Chemical Safety Data Sheet MSDS / SDS

Fenthion 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: Fenthion

CAS: 55-38-9

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

Telephone: +91 9550333722

SECTION 2: Hazards identification

Classification of the substance or mixture

Acute toxicity - Category 4, Oral
Acute toxicity - Category 4, Dermal

Acute toxicity - Category 3, Inhalation
Germ cell mutagenicity, Category 2
Specific target organ toxicity – repeated exposure, Category 1
Hazardous to the aquatic environment, short-term (Acute) - Category Acute 1
Hazardous to the aquatic environment, long-term (Chronic) - Category Chronic 1

GHS label elements, including precautionary statements

Pictogram(s)

Signal word Danger

Hazard statement(s)

H302 Harmful if swallowed
H312 Harmful in contact with skin
H331 Toxic if inhaled
H341 Suspected of causing genetic defects
H372 Causes damage to organs through prolonged or repeated exposure
H410 Very toxic to aquatic life with long lasting effects

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.
P271 Use only outdoors or in a well-ventilated area.
P203 Obtain, read and follow all safety instructions before use.
P260 Do not breathe dust/fume/gas/mist/vapours/spray.
P273 Avoid release to the environment.

Response

P301+P317 IF SWALLOWED: Get medical help.
P330 Rinse mouth.
P302+P352 IF ON SKIN: Wash with plenty of water/...
P317 Get medical help.
P321 Specific treatment (see ... on this label).

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.
P316 Get emergency medical help immediately.
P318 IF exposed or concerned, get medical advice.
P319 Get medical help if you feel unwell.
P391 Collect spillage.

Storage

P403+P233 Store in a well-ventilated place. Keep container tightly closed.
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:	Fenthion
Common names and synonyms:	Fenthion
CAS number:	55-38-9
EC number:	200-231-9
Concentration:	100%

SECTION 4: First aid measures

Description of necessary first-aid measures

If inhaled

Fresh air, rest. Refer immediately for medical attention.

Following skin contact

Remove contaminated clothes. Rinse and then wash skin with water and soap. Refer for medical attention . Wear protective gloves when administering first aid.

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 a slurry of activated charcoal in water to drink. Refer immediately for medical attention.

Most important symptoms/effects, acute and delayed

Exposure Routes: inhalation, skin absorption, ingestion, skin and/or eye contact Symptoms: Nausea, vomiting, abdominal cramps, diarrhea, salivation; headache, dizziness, lassitude (weakness, exhaustion); rhinorrhea (discharge of thin mucus), chest tightness; blurred vision, miosis; cardiac irregularities; muscle fasciculation; dyspnea (breathing difficulty) Target Organs: respiratory system, central nervous system, cardiovascular system, plasma cholinesterase (NIOSH, 2016)

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

1. insure that a clear airway exists by aspiration of secretions if necessary. admin oxygen by mechanically assisted pulmonary ventilation if respiration is depressed. improve tissue oxygenation as much as possible before admin atropine to minimize risk of ventricular fibrillation. in severe poisonings, it may be necessary to support pulmonary ventilation mechanically for several days. 2. admin atropine sulfate iv, or im if iv injection is not possible. ... in moderately severe poisoning: adult dosage and children over 12 yr: 0.4-2.0 mg repeated every 15 min until atropinization is achieved. maintain atropinization with repeated dosage of 0.02-0.05 mg/kg body weight. organophosphate pesticides

SECTION 5: Firefighting measures

Suitable extinguishing media

Dry chemicals, carbon dioxide for small fires. Water spray, foam for large fires. Malathion

Specific hazards arising from the chemical

This compound is probably combustible. (NTP, 1992)

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, protective gloves and filter respirator for organic gases and particulates adapted to the airborne concentration of the substance. Do NOT let this chemical enter the environment. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in dry sand or inert absorbent. Then store and dispose of according to local regulations.

Environmental precautions

Personal protection: chemical protection suit, protective gloves and filter respirator for organic gases and particulates adapted to the airborne concentration of the substance. Do NOT let this chemical enter the environment. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in dry sand or inert absorbent. Then store and dispose of according to local regulations.

Methods and materials for containment and cleaning up

1. ventilate area of spill or leak. 2. collect for reclamation or absorb in vermiculite, dry sand, earth, or a similar material. malathion

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 food and feedstuffs. Well closed. Keep in a well-ventilated room. Provision to contain effluent from fire extinguishing. Store in an area without drain or sewer access.Store in original container, preferably in a locked area, away from children, food, feed.

SECTION 8: Exposure controls/personal protection

Control parameters

Occupational Exposure limit values

TLV: 0.05 mg/m3, as TWA; (skin); A4 (not classifiable as a human carcinogen); BEI issued.MAK: (inhalable fraction): 0.2 mg/m3; peak limitation category: II(2); skin absorption (H)

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 face shield or eye protection in combination with breathing protection.

Skin protection

Protective gloves. Protective clothing.

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:	PHYSICAL DESCRIPTION: Yellow to tan oily liquid with a slight odor of garlic. (NTP, 1992)
Colour:	COLORLESS LIQUID
Odour:	Slight garlic odor

Melting point/freezing point:	7.5°C
Boiling point or initial boiling point and boiling range:	87°C (0.01 mmHg)
Flammability:	Noncombustible Liquid
Lower and upper explosion limit/flammability limit:	no data available
Flash point:	>100°C
Auto-ignition temperature:	365°C
Decomposition temperature:	no data available
pH:	no data available
Kinematic viscosity:	no data available
Solubility:	Insoluble (<1 mg/ml at 72.5° F) (NTP, 1992)
Partition coefficient n-octanol/water:	log Kow= 4.091
Vapour pressure:	3e-05 mm Hg at 68° F (NTP, 1992)
Density and/or relative density:	1.25
Relative vapour density:	(air = 1): 9.6
Particle characteristics:	no data available

SECTION 10: Stability and reactivity

Reactivity

Decomposes on heating. This produces toxic fumes including phosphorus oxides and sulfur oxides. Reacts with oxidants.

