Chemical Safety Data Sheet MSDS / SDS

Phenobarbital 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: Phenobarbital

CAS: 50-06-6

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

Address: 5 vasavi Layout Basaveswara Nilayam Pragathi Nagar Hyderabad, India -500090

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SECTION 2: Hazards identification

Classification of the substance or mixture

Acute toxicity - Category 3, Oral
Acute toxicity - Category 3, Dermal

Skin sensitization, Category 1
Acute toxicity - Category 3, Inhalation
Carcinogenicity, Category 2

GHS label elements, including precautionary statements

Pictogram(s)

Signal word Danger

Hazard statement(s)

H301+H311+H331 Toxic if swallowed, in contact with skin or if inhaled
H317 May cause an allergic skin reaction
H351 Suspected of causing cancer

Precautionary statement(s)

Prevention

P264 Wash ... thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P272 Contaminated work clothing should not be allowed out of the workplace.
P271 Use only outdoors or in a well-ventilated area.
P203 Obtain, read and follow all safety instructions before use.

Response

P301+P316 IF SWALLOWED: Get emergency medical help immediately.
P321 Specific treatment (see ... on this label).
P330 Rinse mouth.
P302+P352 IF ON SKIN: Wash with plenty of water/...
P316 Get emergency medical help immediately.
P361+P364 Take off immediately all contaminated clothing and wash it before reuse.
P333+P317 If skin irritation or rash occurs: Get medical help.
P362+P364 Take off contaminated clothing and wash it before reuse.
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P318 IF exposed or concerned, get medical advice.

Storage

P405 Store locked up.
P403+P233 Store in a well-ventilated place. Keep container tightly closed.

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:	Phenobarbital
Common names and synonyms:	Phenobarbital
CAS number:	50-06-6
EC number:	200-007-0
Concentration:	100%

SECTION 4: First aid measures

Description of necessary first-aid measures

If inhaled

Move the victim into fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration and consult a doctor immediately. Do not use mouth to mouth resuscitation if the victim ingested or inhaled the chemical.

Following skin contact

Take off contaminated clothing immediately. Wash off with soap and plenty of water. Consult a doctor.

Following eye contact

Rinse with pure water for at least 15 minutes. Consult a doctor.

Following ingestion

Rinse mouth with water. Do not induce vomiting. Never give anything by mouth to an unconscious person. Call a doctor or Poison Control Center immediately.

Most important symptoms/effects, acute and delayed

SYMPTOMS: Symptoms of exposure to this class of compounds via ingestion include sedation, nystagmus, ataxia, irritability and hyperexcitability in children, exfoliative dermatitis and hypoprothrombinemia in the neonate. Other symptoms via ingestion include confusion and restlessness in the elderly or in the presence of pain; respiratory depression, occasional allergic reactions, particularly affecting the skin; maculopapular skin rash, fixed-drug eruptions purpura, photosensitivity, erythema multiforme (the Stevens-Johnson syndrome), toxic epidermal necrolysis, hypothermia with associated pyrexia during recovery; hepatitis, cholestasis, nephritis, hepatic dysfunction and shoulder-hand syndrome. Ingestion may cause agitation in the elderly, hemorrhage in the neonate, morbilliform or scarlatiniform rash, megaloblastic anemia and osteomalacia. Ingestion can also cause sleepiness, unsteadiness, mental confusion, slow and shallow respiration, flaccid muscles, hypotension, cyanosis, hyperthermia, absent reflexes and coma. The duration of coma is dependent on the dose. Cerebral edema contributes to the persistence of coma. If coma persists, moist rales are heard in the lower lung fields, indicating pulmonary edema. Atelectasis or aspiration pneumonia with signs of lung consolidation and fever can also occur. Carbon dioxide retention under these conditions can cause acidosis. Death may occur from pneumonia, pulmonary edema or refractory hypotension. Other symptoms of exposure may include drowsiness, headache, irregular respiration and central nervous system effects Inhalation of the dust may cause irritation of the upper respiratory tract. Hypnosis and excitement have been reported. Other reported symptoms include delirium and deep unconsciousness. It can cause poor judgment and hangover. Chronic symptoms include effects on neurological and pyschic functions, disorientation, skin rash, ataxia, dizziness, depression an foliate deficiency. Chronic exposure may also result in drowsiness, emotional lability, irritability, neglect of personal appearance and other behavior disturbances. Other symptoms of chronic exposure are nystagmus, tremor, mild changes in mental condition such as loss of memory, inability to concentrate, giddiness, depression and dullness of mental perception, and precipitation of acute porphyria. Overdosage may cause hemorrhagic and erythematous bullae, respiratory depression, cardiovascular depression, hypotension and shock leading to renal failure; prolonged coma and death due t respiratory or circulatory failure. Absent bowel sounds are a sign of severe poisoning and their return sometimes indicates further absorption of any remaining compound in the gastrointestinal tract with resultant relapse. Dangerous central nervous system effects occur in children at 10 mg/kg. It causes respiratory depression in the neonate and diminished milk flow in the nursing mother. Eye effects through ingestion include slow eye reaction to light, mydriasis, miosis, bilateral ptosis, rapid fluttering of the eyelids, disturbance of eye movement, weakness of convergence, weakness of vertical gaze and of individual extraocular muscles and transient loss of vision following coma. There has been one case of spontaneous abortion. Exposure to this compound may also cause somnolence, motor activity changes, pulmonary changes, allergic dermatitis, fever, developmental abnormalities of the central nervous system, body wall, musculoskeletal, respiratory, gastrointestinal and urogenital systems. It may also cause jaundice. This compound may increase the metabolism of other drugs. Pyschic or physical dependence may occur with continued use. Abrupt withdrawal may result in severe abstinence syndrome which includes grand mal seizures and delirium. ACUTE/CHRONIC HAZARDS: This compound is highly toxic by ingestion. It is also toxic if absorbed through the skin. It is

