

## Chemical Safety Data Sheet MSDS / SDS

## Bis(2-ethylhexyl) phthalate SDS

Revision Date:2024-04-25 Revision Number:1

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

Product name: Bis(2-ethylhexyl) phthalate

CAS: 117-81-7

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

Relevant identified uses: For R&amp;D use only. Not for medicinal, household or other use.

Uses advised against: none

**Company Identification**

Company: Chemicalbook.in

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**SECTION 2: Hazards identification****Classification of the substance or mixture**

Reproductive toxicity, Category 1B

## GHS label elements, including precautionary statements

Pictogram(s)



Signal word

Danger

Hazard statement(s)

none

Precautionary statement(s)

### Prevention

P203 Obtain, read and follow all safety instructions before use.

P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...

### Response

P318 IF exposed or concerned, get medical advice.

### Storage

P405 Store locked up.

### Disposal

P501 Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

### Other hazards which do not result in classification

no data available

## SECTION 3: Composition/information on ingredients

### Substance

Chemical name: Bis(2-ethylhexyl) phthalate

Common names and synonyms: Bis(2-ethylhexyl) phthalate

CAS number: 117-81-7  
EC number: 204-211-0  
Concentration: 100%

#### **SECTION 4: First aid measures**

##### **Description of necessary first-aid measures**

###### **If inhaled**

Fresh air, rest.

###### **Following skin contact**

Remove contaminated clothes. Rinse skin with plenty of water or shower.

###### **Following eye contact**

First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then refer for medical attention.

###### **Following ingestion**

Rinse mouth. Give one or two glasses of water to drink.

##### **Most important symptoms/effects, acute and delayed**

Inhalation can cause nausea and irritation of nose and throat. Contact of liquid with eyes or skin causes irritation. Ingestion can cause abdominal cramps, nausea and diarrhea. (USCG, 1999)

##### **Indication of immediate medical attention and special treatment needed, if necessary**

Immediate first aid: Ensure that adequate decontamination has been carried out. If patient is not breathing, start artificial respiration, preferably with a demand-valve resuscitator, bag-valve-mask device, or pocket mask, as trained. Perform CPR as necessary. Immediately flush contaminated eyes with gently flowing water. Do not induce vomiting. If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain an open airway and prevent aspiration. Keep patient quiet and maintain normal body temperature. Obtain medical attention. Esters and related compounds

#### **SECTION 5: Firefighting measures**

##### **Suitable extinguishing media**

Dry powder, carbon dioxide, foam. Water or foam may cause frothing.

#### **Specific hazards arising from the chemical**

Special Hazards of Combustion Products: Irritating vapors and toxic gases, such as carbon dioxide and carbon monoxide, may be formed when involved in fire. Behavior in Fire: Overheating of containers during fire can result in rupture. (USCG, 1999)

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

Use water spray, foam, powder, carbon dioxide.

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

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

Personal protection: chemical protection suit. Remove all ignition sources. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations.

#### **Environmental precautions**

Personal protection: chemical protection suit. Remove all ignition sources. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations.

#### **Methods and materials for containment and cleaning up**

Accident Release Measures. Personal precautions, protective equipment and emergency procedures: Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Environmental precautions: Prevent further leakage or spillage if safe to do so. Do not let product enter drains. 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.

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

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

NO open flames. Handling in a well ventilated place. Wear suitable protective clothing. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Use non-sparking tools. Prevent fire caused by electrostatic discharge steam.

### Conditions for safe storage, including any incompatibilities

Separated from strong oxidants, acids, alkalis and nitrates. Cool. Dry. Well closed. 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.

## SECTION 8: Exposure controls/personal protection

### Control parameters

### Occupational Exposure limit values

TLV: 5 mg/m<sup>3</sup>, as TWA; A3 (confirmed animal carcinogen with unknown relevance to humans). MAK: (inhalable fraction): 2 mg/m<sup>3</sup>; peak limitation category: II(2); skin absorption (H); carcinogen category: 4; pregnancy risk group: C

### Biological limit values

no data available

### Appropriate engineering controls

Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Set up emergency exits and the risk-elimination area.

