Chemical Safety Data Sheet MSDS / SDS

Bis(2-ethylhexyl) phthalate SDS

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

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&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/m3, as TWA; A3 (confirmed animal carcinogen with unknown relevance to humans).MAK: (inhalable fraction): 2 mg/m3; 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:I.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/m3 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 CO2 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 1X10+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

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/