ChemicalBook

Chemical Safety Data Sheet MSDS / SDS

Dibenz[a,h]anthracene

Revision Date:2025-01-11 Revision Number:1

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

Product identifier

Product name	: Dibenz[a,h]anthracene
CBnumber	: CB4372398
CAS	: 53-70-3
EINECS Number	: 200-181-8
Synonyms	: Dibenz[a,h]anthracene,Dibenzo(a,h)anthracene

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
Address	: Building 1, Huihuang International, Shangdi 10th Street, Haidian District, Beijing
Telephone	: 400-158-6606

SECTION 2: Hazards identification

Classification of the substance or mixture

Carcinogenicity, Category 1B

Hazardous to the aquatic environment, short-term (Acute) - Category Acute 1

Hazardous to the aquatic environment, long-term (Chronic) - Category Chronic 1

Label elements

Pictogram(s)

Signal word Danger

Hazard statement(s)

H341 Suspected of causing genetic defects

H350 May cause cancer

H373 May cause damage to organs through prolonged or repeated exposure

H410 Very toxic to aquatic life with long lasting effects

Precautionary statement(s)

P201 Obtain special instructions before use.

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P202 Do not handle until all safety precautions have been read and understood.

P260 Do not breathe dust/fume/gas/mist/vapours/spray.

P273 Avoid release to the environment.

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

P391 Collect spillage. Hazardous to the aquatic environment

P308+P313 IF exposed or concerned: Get medical advice/attention.

P405 Store locked up.

P501 Dispose of contents/container to.....

Prevention

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

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

P273 Avoid release to the environment.

Response

P318 IF exposed or concerned, get medical advice.

P391 Collect spillage.

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

no data available

SECTION 3: Composition/information on ingredients

Substance

Product name	: Dibenz[a,h]anthracene
Synonyms	: Dibenz[a,h]anthracene,Dibenzo(a,h)anthracene
CAS	: 53-70-3
EC number	: 200-181-8
MF	: C22H14
MW	: 278.35

SECTION 4: First aid measures

Description of first aid measures

If inhaled

Fresh air, rest. Seek medical attention if you feel unwell.

Following skin contact

Remove contaminated clothes. Rinse and then wash skin with water and soap.

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. Seek medical attention if you feel unwell.

Most important symptoms and effects, both acute and delayed

SYMPTOMS: Symptoms of exposure to this compound may include irritation. ACUTE/CHRONIC HAZARDS: This compound is harmful if swallowed or inhaled. It may cause irritation. When heated to decomposition it emits acrid smoke, irritating fumes and toxic fumes of carbon monoxide and carbon dioxide. (NTP, 1992)

Indication of any immediate medical attention and special treatment needed

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 if 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. Aromatic hydrocarbons and related compounds

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SECTION 5: Firefighting measures

Extinguishing media

Suitable extinguishing media: Use water spray, alcohol-resistant foam, dry chemical. or carbon dioxide.[Sigma-Aldrich; Safety Data Sheet for Dibenz

Specific Hazards Arising from the Chemical

Flash point data for this chemical are not available; however, it is probably combustible. (NTP, 1992)

Advice for firefighters

Use water spray, powder.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

Personal protection: particulate filter respirator adapted to the airborne concentration of the substance. Sweep spilled substance into sealable containers. If appropriate, moisten first to prevent dusting. Carefully collect remainder. Then store and dispose of according to local regulations. Do NOT let this chemical enter the environment.

Environmental precautions

Personal protection: particulate filter respirator adapted to the airborne concentration of the substance. Sweep spilled substance into sealable containers. If appropriate, moisten first to prevent dusting. Carefully collect remainder. Then store and dispose of according to local regulations. Do NOT let this chemical enter the environment.

Methods and materials for containment and cleaning up

ACCIDENTAL RELEASE MEASURES: Personal precautions, protective equipment and emergency procedures: Use personal protective

equipment. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust. 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. Methods and materials for containment and cleaning up: Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.[Sigma-Aldrich; Safety Data Sheet for Dibenz

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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

Well closed. Store in an area without drain or sewer access. Provision to contain effluent from fire extinguishing.Keep container tightly closed in a dry and well-ventilated place. Storage class (TRGS 510): Non-combustible, acute toxic Cat.3 / toxic hazardous materials or hazardous materials causing chronic effects.[Sigma-Aldrich; Safety Data Sheet for Dibenz

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SECTION 8: Exposure controls/personal protection

Control parameters

Occupational Exposure limit values

MAK: carcinogen category: 2; germ cell mutagen group: 3A; skin absorption (H)

Biological limit values

no data available

Exposure 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

Eye/face protection

Wear face shield or eye protection in combination with breathing protection.

Skin protection

Protective gloves. Protective clothing.

Respiratory protection

Use local exhaust or breathing protection.

Thermal hazards

no data available

SECTION 9: Physical and chemical properties

Information on basic physicochemical properties

Physical state	neat
Colour	Colorless plates or leaflets /recrystallized/ from acetic acid
Odour	no data available
Melting point/freezing point	266°C(lit.)
Boiling point or initial boiling point and boiling range	524°C(lit.)
Flammability	Combustible.
Lower and upper explosion limit/flammability limit	no data available
Flash point	78°C(lit.)
Auto-ignition temperature	no data available
Decomposition temperature	no data available
pH	no data available
Kinematic viscosity	no data available
Solubility	Soluble in petroleum ether, benzene, toluene, xylene, and oils (Windholz et al., 1983).
Partition coefficient n-octanol/water	log Kow = 6.50
Vapour pressure	2.78×10^{-12} mmHg at 25 °C (de Kruif, 1980)
Density and/or relative density	1.232g/cm3
Relative vapour density	no data available
Particle characteristics	no data available

SECTION 10: Stability and reactivity

Reactivity

NIOSH considers coal tar pitch volatiles to be potential occupational carcinogens. Coal tar pitch volatiles

Chemical stability

Stable under recommended storage conditions.[Sigma-Aldrich; Safety Data Sheet for Dibenz

Possibility of hazardous reactions

This chemical is a combustible solid.DIBENZ[A,H]ANTHRACENE is incompatible with strong oxidizing agents. Is oxidized by chromic acid and by osmium tetraoxide (NTP, 1992).

Conditions to avoid

no data available

Incompatible materials

Incompatible materials: Strong oxidizing agents.[Sigma-Aldrich; Safety Data Sheet for Dibenz

Hazardous decomposition products

Hazardous decomposition products formed under fire conditions - Carbon oxides.[Sigma-Aldrich; Safety Data Sheet for Dibenz

SECTION 11: Toxicological information

Acute toxicity

- Oral: no data available
- Inhalation: no data available
- 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. Sufficient evidence of carcinogenicity in animals. OVERALL EVALUATION: Group 2A: The agent is probably carcinogenic to humans.

Reproductive toxicity

no data available

STOT-single exposure

See Notes.

STOT-repeated exposure

The substance may have effects on the skin. This may result in photosensitization. This substance is probably carcinogenic to humans.

Aspiration hazard

A nuisance-causing concentration of airborne particles can be reached quickly when dispersed.

SECTION 12: Ecological information

Toxicity

Toxicity to fish: no data available

Toxicity to daphnia and other aquatic invertebrates: EC50; Species: Daphnia magna (Water flea) about 4 day old juvenile; Conditions: freshwater, static, 20 deg C, pH 8.0, alkalinity 250 mg/L CaCO3; Concentration: 496 ug/L for 24 hr (95% confidence interval: 360-778 ug/L); Effect: intoxication, immobilization /97% purity

