ChemicalBook

Chemical Safety Data Sheet MSDS / SDS

Fenitrothion

Revision Date:2025-12-06 Revision Number:1

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

Product identifier

Product name	: Fenitrothion
CBnumber	: CB5406210
CAS	: 122-14-5
EINECS Number	: 204-524-2
Synonyms	: FENITROTHION,MEP

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	: 010-86108875

SECTION 2: Hazards identification

Classification of the substance or mixture

Acute toxicity - Category 4, Oral

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)

H225 Highly Flammable liquid and vapour

H301 Toxic if swalloed

H304 May be fatal if swallowed and enters airways

H312 Harmful in contact with skin

H315 Causes skin irritation

H330 Fatal if inhaled

H336 May cause drowsiness or dizziness

H410 Very toxic to aquatic life with long lasting effects

Precautionary statement(s)

P210 Keep away from heat/sparks/open flames/hot surfaces. — No smoking.

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.

P331 Do NOT induce vomiting.

P301+P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.

P370+P378 In case of fire: Use … for extinction.

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

P501 Dispose of contents/container to..…

Prevention

P264 Wash ... thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

P273 Avoid release to the environment.

Response

P301+P317 IF SWALLOWED: Get medical help.

P330 Rinse mouth.

P391 Collect spillage.

Storage

none

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	: Fenitrothion
Synonyms	: FENITROTHION,MEP
CAS	: 122-14-5
EC number	: 204-524-2
MF	: C9H12NO5PS
MW	: 277.23

SECTION 4: First aid measures

Description of first aid measures

If inhaled

Fresh air, rest. Half-upright position. Artificial respiration may be needed. Refer for medical attention.

Following skin contact

Remove contaminated clothes. Rinse and then wash skin with water and soap. Refer for medical attention .

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. Induce vomiting (ONLY IN CONSCIOUS PERSONS!). Refer for medical attention .

Most important symptoms and effects, both acute and delayed

This compound is an organophosphate insecticide. It is a highly toxic cholinesterase inhibitor, that acts on the nervous system. Does not cause delayed neurotoxicity and contact produces little irritation. (EPA, 1998)

Indication of any immediate medical attention and special treatment needed

Basic Treatment: Establish a patent airway. Suction if necessary. Aggressive airway control may be needed. Watch for signs of respiratory insufficiency and assist ventilations if necessary. Administer oxygen by nonrebreather mask at 10 to 15 L/min. Monitor for pulmonary edema and treat if necessary . Monitor for shock and treat if necessary. Anticipate seizures and treat if necessary . For eye contamination, flush eyes immediately with water. Irrigate each eye continuously with normal saline during transport . Do not use emetics. For ingestion, rinse mouth and administer 5 ml/kg up to 200 ml of water for dilution if the patient can swallow, has a strong gag reflex, and does not drool. Administer activated charcoal . Organophosphates and related compounds

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SECTION 5: Firefighting measures

Extinguishing media

Non-Specific -- Organophosphate Pesticide n.o.s.) Move containers from fire area if you can do so without risk. Fight fire from maximum distance. Dike fire control water for later disposal; do not scatter the material. Wear positive pressure breathing apparatus and special protective clothing. This compound is an organophosphate insecticide. Small fires: dry chemical, carbon dioxide, water spray, or foam. Large fires: water spray, fog or foam. (EPA, 1998)

Specific Hazards Arising from the Chemical

When heated to decomposition, it emits very toxic fumes of oxides of nitrogen, phosphorus and sulfur. Decomposition at 212-284F produces a mixture of organophosphorus polymers. Unstable in alkaline media. Stable for 2 years if stored at 68-77F. Do not store above 104F. (EPA, 1998)

Advice for firefighters

Use water spray, powder, foam, carbon dioxide.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

Personal protection: chemical protection suit including self-contained breathing apparatus. Absorb remaining liquid in sand or inert absorbent. Collect leaking liquid in covered containers. Then store and dispose of according to local regulations. Do NOT wash away into sewer. Do NOT

let this chemical enter the environment.

Environmental precautions

Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations. Do NOT wash away into sewer. Personal protection: chemical protection suit including self-contained breathing apparatus.

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

Provision to contain effluent from fire extinguishing. Separated from food and feedstuffs. Keep in a well-ventilated room./Storage temperature should be less than 40 deg C on account of the tendency/ to isomerize.