Chemical stability

Stable to light

Possibility of hazardous reactions

FENTHION may react with strong reducing agents such as hydrides to generate highly toxic and flammable phosphine gas. Partial oxidation by oxidizing agents may result in the release of toxic phosphorus oxides.

Conditions to avoid

no data available

Incompatible materials

incompatible with /insecticides and fungicides/ which are highly alkaline.

Hazardous decomposition products

When heated to decomposition it emits very toxic fumes of /phosphorus oxides and sulfur oxides/.

SECTION 11: Toxicological information

Acute toxicity

Oral: LD50 Rat male oral 190-315 mg/kg

Inhalation: no data available

Dermal: LD50 Rat percutaneous 330-500 mg/kg

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 E Evidence of Non-carcinogenicity for Humans

Reproductive toxicity

no data available

STOT-single exposure

Cholinesterase inhibition. The substance may cause effects on the nervous system. This may result in convulsions and respiratory failure. The effects may be delayed. Medical observation is indicated.

STOT-repeated exposure

Cholinesterase inhibition. Cumulative effects are possible. See Acute Hazards/Symptoms.

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; on spraying or dispersing, however, much faster.

SECTION 12: Ecological information

Toxicity

Toxicity to fish: LC50 Salvelinus namaycush (lake trout) 1900 ug/l/96 hr (95% confidence limit 1{00-2020 ug/l), wt 2 g. Static bioassay without aeration, pH 7.2-7.5, water hardness 40-50 mg/l as calcium carbonate and alkalinity of 30-35 mg/l. /Technical material 97%

Toxicity to daphnia and other aquatic invertebrates: no data available

Toxicity to algae: no data available

Toxicity to microorganisms: no data available

Persistence and degradability

The effects of some potential chemical, photochemical, biological and environmental conditions upon the degradation of fenthion in laboratory and field experiments were investigated. The effects of biological activity on the degradation of fenthion were examined with mangrove swamp water in a dark bottle. Photolytic degradation was observed with mangrove water that was sterilized by the addition of mercuric chloride to 40 ppm and exposed to natural sunlight for the field study. Different natural waters (ocean, inlet, estuarine, mangrove swamp, freshwater lake, and canal) were collected and incubated in the pond for studying the fenthion disappearance rate in different types of water bodies. The stability of fenthion under acidic and alkaline conditions was observed for hydrolytic degradation. A comparison of the biological degradation by aquatic microorganisms against that of chemical degradation by pH adjustment was also investigated. The results show that fenthion remains relatively stable under acidic to neutral conditions. Under alkaline conditions fenthion still remains stable up to pH 11. Higher salinity resulted in a shorter half-life. Fenthion was found to be susceptible to biological degradation by anaerobic or non-photolytic organisms. In natural waters, the degradation of fenthion was related to the biological activity of each water sample. Mangrove water exhibited the lowest half-life (2.9 days) while the ocean water showed the longest half-life (21.1 days).

Bioaccumulative potential

Using a flow-through system and up to 11 days of exposure, a mean BCF of 16,600 (extractable lipid basis) was measured in guppies (Poecilia reticulata)(1). Based upon a measured Log Kow of 4.09(2) and a water solubility of 7.5 mg/l at 20 deg C(3), the BCF of fenthion can be estimated to be 760 and 200, respectively, from regression derived equations(4,SRC). These measured and estimated BCF values suggest that bioconcentration in aquatic organisms may have some environmental importance(SRC). A fenthion BCF of 62 was measured in tadpoles after a 96 hr exposure period in a flow-through system(5).

Mobility in soil

Based upon a measured log Kow of 4.09(1) and a water solubility of 7.5 mg/l at 20 deg C(2), the Koc of fenthion can be estimated to be 4000 and 1400, respectively, from regression derived equations(3,SRC). The US Dept Agric's Pesticide Properties Database lists a Koc value of 1500 for fenthion(4). According to a suggested classification scheme(5), these estimated Koc values suggest that fenthion is only slightly mobile 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: UN2784 (For reference only, please check.)
IMDG: UN2784 (For reference only, please check.)
IATA: UN2784 (For reference only, please check.)

UN Proper Shipping Name

ADR/RID: ORGANOPHOSPHORUS PESTICIDE, LIQUID, FLAMMABLE, TOXIC, flash point less than 23 °C (For reference only, please check.)
IMDG: ORGANOPHOSPHORUS PESTICIDE, LIQUID, FLAMMABLE, TOXIC, flash point less than 23 °C (For reference only, please check.)
IATA: ORGANOPHOSPHORUS PESTICIDE, LIQUID, FLAMMABLE, TOXIC, flash point less than 23 °C (For reference only, please check.)

Transport hazard class(es)

ADR/RID: 3 (For reference only, please check.)
IMDG: 3 (For reference only, please check.)
IATA: 3 (For reference only, please check.)

Packing group, if applicable

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

Not Listed.

China Catalog of Hazardous chemicals 2015

Listed.

New Zealand Inventory of Chemicals (NZIoC)

Listed.

(PICCS)

Not 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

The technical grade (95-98% pure) is a yellow to brown oil with a weak garlic-like odour.Carrier solvents used in commercial formulations may change physical and toxicological properties.Do NOT take working clothes home.Depending on the degree of exposure, periodic medical examination is suggested.Specific treatment is necessary in case of poisoning with this substance; the appropriate means with instructions must be available.