Toxicity to algae: no data available

Toxicity to microorganisms: no data available

Persistence and degradability

AEROBIC: In Warburg tests, dibenz(a,h)anthracene reached 96% of its theoretical BOD in 144 hrs using activated sludge from municipal wastewater plants(1). The percent microbial mineralization of dibenz(a,h)anthracene by 6 fresh and 6 ripe composted municipal waste in 10 weeks as measured by (14)CO2 formation was 0.1-1.4% and 0.8-20.8%, respectively; the average was 0.4% and 12.6%, respectively(2). Half-lives of 18 and 21 days were reported for the degradation (method of degradation unknown) of dibenz(a,h)anthracene in soil systems(3). 20% biodegradation of dibenz(a,h)anthracene was observed in a town gas soil-water slurry reactor using a polynuclear aromatic hydrocarbon-acclimated mixed culture over a period of 5 weeks incubation(4). 30% biodegradation of dibenz(a,h)anthracene was observed after 2 weeks incubation using a mixed aerobic culture in liquid slurry intentionally contaminated with polynuclear aromatic hydrocarbons extracted from a town gas site(4). After 30 days of aeration and mixing in a batch slurry bioremediation process, inoculated with a mixed culture of hydrocarbon-degrading bacteria, the slurry-phase dibenz(a,h)anthracene concentration was reduced from 1,300 ug/kg on day 30 to 1,180 ug/kg on day 60(5). An initial increase in the slurry-phase dibenz(a,h)anthracene concentration observed during the first 30 days of the experiment was attributed to a solubilizing effect resulting from bacterial inoculation of the pollutant soil wash concentrates(5). The percent biodegradation of dibenz(a,h)anthracene by microbes in settled domestic wastewater in original culture, 1st, 2nd and 3rd subculture was (concentration): 82% (1.10 ppm), 82% (1.18 ppm), 82% (1.14 ppm) and 75% (1.22 ppm), respectively. 7 days were allowed between each measurement and subculture(6). Soil contaminated with dibenz(a,h)anthracene from the former gasworks site showed little biodegradation in a pilot scale bioslurry when normalized with anthracene biodegradation. The fraction of dibenz(a,h)anthracene left in soil after degradation relative to anthracene at 3, 7, 24, 29 days was 102, 95, 104, 93%, respectively(7). Additional field bioremediation efforts were also unsuccessful after one year of treatment followed by supercritical fluid extraction (SFE)(7). Dibenz(a,h)anthracene concentration of 12 mg/kg remained the same after 1 year of bioremediateion in the field. SFE was not able to remove dibenz(a,h)anthracene from the fast fraction and only reduced the concentration to 10 mg/kg by in the fast/moderate fraction(8).

Bioaccumulative potential

An estimated BCF of 9000 was calculated in fish for dibenz(a,h)anthracene(SRC), using a log Kow of 6.50(1) and a regression-derived equation(2). According to a classification scheme(3), this BCF suggests the potential for bioconcentration in aquatic organisms is very high(SRC), provided the compound is not metabolized by the organism(SRC). However, it may not bioconcentrate in aquatic organisms which contain microsomal oxidase, such as fish, as this enzyme enables the rapid metabolism of certain polycyclic aromatic hydrocarbons(4). A BCF of 10 was measured in golden ide fish (Leuciscus idus melanotus) that were exposed to dibenz(a,h)anthracene (0.05 mg/L) over a 3-day period(5). A measured fish biotransformation half-life of 1.63 days has been reported for dibenz(a,h)anthracene(6).

Mobility in soil

In sediments, the Koc of dibenz(a,h)anthracene ranged (11 values) from 8.1X10+5 to 3.1X10+6; in soil the Koc ranges (3 values) are from 5.7X10+5 to 3.0X10+6(1). The average Koc in sediments and soil is 2.0X10+6(1). The Koc of dibenz(a,h)anthracene in 16 historically contaminated sediments ranged from 1.1X10+6 to 4.8X10+7 with a median of 6.6X10+6(2). According to a classification scheme(3), these Koc values suggest that dibenz(a,h)anthracene is expected to be immobile in soil(SRC). An accumulation factor (concentration of chemical in sludge, ug/g/final concentration of chemical in water, ug/g) of 42,800 was observed for dibenz(a,h)anthracene after 5 days in activated sludge(4).

Toxics Screening Level

The initial risk screening level and secondary risk screening level (SRSL) for benzo(a)pyrene (B(a)P) are 6E-4 µg/m3 and 6E-3 µg/m3, respectively.

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: UN3077 (For reference only, please check.)

IMDG: UN3077 (For reference only, please check.)

IATA: UN3077 (For reference only, please check.)

UN Proper Shipping Name

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

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

IATA: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, 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

Not Listed.

Vietnam National Chemical Inventory

Listed.

IECSC

Listed.

Korea Existing Chemicals List (KECL)

Not 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

Insufficient data are available on the effect of this substance on human health, therefore utmost care must be taken.Do NOT take working clothes home.