P403 + P235 Store in a well-ventilated place. Keep cool.

Supplemental Hazard Statements

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 : Butyl ether

Formula : C₅H₁₀O

Molecular weight : 130.23 g/mol

CAS-No. : 142-96-1

EC-No. : 205-575-3

Index-No. : 603-054-00-9

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>Dibutyl ether</td>
<td>Flm. Liq. 3; Skin Irrit. 2; Eye</td>
<td>&lt;= 100 %</td>
</tr>
<tr>
<td>CAS-No.</td>
<td>142-96-1</td>
<td></td>
</tr>
<tr>
<td>EC-No.</td>
<td>205-575-3</td>
<td>Irrit. 2; STOT SE 3; Aquatic</td>
</tr>
<tr>
<td>Index-No.</td>
<td>603-054-00-9</td>
<td>Chronic 3; H226, H315, H319, H335, H412</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

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed

Do NOT induce vomiting. 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
   Use water spray to cool unopened containers.

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. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas. For personal protection see section 8.
6.2 Environmental precautions
   Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.
6.3 Methods and materials for containment and cleaning up
   Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13).
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. Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge. 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. Containers which are opened must be carefully resealed and kept upright to prevent leakage.
   Store under inert gas. Air and light sensitive.
   Storage class (TRGS 510): Flammable 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
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
Impervious clothing, Flame retardant antistatic protective clothing. 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
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

| a) Appearance | Form: liquid |
| b) Odour | No data available |
| c) Odour Threshold | No data available |
| d) pH | 5.2 |
| e) Melting point/freezing point | Melting point/range: -98 °C - lit. |
| f) Initial boiling point and boiling range | 142 - 143 °C - lit. |
| g) Flash point | 25 °C - closed cup |
| h) Evaporation rate | No data available |
| i) Flammability (solid, gas) | No data available |
| j) Upper/lower flammability or explosive limits | Upper explosion limit: 8.5 % (V) |
| | Lower explosion limit: 0.9 % (V) |
| k) Vapour pressure | 4.6 hPa at 20 °C |
| | 6.4 hPa at 25 °C |
| l) Vapour density | 4.5 - (Air = 1.0) |
| m) Relative density | 0.764 g/cm3 at 25 °C |
| n) Water solubility | 0.113 g/l at 20 °C |
| o) Partition coefficient: n-octanol/water | log Pow: 3.35 |
| p) Auto-ignition temperature | 194 °C |
| | at 1,013 hPa |
| q) Decomposition temperature | No data available |
| r) Viscosity | No data available |
| s) Explosive properties | No data available |
| t) Oxidizing properties | No data available |
9.2 Other safety information
Relative vapour density 4.5 - (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
Heat, flames and sparks.

10.5 Incompatible materials
Oxidizing agents, Strong acids

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 - 7,400 mg/kg(Dibutyl ether)
(OECD Test Guideline 401)
LC50 Inhalation - Rat - male - 4 h - 21,600 mg/m3(Dibutyl ether)
(OECD Test Guideline 403)
LD50 Dermal - Rabbit - male - 7,741 mg/kg(Dibutyl ether)
(OECD Test Guideline 402)

Skin corrosion/irritation
No data available(Dibutyl ether)

Serious eye damage/eye irritation
No data available(Dibutyl ether)

Respiratory or skin sensitisation
- Guinea pig(Dibutyl ether)
Result: Does not cause skin sensitisation.
(OECD Test Guideline 406)

Germ cell mutagenicity
Ames test(Dibutyl ether)
Salmonella typhimurium
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(Dibutyl ether)

Specific target organ toxicity - single exposure
No data available(Dibutyl ether)

Specific target organ toxicity - repeated exposure
No data available
Aspiration hazard
No data available (Dibutyl ether)

Additional Information
Repeated dose toxicity - Rat - male - Oral - No observed adverse effect level - 200 mg/kg (Dibutyl ether)
RTECS: EK5425000
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated. (Dibutyl ether)

SECTION 12: Ecological information

12.1 Toxicity
Toxicity to fish
flow-through test LC50 - Pimephales promelas (fathead minnow) - 32.3 mg/l - 96.0 h (Dibutyl ether)
(OECD Test Guideline 203)

Toxicity to daphnia and other aquatic Invertebrates
static test EC50 - Daphnia magna (Water flea) - 26 mg/l - 48 h (Dibutyl ether)

Toxicity to algae
Growth inhibition EC50 - Pseudokirchneriella subcapitata (green algae) - ca. 19.1 mg/l - 72 h (Dibutyl ether)
(OECD Test Guideline 201)

Toxicity to bacteria
Respiration inhibition EC50 - activated sludge - > 1,000 mg/l - 30 min (Dibutyl ether)
(OECD Test Guideline 209)

12.2 Persistence and degradability
Biodegradability
aerobic - Exposure time 28 d (Dibutyl ether)
Result: 5 % - Not readily biodegradable.
(OECD Test Guideline 301D)

12.3 Bioaccumulative potential
Bioaccumulation
Cyprinus carpio (Carp) - 42 d - 0.2 mg/l (Dibutyl ether)

Bioconcentration factor (BCF): 47 - 83
(OECD Test Guideline 305C)

12.4 Mobility in soil
No data available (Dibutyl ether)

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
Harmful to aquatic life with long lasting effects.

Avoid release to the environment.

SECTION 13: Disposal considerations

13.1 Waste treatment methods
Product
Burn in a chemical incinerator equipped with an afterburner and scrubber b highly flammable. 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: 1149  IMDG: 1149  IATA: 1149

14.2 UN proper shipping name
ADR/RID:  DIBUTYL ETHERS
IMDG:  DIBUTYL ETHERS
IATA:  Dibutyl ethers

14.3 Transport hazard class(es)
ADR/RID: 3  IMDG: 3  IATA: 3

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

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
For this product a chemical safety assessment was not carried out

SECTION 16: Other information

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

H226  Flammable liquid and vapour.
H315  Causes skin irritation.
H319  Causes serious eye irritation.
H335  May cause respiratory irritation.
H412  Harmful to aquatic life with long lasting effects.

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.