ChemicalBook

Chemical Safety Data Sheet MSDS / SDS

Thiosulfan

Revision Date:2025-06-14 Revision Number:1

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

Product identifier

Product name	: Thiosulfan
CBnumber	: CB6153380
CAS	: 115-29-7
EINECS Number	: 204-079-4
Synonyms	: endosulfan,FAN

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 2, Oral

Acute toxicity - Category 4, Dermal

Acute toxicity - Category 2, Inhalation

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

H304 May be fatal if swallowed and enters airways

H315 Causes skin irritation

H336 May cause drowsiness or dizziness

H373 May cause damage to organs through prolonged or repeated exposure

H410 Very toxic to aquatic life with long lasting effects

H411 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.

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.

P264 Wash hands thoroughly after handling.

P264 Wash skin thouroughly after handling.

P273 Avoid release to the environment.

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

P281 Use personal protective equipment as required.

P284 Wear respiratory protection.

P331 Do NOT induce vomiting.

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

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/...

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

P271 Use only outdoors or in a well-ventilated area.

P284 [In case of inadequate ventilation] wear respiratory protection.

P273 Avoid release to the environment.

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/...

P317 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.

P316 Get emergency medical help immediately.

P320 Specific treatment is urgent (see ... on this label).

P391 Collect spillage.

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

no data available

SECTION 3: Composition/information on ingredients

Substance

Product name	: Thiosulfan
Synonyms	: endosulfan,FAN
CAS	: 115-29-7
EC number	: 204-079-4
MF	: C9H6Cl6O3S
MW	: 406.93

SECTION 4: First aid measures

Description of first aid measures

If inhaled

Fresh air, rest. 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

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

Most important symptoms and effects, both acute and delayed

ACUTE/CHRONIC HAZARDS: Highly toxic by ingestion, inhalation, and skin absorption. (NTP, 1992)

It is very toxic. The probable oral lethal dose is 50 to 500 mg/kg, or 1 teaspoonful to 1 ounce for a 150 lb. person. (EPA, 1998)

Excerpt from ERG Guide 151 [Substances - Toxic (Non-combustible)]: Highly toxic, may be fatal if inhaled, swallowed or absorbed through skin. Avoid any skin contact. Effects of contact or inhalation may be delayed. Fire may produce irritating, corrosive and/or toxic gases. Runoff from fire control or dilution water may be corrosive and/or toxic and cause pollution. (ERG, 2016)

Indication of any immediate medical attention and special treatment needed

Observation. Persons exposed to high levels of organochlorine pesticides by any route should be observed for sensory disturbances, incoordination, speech slurring, mental aberrations, and involuntary motor activity that would warn of imminent convulsions. Solid organochlorine insecticides

SECTION 5: Firefighting measures

Extinguishing media

If material involved in fire: Extinguish fire using agent suitable for type of surrounding fire. (Material itself does not burn or burns with difficulty.) Use "alcohol" foam, dry chemical, or carbon dioxide. Cool all affected containers with flooding quantities of water. Apply water from as far a distance as possible. Keep run-off watter out of sewers and water sources. Endosulfan (organochlorine pesticides, liquid, toxic); Endosulfan (organochlorine pesticides, solid, toxic)

Specific Hazards Arising from the Chemical

Excerpt from ERG Guide 151 [Substances - Toxic (Non-combustible)]: Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes. Containers may explode when heated. Runoff may pollute waterways. (ERG, 2016)
Container may explode in heat of fire. Fire or run off from fire control water may release irritating or poisonous gases. Slowly oxidizes in air. Do not store at temperature below 20F. (EPA, 1998)
Excerpt from ERG Guide 151 [Substances - Toxic (Non-combustible)]: Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes. Containers may explode when heated. Runoff may pollute waterways. (ERG, 2016)

Advice for firefighters

In case of fire in the surroundings, use appropriate extinguishing media. In case of fire: keep drums, etc., cool by spraying with water.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

Personal protection: chemical protection suit including self-contained breathing apparatus. Do NOT wash away into sewer. Sweep spilled substance into covered sealable containers. If appropriate, moisten first to prevent dusting. Carefully collect remainder. Then store and dispose of according to local regulations.

Environmental precautions

Do NOT wash away into sewer. Sweep spilled substance into covered sealable containers. If appropriate, moisten first to prevent dusting. Carefully collect remainder. Then store and dispose of according to local regulations. Personal protection: chemical protection suit including self-contained breathing apparatus.

Methods and materials for containment and cleaning up

SRP: Wastewater from contaminant suppression, cleaning of protective clothing/equipment, or contaminated sites should be contained and evaluated for subject chemical or decomposition product concentrations. Concentrations shall be lower than applicable environmental discharge or disposal criteria. Alternatively, pretreatment and/or discharge to a POTW is acceptable only after review by the governing authority. Due consideration shall be given to remediation worker exposure (inhalation, dermal and ingestion) as well as fate during treatment, transfer and disposal. If it is not practicable to manage the chemical in this fashion, it must meet Hazardous Material Criteria for disposal.

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

Provision to contain effluent from fire extinguishing. Separated from acids, bases, iron and food and feedstuffs. Dry. Well closed.Do not store in or around home. Do not store near heat, open flame, or hot surfaces.

SECTION 8: Exposure controls/personal protection

Control parameters

Occupational Exposure limit values

TLV: 0.1 mg/m3, as TWA; (skin); A4 (not classifiable as a human carcinogen)

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	Brown crystals ... [Note: Technical product is a tan, waxy, isomer mixture].
Odour	Similar to terpene.
Melting point/freezing point	106°C
Boiling point or initial boiling point and boiling range	449.7°C at 760mmHg
Flammability	Noncombustible Solid, but may be dissolved in flammable liquids.
Lower and upper explosion limit/flammability limit	no data available
Flash point	225.8°C
Auto-ignition temperature	no data available
Decomposition temperature	no data available
pH	pH 7.2 in tap water
Kinematic viscosity	no data available
Solubility	Insoluble (NTP, 1992)
Partition coefficient n-octanol/water	log Kow = 3.83 (alpha); log Kow = 3.62 (beta)
Vapour pressure	8.3×10^{-4} Pa (25 °C) for 2:l mixture of α- and β-isomers
Density and/or relative density	1.94g/cm3

Relative vapour density	no data available
Particle characteristics	no data available

SECTION 10: Stability and reactivity

Reactivity

Decomposes on heating. This produces toxic fumes including sulfur oxides and chlorine. Reacts with bases. This produces sulfur dioxide fumes. This generates toxic hazard. Attacks iron.

Chemical stability

Stable to sunlight

Possibility of hazardous reactions

Not combustible. Liquid formulations containing organic solvents may be flammable.BETA-ENDOSULFAN is a sulfite ester of a chlorinated cyclic diol. Decomposed rapidly by alkali to generate sulfur dioxide. Decomposed by acid. