Chemical Safety Data Sheet MSDS / SDS

Bis(2-ethylhexyl) adipate 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) adipate

CAS: 103-23-1

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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Telephone: +91 9550333722

SECTION 2: Hazards identification

Classification of the substance or mixture

Not classified.

GHS label elements, including precautionary statements

Signal word: No signal word

Hazard statement(s)

none

Precautionary statement(s)

Prevention

none

Response

none

Storage

none

Disposal

none

Other hazards which do not result in classification

no data available

SECTION 3: Composition/information on ingredients

Substance

Chemical name:	Bis(2-ethylhexyl) adipate
Common names and synonyms:	Bis(2-ethylhexyl) adipate
CAS number:	103-23-1
EC number:	203-090-1
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 and then wash skin with water and soap.

Following eye contact

Rinse with plenty of water (remove contact lenses if easily possible).

Following ingestion

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

Most important symptoms/effects, acute and delayed

Liquid may cause mild eye irritation. Repeated or prolonged skin contact may cause irritation. (USCG, 1999)

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

Absorption, Distribution and Excretion

The absorption, distribution, and elimination of DEHA were studied in mice and rats. Male Sprague Dawley rats, male NMRI mice, and pregnant female NMRI mice on day 17 of gestation were administered (14)C labeled DEHA dissolved in dimethyl sulfoxide or corn oil iv or intragastrically. The DEHA was labeled on the carbonyl or alcohol moiety. Animals were killed 5 min to 4 days after dosing, and the tissue distribution of (14)C activity was determined by whole body autoradiography. The tissue distribution of (14)C activity from carbonyl labeled DEHA was similar in all animals. Highest levels of radioactivity were observed in the body fat, liver, and kidney after intragastrically or iv administration. (14)C activity from alcohol labeled DEHA was found in the bronchi of male mice. In pregnant mice, (14)C activity was observed in the fetal liver, intestine, and bone marrow during the first 24 hr after carbonyl labeled DEHA was given. Very little radiolabel was found in fetuses of mice given alcohol labeled DEHA. No DEHA derived radioactivity was found in mice 4 days after dosing. Blood DEHA concn in rats increased faster and were two or three times higher when the dose was given in DMSO rather than corn oil. Significant amounts of DEHA were excreted in the bile of rats treated with DEHA in DMSO. Very little biliary elimination of radiolabel occurred in animals given carbonyl labeled DEHA. DEHA was excreted in the urine, the amounts being smaller in animals used in the bile collection experiments. The vehicle had very little effect on the amount excreted. DEHA is poorly absorbed from an oil solution.

SECTION 5: Firefighting measures

Suitable extinguishing media

Foam, carbon dioxide, dry chem .

Specific hazards arising from the chemical

Behavior in Fire: Use water spray to cool exposed containers. (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: filter respirator for organic gases and vapours adapted to the airborne concentration of the substance. Do NOT let this chemical enter the environment. Collect leaking liquid in sealable containers. Carefully collect remainder. Then store and dispose of according to local regulations.

Environmental precautions

Personal protection: filter respirator for organic gases and vapours adapted to the airborne concentration of the substance. Do NOT let this chemical enter the environment. Collect leaking liquid in sealable containers. Carefully collect remainder. Then store and dispose of according to local regulations.

Methods and materials for containment and cleaning up

Collect and arrange disposal. Keep the chemical in suitable and closed containers for disposal. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment. Adhered or collected material should be promptly disposed of, in accordance with appropriate laws and regulations.

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 and strong acids. Provision to contain effluent from fire extinguishing. Store in an area without drain or sewer access.IN GENERAL, MATERIALS ... TOXIC AS STORED OR WHICH CAN DECOMP INTO TOXIC COMPONENTS ... SHOULD BE STORED IN COOL ... VENTILATED PLACE, OUT OF ... SUN, AWAY FROM ... FIRE HAZARD ... BE PERIODICALLY INSPECTED & MONITORED. INCOMPATIBLE MATERIALS SHOULD BE ISOLATED.

SECTION 8: Exposure controls/personal protection

Control parameters

Occupational Exposure limit values

Component	Bis(2-ethylhexyl) adipate			
CAS No.	103-23-1			
	Limit value - Eight hours		**Limit value - Short term**	
	ppm	mg/m^3	ppm	mg/m^3
Poland	?	400	?	?
	Remarks			

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 spectacles.

Skin protection

Protective gloves.

Respiratory protection

Use ventilation.

