

Chemical Safety Data Sheet MSDS / SDS

Dibutyl 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: Dibutyl phthalate

CAS: 84-74-2

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**Hazardous to the aquatic environment, short-term (Acute) - Category Acute 1
Reproductive toxicity, Category 1B

GHS label elements, including precautionary statements

Pictogram(s)



Signal word

Danger

Hazard statement(s)

H400 Very toxic to aquatic life

Precautionary statement(s)

Prevention

P273 Avoid release to the environment.

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

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

Response

P391 Collect spillage.

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: Dibutyl phthalate

Common names and synonyms:	Dibutyl phthalate
CAS number:	84-74-2
EC number:	201-557-4
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. Refer for medical attention .

Most important symptoms/effects, acute and delayed

Excerpt from ERG Guide 171 [Substances (Low to Moderate Hazard)]: Inhalation of material may be harmful. Contact may cause burns to skin and eyes. Inhalation of Asbestos dust may have a damaging effect on the lungs. Fire may produce irritating, corrosive and/or toxic gases. Some liquids produce vapors that may cause dizziness or suffocation. Runoff from fire control may cause pollution. (ERG, 2016)

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

Remove to fresh air. Wash affected skin areas with water. Flush eyes with water.

SECTION 5: Firefighting measures

Suitable extinguishing media

Extinguish with dry chemicals ... or carbon dioxide.

Specific hazards arising from the chemical

Combustible. (USCG, 1999)

Special protective actions for fire-fighters

Use foam, dry powder, carbon dioxide.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

Do NOT let this chemical enter the environment. Collect leaking and spilled liquid in covered containers as far as possible. Absorb remaining liquid in vermiculite, sand or inert absorbent. Then store and dispose of according to local regulations.

Environmental precautions

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Methods and materials for containment and cleaning up

1) Remove all ignition sources. 2) Ventilate area ... 3) for small quant, absorb on paper towels. Evaporate in a safe place (such as fume hood). Allow sufficient time for evaporating vapors to completely clear hood ductwork. Burn paper in a suitable location ... large quant ... atomized in ... combustion chamber.

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. 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.MAK: 0.58 mg/m³, 0.05 ppm; peak limitation category: I(2); carcinogen category: 3B; 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.

Thermal hazards

no data available

SECTION 9: Physical and chemical properties and safety characteristics

Physical state:	N-butyl phthalate is a colorless oily liquid. It is insoluble in water. The primary hazard is the threat to the environment. Immediate steps should be taken to limit its spread to the environment. Since it is a liquid it can easily penetrate the soil and contaminate groundwater and nearby streams. It is combustible though it may take some effort to ignite. It is used in paints and plastics and as a reaction media for chemical reactions.
Colour:	Colorless to faint yellow, oily liquid
Odour:	Slight, aromatic odor
Melting point/freezing point:	-35°C
Boiling point or initial boiling point and boiling range:	340°C(lit.)
Flammability:	Class IIIB Combustible Liquid: Fl.P. at or above 200°F.
Lower and upper explosion limit/flammability limit:	Lower flammable limit: 0.5% by volume at 456 deg F (235 deg C)
Flash point:	171°C
Auto-ignition temperature:	756°F
Decomposition temperature:	no data available
pH:	no data available
Kinematic viscosity:	0.203 poise at 20 deg C
Solubility:	less than 1 mg/mL at 68° F (NTP, 1992)
Partition coefficient n-octanol/water:	log Kow = 4.50
Vapour pressure:	1 mm Hg (147 °C)
Density and/or relative density:	1.043g/mL at 25°C(lit.)

Relative vapour density:	9.6 (vs air)
Particle characteristics:	no data available

SECTION 10: Stability and reactivity

Reactivity

Decomposes on burning. This produces toxic and irritating fumes (phthalic anhydride - see ICSC 0315). Reacts with strong oxidants.

Chemical stability

Stable under recommended storage conditions.

Possibility of hazardous reactions

CombustibleAs a result of flow, agitation, etc., electrostatic charges can be generated.N-BUTYL PHTHALATE 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. Avoid contact with strong oxidizing agents and strong bases. Will not polymerize. (USCG, 1999). Can generate electrostatic charges. [Handling Chemicals Safely 1980. p. 250].

Conditions to avoid

no data available

Incompatible materials

Liquid chlorine reacts explosively with ...dibutyl phthalate.

Hazardous decomposition products

When heated to decomp it emits acrid smoke and fumes.

SECTION 11: Toxicological information

Acute toxicity

Oral: LD50 Mouse oral 5289 mg/kg.

Inhalation: LC50 Mouse inhalation 25 g/cu m/2 hr

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

Cancer Classification: Group D Not Classifiable as to Human Carcinogenicity

Reproductive toxicity

No studies are available regarding the reproductive or developmental effects of dibutyl phthalate in humans from inhalation or oral exposure. Animal studies have reported developmental effects, such as reduced fetal weight, decreased number of viable litters, and birth defects (neural tube defects) in mice exposed orally to dibutyl phthalate. Reproductive effects, such as decreased spermatogenesis and testes weight, have also been reported in oral animal studies.

STOT-single exposure

no data available

STOT-repeated exposure

Animal tests show that this substance possibly causes toxicity to human reproduction or development.

Aspiration hazard

A harmful contamination of the air will not or will only very slowly be reached on evaporation of this substance at 20°C.

SECTION 12: Ecological information

Toxicity

Toxicity to fish: LC50; Species: *Brachydanio rerio* (Zebrafish); Conditions: semi-static; Concentration: 2.2 mg/L for 96 hr /From table

Toxicity to daphnia and other aquatic invertebrates: EC50; Species: *Daphnia magna* (Water flea); Conditions: freshwater, renewal, 25 deg C, pH >7; Concentration: 17000 ug/L for 24 hr; Effect: behavior, equilibrium /formulated product

Toxicity to algae: LC50; Species: *Scenedesmus acutus* var. *acutus* (Green Algae) 5-6x 10⁵ cells/mL; Conditions: freshwater, static, 25 deg C; Concentration: 210 ug/L for 96 hr

Toxicity to microorganisms: no data available

Persistence and degradability

AEROBIC: In a shake flask biodegradation test, after 28 days 68 to >99% of the dibutyl phthalate had disappeared and 80.6 to >99% was converted to CO₂ with a lag period averaged 4.5 days(1). Dibutyl phthalate was removed 60-70% in three treatment plants using activated sludge(2). A synthetic waste feedstock degraded 94% of an initial concentration of dibutyl phthalate in 12 days(3). Microbial cultures isolated from an industrial wastewater facility completely degraded dibutyl phthalate within 40 to 220 days depending upon the strain of the microorganisms used and concentration of the dibutyl phthalate sample(4). Batch experiments using enriched microbial cultures completely degraded dibutyl phthalate in 15 hours(5). Enriched microbial cultures isolated from a wastewater treatment facility resulted in 85% degradation of a 200 mg/L sample of dibutyl phthalate in 90 days(6). Dibutyl phthalate had a half-life of 1-23 days in wastewater treatment plants(7). Dibutyl phthalate was degraded 81% in 28 days using the modified Sturm test(8). Dibutyl phthalate, present at 100 mg/L, had a biodegradation rate of 0.17/hour at 25 deg C using an activated sludge inoculum at 30 mg/L taken from Little Miami wastewater treatment plant in Cincinnati, OH(9). Dibutyl phthalate, present at 10-100 mg/L, biodegraded >90% in 8 days using an inoculum of 6 g/L of activated sludge, giving a half-life of 45.6 hours(10). Dibutyl phthalate had biodegradation half-lives in acclimated sludge of 45.3, 45.3, 46.8, and 47.5 hours at starting concentrations of 50, 100, 150, and 200 mg/L, respectively(11). Dibutyl phthalate, present at 100 mg/L, reached 69% of its theoretical BOD in 2 weeks using an activated sludge inoculum at 30 mg/L in the Japanese MITI test(12).

Bioaccumulative potential

Experimental BCF values of 12(1), 167(2) and 172(2) were reported for fathead minnows (*Pimephales promelas*) for dibutyl phthalate. BCF values of 5.2-176 and 3.1-21.2 were reported using carp (*Cyprinus carpio*) which were exposed over an 8-week period to dibutyl phthalate concentrations of 0.015 and 0.05 ppm, respectively(3). Other reported BCF values for dibutyl phthalate

were 3.6 in carp(2) and 117 in bluegill fish (*Lepomis macrochirus*)(4). According to a classification scheme(5), BCF values of zero to 30 are low and from 100 to 1,000 are high(SRC). The log BCF of oysters exposed to 100 ug/L of dibutyl phthalate for 1 day was measured as 1.32(6). Dibutyl phthalate BCF values of 22 and 42 were reported for oysters(1). Experimental BCF values of 1,500, 31 and 3 were reported in shrimp for dibutyl phthalate(1). Other BCF values of 662, 624 and 3399 were reported for dibutyl phthalate in crustaceans, insects and algae, respectively(2). Biota-sediment accumulation factors for dibutyl phthalate were 5.5, 6.0 and 11.8 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(7). BCFs of 0.02-1.99 were reported for dibutyl phthalate in water spinach (*Ipomoea aquatica*) grown under different conditions on sludge from waste water treatment plants in China(8). BCFs of 4.82-83.65 L/kg were reported for dibutyl phthalate in the submerged water plant *Potamogeton crispus* L.; plants were grown in the Haihe River, China from Mar to May 2008(9). The BCF of dibutyl phthalate in the algae, *Chlorella vulgaris* was a maximum of 10,800 when grown in lake water(10).

Mobility in soil

A log Koc value of 3.14 was determined from measurements on soil samples from Broome County, NY(1-2). An experimental log Koc of 3.05 was determined from unsaturated soil columns(3). Dibutyl phthalate had measured log Koc values of 3.05-3.06 in Typic Haplaquept type loamy, sandy soil(4). According to a classification scheme(5), these Koc values suggest that dibutyl phthalate is expected to have low mobility in soil(SRC). A mean sediment log Koc value of 3.8 was calculated from the mean dibutyl phthalate concentration in water and suspended particulate matter from Lake Yssel, The Netherlands(6).

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: UN3082 (For reference only, please check.)

IMDG: UN3082 (For reference only, please check.)

IATA: UN3082 (For reference only, please check.)

UN Proper Shipping Name

ADR/RID: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (For reference only, please check.)

IMDG: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (For reference only, please check.)

IATA: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (For reference only, please check.)

Transport hazard class(es)

ADR/RID: 9 (For reference only, please check.)

IMDG: 9 (For reference only, please check.)

IATA: 9 (For reference only, please check.)

Packing group, if applicable

ADR/RID: III (For reference only, please check.)

IMDG: III (For reference only, please check.)

IATA: III (For reference only, please check.)

Environmental hazards

ADR/RID: Yes

IMDG: Yes

IATA: Yes

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?pagelD=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/>

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