### Individual protection measures, such as personal protective equipment (PPE)

#### Eye/face protection

Wear safety goggles.

#### Skin protection

Protective gloves.

#### Respiratory protection

Use ventilation, local exhaust or breathing protection.

#### Thermal hazards

no data available

## SECTION 9: Physical and chemical properties and safety characteristics

Physical state:	Liquid. Oily.
Colour:	Colourless.
Odour:	Slight odor
Melting point/freezing point:	-47 °C.
Boiling point or initial boiling point and boiling range:	374.15 °C. Atm. press.:1 022 mBar.;363.52 °C. Atm. press.:750 mBar.;352.76 °C. Atm. press.:500 mBar.
Flammability:	Class IIIB Combustible Liquid: Fl.P. at or above 200°F.
Lower and upper explosion limit/flammability limit:	Lower flammable limit: 0.3% by volume at 474 deg F (245 deg C)
Flash point:	207°C
Auto-ignition temperature:	735° F (NTP, 1992)
Decomposition temperature:	no data available
pH:	no data available
Kinematic viscosity:	dynamic viscosity (in mPa s) = 81. Temperature:20°C.
Solubility:	less than 0.1 mg/mL at 72° F (NTP, 1992)
Partition coefficient n-octanol/water:	log Pow = 7.5.
Vapour pressure:	0 Pa. Temperature:20 °C. Remarks:l.e. 6 x10 E-9 mbar.
Density and/or relative density:	0.99. Temperature:20 °C.
Relative vapour density:	>16 (vs air)

Particle characteristics: no data available

## SECTION 10: Stability and reactivity

### Reactivity

NIOSH considers bis-(2-ethylhexyl)-phthalate to be a potential occupational carcinogen. Decomposes on heating. This produces irritating fumes. Reacts with strong oxidants, acids, alkalis and nitrates.

### Chemical stability

Stable

### Possibility of hazardous reactions

DI(2-ETHYLHEXYL) PHTHALATE reacts with acids to liberate heat along with alcohols and acids. Strong oxidizing acids may cause a vigorous reaction that is sufficiently exothermic to ignite the reaction products. Heat is also generated by the interaction of esters with caustic solutions. Flammable hydrogen is generated by mixing with alkali metals and hydrides. Incompatible with nitrates (NTP, 1992).

### Conditions to avoid

no data available

### Incompatible materials

Strong oxidizing agents

### Hazardous decomposition products

When heated to decomp it emits acrid smoke.

## SECTION 11: Toxicological information

### Acute toxicity

Oral: LD0 - rat (male/female) - > 20 000 mg/kg bw.

Inhalation: LC0 - rat (male/female) - > 10 620 mg/m<sup>3</sup> air (nominal).

Dermal: LD50 - rabbit - ca. 20 mL/kg bw.

**Skin corrosion/irritation**

no data available

**Serious eye damage/irritation**

no data available

**Respiratory or skin sensitization**

no data available

**Germ cell mutagenicity**

no data available

**Carcinogenicity**

NTP: Reasonably anticipated to be a human carcinogen

**Reproductive toxicity**

No information is available on the reproductive or developmental effects of DEHP in humans. No reproductive or developmental effects were observed in animal studies from inhalation exposure to DEHP. DEHP has been demonstrated to cause developmental toxicity, such as birth defects, in rats and mice from oral exposure. Reproductive effects, such as decreased fertility, proportion of pups born alive, and testicular weights and tubular atrophy, have also been noted from oral exposure to DEHP in animals.

**STOT-single exposure**

The substance is irritating to the eyes and respiratory tract.

**STOT-repeated exposure**

The substance may have effects on the testes. Animal tests show that this substance possibly causes toxicity to human reproduction or development.

**Aspiration hazard**



Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly on spraying.

## SECTION 12: Ecological information

### Toxicity

Toxicity to fish: LC50 - fish species - > 0.16 mg/L - 96 h.