Thermal hazards

no data available

SECTION 9: Physical and chemical properties and safety characteristics

Physical state:	Liquid.
Colour:	Light colored.
Odour:	SLIGHT AROMATIC SMELL
Melting point/freezing point:	-67.8 °C.
Boiling point or initial boiling point and boiling range:	377.88 °C. Atm. press.: 1 013 hPa. Remarks: Extrapolated value.
Flammability:	Combustible.
Lower and upper explosion limit/flammability limit:	LOWER FLAMMABLE LIMIT: 0.4% BY VOLUME @ 242 DEG C
Flash point:	196 °C. Atm. press.: 1 013.25 hPa.
Auto-ignition temperature:	377 °C. Atm. press.: 1 013.25 hPa.
Decomposition temperature:	no data available
pH:	Acidity: 0.25 (meg/100 gm. max)
Kinematic viscosity:	dynamic viscosity (in mPa s) = 13.7. Temperature: 20°C.
Solubility:	less than 0.1 mg/mL at 72° F (NTP, 1992)
Partition coefficient n-octanol/water:	log Pow = 8.94. Temperature: 25 °C. Remarks: PH value is not reported.

Vapour pressure:	Ca. 0 hPa. Temperature:20 °C. Remarks:Extrpolated value.
Density and/or relative density:	0.92 g/cm3. Temperature:20 °C.
Relative vapour density:	12.8 (NTP, 1992) (Relative to Air)
Particle characteristics:	no data available

SECTION 10: Stability and reactivity

Reactivity

Reacts with strong oxidants and strong acids. This generates fire hazard.

Chemical stability

no data available

Possibility of hazardous reactions

SLIGHT, WHEN EXPOSED TO HEAT OR FLAME; CAN REACT WITH OXIDIZING MATERIALS.BIS(2-ETHYLHEXYL) ADIPATE is an ester. Esters react 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 esters with alkali metals and hydrides. Can generate electrostatic charges. [Handling Chemicals Safely 1980. p. 250]. This chemical is incompatible with oxidizing materials and water. It is also incompatible with nitrates. (NTP, 1992)

Conditions to avoid

no data available

Incompatible materials

no data available

Hazardous decomposition products

When heated to decomposition it emits acrid smoke and irritating fumes.

SECTION 11: Toxicological information

Acute toxicity

Oral: LD50 - rat (male/female) - > 20 000 mg/kg bw. Remarks:The estimated LD50 was 45 g/kg for males and 24 .6 g/kg for females.

Inhalation: LC50 - rat (male/female) - > 5.7 mg/L air.

Dermal: no data available

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

No data are available in humans. Limited evidence of carcinogenicity in animals. OVERALL EVALUATION: Group 3: The agent is not classifiable as to its carcinogenicity to humans.

Reproductive toxicity

no data available

STOT-single exposure

The substance is mildly irritating to the eyes. If swallowed the substance easily enters the airways and could result in aspiration pneumonitis.

STOT-repeated exposure

no data available

Aspiration hazard

No indication can be given about the rate at which a harmful concentration of this substance in the air is reached on evaporation at 20°C.

SECTION 12: Ecological information

Toxicity

Toxicity to fish: LC50 - Oncorhynchus mykiss, Lepomis macrochirus, Pimephales promelas - > 0.78 mg/L - 96 h.

Toxicity to daphnia and other aquatic invertebrates: EC50 - Daphnia magna - > 500 mg/L - 48 h.

Toxicity to algae: EC50 - Desmodesmus subspicatus (previous name: Scenedesmus subspicatus) - > 500 mg/L - 72 h.

Toxicity to microorganisms: EC50 - activated sludge - > 350 mg/L - 3 h. Remarks:Respiration rate.

Persistence and degradability

AEROBIC: In a semi-continuous activated sludge method used to simulate sewage treatment plant biodegradation, bis(2-ethylhexyl) adipate was observed to undergo primary degradation of 65-96% (at concns of 5 and 20 mg added/24 hr)(1); in a CO2 evolution study, bis(2-ethylhexyl) adipate was observed to undergo an ultimate degradation of 94% over a 35-day incubation period which corresponds to a first-order half-life of 2.7 days(1). Bis(2-ethylhexyl) adipate, present at 100 mg/l, reached 67-74% of its theoretical BOD in 4 weeks using an activated sludge inoculum at 30 mg/l and the Japanese MITI test(2).

Bioaccumulative potential

A whole-fish BCF of 27 was observed for blue-gill fish exposed to bis(2-ethylhexyl) adipate levels of 250 ug/l for a 28-day period(1). According to a classification scheme(2), this measured BCF value suggests the potential for bioconcentration in aquatic organisms is low.

Mobility in soil

Using a structure estimation method based on molecular connectivity indices(1), the Koc for bis(2-ethylhexyl) adipate can be estimated to be 49,000(SRC). According to a classification scheme(2), this estimated Koc value suggests that bis(2-ethylhexyl) adipate is expected to be immobile in soil.

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/

Other Information

Refer for medical attention if breathing difficulties and/or fever develop.