SECTION 8: Exposure controls/personal protection

Control parameters

Occupational Exposure limit values

Component	Fenitrothion			
CAS No.	122-14-5			
	Limit value - Eight hours		**Limit value - Short term**	
	ppm	**mg/m^3**	**ppm**	**mg/m^3**
Austria	?	1	?	?
Japan - JSOH	?	1	?	?
People's Republic of China	?	1	?	2 (1)
Poland	?	0,02	?	0,1
	Remarks			
People's Republic of China	(1) 15 minutes average value			

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 ventilation, 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	Yellow-brown liquid
Odour	Phenolic odor
Melting point/freezing point	3.4°C
Boiling point or initial boiling point and boiling range	140-145°C (0.05 torr)
Flammability	Combustible. Liquid formulations containing organic solvents may be flammable. Gives off irritating or toxic fumes (or gases) in a fire.
Lower and upper explosion limit/flammability limit	no data available
Flash point	165.2°C
Auto-ignition temperature	no data available
Decomposition temperature	140-145°C
pH	no data available
Kinematic viscosity	no data available
Solubility	Readily soluble in dichloromethane, 2-propanol, toluene, hardly sol in n-hexane.
Partition coefficient n-octanol/water	log Kow= 3.30
Vapour pressure	1.5×10^{-2} Pa (20 °C)
Density and/or relative density	1.328 (20℃)
Relative vapour density	1.328 (20℃)
Particle characteristics	no data available

SECTION 10: Stability and reactivity

Reactivity

Decomposes on heating and on burning. This produces toxic fumes including nitrogen oxides, phosphorus oxides and sulfur oxides.

Chemical stability

It is hydrolyzed by alkali, in 10 m sodium hydroxide 50% loss occurs in 4.5 hr @ 30 deg c

Possibility of hazardous reactions

Organophosphates, such as FENITROTHION, are susceptible to formation of highly toxic and flammable phosphine gas in the presence of strong reducing agents such as hydrides. Partial oxidation by oxidizing agents may result in the release of toxic phosphorus oxides.

Conditions to avoid

no data available

Incompatible materials

no data available

Hazardous decomposition products

no data available

SECTION 11: Toxicological information

Acute toxicity

- Oral: LD50 Rat (female) acute oral 800 mg/kg
- Inhalation: no data available
- Dermal: LD50 Rat (male) acute percutaneous 890 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

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

STOT-repeated exposure

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

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 Rainbow trout 2.4 mg/l/96 hr, water 10 deg C (95% confidence limit 2.0-2.9 mg/l), wt 1.5 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, 95%.
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 loss of fenitrothion was faster in non-sterile soil than sterile soil indicating degradation in soil was a combination of abiotic and microbial reactions(1). The rate of fenitrothion degradation in soil depended on pH, soil type, organic amendment, soil moisture content and pesticide concentration(1). The half-life was 1608 days in a non-sterile sandy loam soil containing 1,000 ppm fenitrothion at a soil pH 7.2 and moisture content of 50%(1). On the other hand, the biodegradation half-life was 13 days in a non-sterile clay loam soil containing 100 ppm fenitrothion at a soil pH 10 and moisture content of 50%(1).

Bioaccumulative potential

There were no consistent differences in concn of fenitrothion in streamwater with depth, or between midstream and slow water at the stream edge. This was true of aq and oil-based formulations. A large portion of the fenitrothion was taken up by suspended material; in sediment, it was taken up mainly by the organic fraction. Concn of fenitrothion were above pre-spray values in most plants and insects sampled, and in some, above peak concn found in the water. Highest and most persistent residues were found in a livewort. Highest residues in an animal were found in black fly larvae, perhaps explained by their filter-feeding on suspended matter with high fenitrothion concn. Peak concn in plants and animals usually occured at 6 or 24 hr postspray sampling times, and in all cases decr thereafter. Aminofenitrothion and fenitrooxon in sediments and 3-methyl-4-nitrophenol in plants and insects were seldom and inconsistently detected.

Mobility in soil

Measured fenitrothion Koc values of 593 and 254 in Tsukuba and Kanuma soils(1) and 1531, 1201, 833, and 1061 in 4 rice soils(2) have been determined. According to a classification scheme(3), these Koc value suggests that fenitrothion is expected to have low to moderate mobility in soil. A study conducted on organic and silty clay loam soil, from the Boreal Forest in Ontario, Canada, indicate a maximum adsorption rate of 92 ug/g and 81 ug/g, respectively, in 30 hrs when fenitrothion-acetone is added to the soils(4). In the same experiment, studies with a buffer solution showed 38 and 48% desorption rate after 50 hrs extraction time(4).

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: UN3018 (For reference only, please check.)

IMDG: UN3018 (For reference only, please check.)

IATA: UN3018 (For reference only, please check.)

UN Proper Shipping Name

ADR/RID: ORGANOPHOSPHORUS PESTICIDE, LIQUID, TOXIC (For reference only, please check.)

IMDG: ORGANOPHOSPHORUS PESTICIDE, LIQUID, TOXIC (For reference only, please check.)

IATA: ORGANOPHOSPHORUS PESTICIDE, LIQUID, TOXIC (For reference only, please check.)

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: 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

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

Specific treatment is necessary in case of poisoning with this substance; the appropriate means with instructions must be available.Carrier solvents used in commercial formulations may change physical and toxicological properties.Do NOT take working clothes home.