harmful by inhalation and may cause irritation by skin or eye contact. When heated to decomposition it emits toxic fumes of nitrogen oxides. (NTP, 1992)

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

Treatment of overdosage is mainly supportive including maintenance of an adequate airway and assisted respiration and oxygen administration if needed. Resuscitative measures should be initiated promptly. Standard treatment for shock should be administered if necessary. Management of hypotension may include administration of iv fluids, elevation of the lower extremities, and/or use of vasopressor or inotropic agents. For seizures, iv diazepam and phenytoin may be used; in case of refractory seizures, general anesthesia and paralysis induced by a neuromuscular blocking agent may be necessary. Activated charcoal is an effective barbiturate adsorbant when administered within 30 minutes following ingestion of the drugs. ... Gastric aspiration is not recommended unless there is evidence that the drug has been ingested recently (within 4 hours); care should be taken to prevent pulmonary aspiration of gastric contents. Multiple-dose, nasogastric administration of activated charcoal has been used effectively to treat phenobarbital overdose; activated charcoal enhances elimination of the drug and shortens the duration of coma. The patient's vital signs, fluid intake, blood gases, and serum electrolytes should be monitored closely. Analeptic drugs should not be administered because they may produce paroxysmal cerebral activity which may result in generalized seizures. In addition, it has been demonstrated that analeptics are incapable of stimulating respiration and exerting an arousal effect in patients with severe barbiturate poisoning and profound CNS depression. If renal function is normal, forced diuresis may be of benefit. In addition, alkalinization of the urine increases renal excretion of phenobarbital, aprobarbital, and mephobarbital which is metabolized to phenobarbital. Peritoneal dialysis or hemodialysis may be useful in severe barbiturate intoxication and/or if the patient is anuric or in shock. Barbiturates General Statement

SECTION 5: Firefighting measures

Suitable extinguishing media

Water spray, dry chemical, carbon dioxide, or foam as appropriate for surrounding fire and materials.

Specific hazards arising from the chemical

This chemical is combustible. (NTP, 1992)

Special protective actions for fire-fighters

Wear self-contained breathing apparatus for firefighting if necessary.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

Avoid dust formation. Avoid breathing mist, gas or vapours.Avoid contacting with skin and eye. Use personal protective equipment.Wear chemical impermeable gloves. Ensure adequate ventilation.Remove all sources of ignition. Evacuate personnel to safe areas.Keep people away from and upwind of spill/leak.

Environmental precautions

Prevent further spillage or leakage if it is safe to do so. Do not let the chemical enter drains. Discharge into the environment must be avoided.

Methods and materials for containment and cleaning up

Wipe up spillage or collect spillage using a high- efficiency vacuum cleaner. Avoid breathing dust. Wash spill site. Place spillage and all contaminated cleanup materials in a thick plastic hazardous waste disposal bag or leakproof container and label it CAUTION: HAZARDOUS CHEMICAL WASTE.

SECTION 7: Handling and storage

Precautions for safe handling

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

Store in tight container as defined in the USP-NF. This material should be handled and stored per label instructions to ensure product integrity.

SECTION 8: Exposure controls/personal protection

Control parameters

Occupational Exposure limit values

no data available

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 tightly fitting safety goggles with side-shields conforming to EN 166(EU) or NIOSH (US).

Skin protection

Wear fire/flame resistant and impervious clothing. Handle with gloves. Gloves must be inspected prior to use. Wash and dry hands. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

Respiratory protection

If the exposure limits are exceeded, irritation or other symptoms are experienced, use a full-face respirator.

Thermal hazards

no data available

SECTION 9: Physical and chemical properties and safety characteristics

Physical state:	PHYSICAL DESCRIPTION: Odorless white crystalline powder or colorless crystals. A saturated aqueous solution is acid to litmus (approximately pH 5). Slightly bitter taste. (NTP, 1992)
Colour:	Crystals (3 different phases)
Odour:	Odorless
Melting point/freezing point:	174°C
Boiling point or initial boiling point and boiling range:	no data available
Flammability:	no data available

Lower and upper explosion limit/flammability limit:	no data available
Flash point:	11?°C
Auto-ignition temperature:	no data available
Decomposition temperature:	no data available
pH:	Saturated soln in water has a pH of about 5
Kinematic viscosity:	no data available
Solubility:	>34.8 [ug/mL]
Partition coefficient n-octanol/water:	no data available
Vapour pressure:	1.4X10-11 mm Hg at 25 deg C (est)
Density and/or relative density:	1.234 g/cm3
Relative vapour density:	no data available
Particle characteristics:	no data available

SECTION 10: Stability and reactivity

Reactivity

Sensitive to hydrolysis. Alkaline solutions react more rapidly than acidic solutions. At pH 7 and 176°F, has a half life of 74 hours. Insoluble in water.

Chemical stability

Aqueous solutions of "phenobarbital" sodium are not generally stable. The drug is more stable in polyethylene glycol or propylene

glycol.

Possibility of hazardous reactions

PHENOBARBITAL is also sensitive to prolonged exposure to light. Incompatible with strong oxidizing agents. Forms a complex of reduced solubility with macrogol 4000. Able to form metal derivatives (NTP, 1992).

Conditions to avoid

no data available

Incompatible materials

Solutions of "phenobarbital" sodium should not be added to acidic solutions because precipitation of "phenobarbital" may occur. Solutions for injection should not be used if they contain a precipitate.

Hazardous decomposition products

When heated to decomposition it emits toxic fumes of /nitrogen oxides/.

SECTION 11: Toxicological information

Acute toxicity

Oral: LD50 rat oral 162 +/- 14 mg/kg

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

Evaluation: There is inadequate evidence in humans for the carcinogenicity of phenobarbital. There is sufficient evidence in experimental animals for the carcinogenicity of phenobarbital. Overall evaluation: Phenobarbital is possibly carcinogenic to humans (Group 2B).

Reproductive toxicity

no data available

STOT-single exposure

no data available

STOT-repeated exposure

no data available

Aspiration hazard

no data available

SECTION 12: Ecological information

Toxicity

Toxicity to fish: LC50; Species: Pimephales promelas (Fathead minnow, age 30 days, mean length 16.5 mm, mena weight 0.067 g); Conditions: flow through, 24.9 deg C, pH 7.8, hardness 45.1 mg/L CaCO3, alkalinity 108 mg/L CaCO3, dissolved oxygen 6.8 mg/L; Concentration: 484 mg/L for 96 hr (95% confidence limit: 446-526 mg/L) /99+% purity

Toxicity to daphnia and other aquatic invertebrates: LC50; Species: Daphnia magna (Water flea); Concentration: 1,460 mg/L for 24 hr /Conditions of bioassay not specified

Toxicity to algae: no data available

Toxicity to microorganisms: no data available

Persistence and degradability

AEROBIC: Phenobarbital, present at 100 mg/L, reached 0% of its theoretical BOD in 4 weeks using an activated sludge inoculum at 30 mg/L in the Japanese MITI test(1).

Bioaccumulative potential

An estimated BCF of 4 was calculated in fish for phenobarbital(SRC), using a log Kow of 1.47(1) and a regression-derived equation(2). According to a classification scheme(3), this BCF suggests the potential for bioconcentration in aquatic organisms is low(SRC).

Mobility in soil

The Koc of phenobarbital is estimated as 59(SRC), using a log Kow of 1.47(1) and a regression-derived equation(2). According to a classification scheme(3), this estimated Koc value suggests that phenobarbital is expected to have high mobility in soil. The pKa of phenobarbital is 7.3(4), indicating that this compound will exist partially in the anion form in the environment and anions generally do not adsorb more strongly to soils containing organic carbon and clay than their neutral counterparts(5).

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: no data available
IMDG: no data available
IATA: no data available

UN Proper Shipping Name

ADR/RID: no data available
IMDG: no data available
IATA: no data available

Transport hazard class(es)

ADR/RID: 6.1 (For reference only, please check.)
IMDG: 6.1 (For reference only, please check.)
IATA: 6.1 (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: 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

Not Listed.

China Catalog of Hazardous chemicals 2015

Not Listed.

New Zealand Inventory of Chemicals (NZIoC)

Listed.

(PICCS)

Listed.

Vietnam National Chemical Inventory

Listed.

IECSC)

Not 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/