Toxicity to daphnia and other aquatic invertebrates: EC0 - *Daphnia magna* - 101.8 - 165.65 µg/L - 48 h.

Toxicity to algae: EC50 - *Pseudokirchneriella subcapitata* (previous names: *Raphidocelis subcapitata*, *Selenastrum capricornutum*) - > 0.003 mg/L - 72 h.

Toxicity to microorganisms: NOEC - activated sludge of a predominantly domestic sewage - 1 000 mg/L - 3 h.

### Persistence and degradability

AEROBIC: Bis(2-ethylhexyl) phthalate was degraded with gradual adaptation; 0, 43, 80, and 95% biodegradation were observed in the original culture, first, second, and third weekly subcultures, respectively, in static flask screening tests using a settled domestic wastewater inoculum(1). A biodegradation half-life of 0.8 days has been reported for bis(2-ethylhexyl) phthalate in activated sludge(2). Bis(2-ethylhexyl) phthalate subjected to static culture flask biodegradability tests was almost completely bio-oxidized at the end of 3 weeks(3). Greater than 64% removal of bis(2-ethylhexyl) phthalate was observed in a low-loaded activated sludge reactor and a biological aerated filter(4). In a biodegradability screening test using an activated sludge inoculum based on carbon dioxide evolution, bis(2-ethylhexyl) phthalate reached 4 to 5% theoretical amount of CO<sub>2</sub> after 28 days at an initial carbon content of 34.1 to 38.7 mg/L(5). In a trickling filter system and an activated sludge system, 76 and 71% removal of bis(2-ethylhexyl) phthalate was observed, respectively(6). A mean of 81.5% biodegradation of bis(2-ethylhexyl) phthalate was observed after 24 hours in semi-continuous activated sludge tests; 4 days were required to reach >90% biodegradation in the activated sludge die-away portion of this test(7). Bis(2-ethylhexyl) phthalate had a half-life of 23 days in wastewater treatment plants(8). Bis(2-ethylhexyl) phthalate was degraded 82% in 28 days using the modified Sturm test(9). Aerobic biodegradation products of bis(2-ethylhexyl) phthalate incubated in sewage sludge include 2-ethylhexanol, 2-ethylhexanal and 2-ethylhexanoic acid(10).

### Bioaccumulative potential

Experimental BCF values range from a log 2 to 4 in fish and invertebrates(1-7). Log BCFs of 2.93 and 2.06 were measured in fathead minnows (*Pimephales promelas*)(2) and bluegill sunfish (*Lepomis macrochirus*), respectively(3). BCF values of <0.7-29.7 and 1-3.4 were reported using carp (*Cyprinus carpio*) which were exposed over an 8-week period to bis(2-ethylhexyl) phthalate concentrations of 0.1 and 1.0 ppm, respectively(8). According to a classification scheme(9), these BCFs suggest that bioconcentration in aquatic organisms is low to very high(SRC). Experiments with rainbow trout (*Salmo gairdneri*) showed that the majority of (14)C-bis(2-ethylhexyl) phthalate did not reach the systemic circulation of the fish, but was present in the exposure water as metabolites as a result of pre-systemic branchial metabolism of this compound during uptake from the water to the blood(10). Biota-sediment accumulation factors were 1.0, 0.5 and 1.3 in roach (*Rutilus rutilus*), chub (*Leuciscus cephalus*) and perch

(*Perca fluviatilis*), respectively; fish were collected from the Orge River, France from Jul 2009 to Apr 2010(11). BCFs of 0.02-0.11 were reported for bis(2-ethylhexyl) phthalate in water spinach (*Ipomoea aquatica*) grown under different conditions on sludge from waste water treatment plants in China(12). BCFs of 6.71-93.70 L/kg were reported for bis(2-ethylhexyl) phthalate in the submerged water plant *Potamogeton crispus* L.; plants were grown in the Haihe River, China from Mar to May 2008(13).

#### **Mobility in soil**

Log Koc values of 4 to 5 have been reported for bis(2-ethylhexyl) phthalate in clays and sediments(1). A Koc of 87,420 was measured in soil from Broome County, NY, for bis(2-ethylhexyl) phthalate(2). Bis(2-ethylhexyl) phthalate had measured log Koc values of 5.17-6.23(3), 5.72(4), 4.94(5), 5.68 and 5.72(6). Soil/sediment Koc values range from 87,420 to 510,000(7). Suspended solid Koc values range from 22,000 to  $1 \times 10^6$ (7). According to a recommended classification scheme(8), these measured Koc values suggest that bis(2-ethylhexyl) phthalate is expected to be immobile in soil(SRC).

#### **Other adverse effects**

no data available

### **SECTION 13: Disposal considerations**

#### **Disposal methods**

#### **Product**

The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

#### **Contaminated packaging**

Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

### **SECTION 14: Transport information**

#### **UN Number**

ADR/RID: Not dangerous goods. (For reference only, please check.)

IMDG: Not dangerous goods. (For reference only, please check.)

IATA: Not dangerous goods. (For reference only, please check.)

### **UN Proper Shipping Name**

ADR/RID: Not dangerous goods. (For reference only, please check.)

IMDG: Not dangerous goods. (For reference only, please check.)

IATA: Not dangerous goods. (For reference only, please check.)

### **Transport hazard class(es)**

ADR/RID: Not dangerous goods. (For reference only, please check.)

IMDG: Not dangerous goods. (For reference only, please check.)

IATA: Not dangerous goods. (For reference only, please check.)

### **Packing group, if applicable**

ADR/RID: Not dangerous goods. (For reference only, please check.)

IMDG: Not dangerous goods. (For reference only, please check.)

IATA: Not dangerous goods. (For reference only, please check.)

### **Environmental hazards**

ADR/RID: No

IMDG: No

IATA: No

### **Special precautions for user**

no data available

### **Transport in bulk according to IMO instruments**

no data available

## **SECTION 15: Regulatory information**

**Safety, health and environmental regulations specific for the product in question**

**European Inventory of Existing Commercial Chemical Substances (EINECS)**

Listed.

**EC Inventory**

Listed.

**United States Toxic Substances Control Act (TSCA) Inventory**

Listed.

**China Catalog of Hazardous chemicals 2015**

Not Listed.

**New Zealand Inventory of Chemicals (NZIoC)**

Listed.

**(PICCS)**

Listed.

**Vietnam National Chemical Inventory**

Listed.

**IECSC)**

Listed.

**Korea Existing Chemicals List (KECL)**

Listed.

**SECTION 16: Other information**

**Abbreviations and acronyms**

CAS: Chemical Abstracts Service

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road

RID: Regulation concerning the International Carriage of Dangerous Goods by Rail

IMDG: International Maritime Dangerous Goods

IATA: International Air Transportation Association

TWA: Time Weighted Average

STEL: Short term exposure limit

LC50: Lethal Concentration 50%

LD50: Lethal Dose 50%

EC50: Effective Concentration 50%

### References

IPCS - The International Chemical Safety Cards (ICSC), website: <http://www.ilo.org/dyn/icsc/showcard.home>

HSDB - Hazardous Substances Data Bank, website: <https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm>

IARC - International Agency for Research on Cancer, website: <http://www.iarc.fr/>

eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website:  
[http://www.echemportal.org/echemportal/index?pageID=0&request\\_locale=en](http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en)

CAMEO Chemicals, website: <http://cameochemicals.noaa.gov/search/simple>

ChemIDplus, website: <http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp>

ERG - Emergency Response Guidebook by U.S. Department of Transportation, website:  
<http://www.phmsa.dot.gov/hazmat/library/erg>

Germany GESTIS-database on hazard substance, website: <http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp>

ECHA - European Chemicals Agency, website: <https://echa.europa.eu/>

Disclaimer: 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. We as supplier shall not be held liable for any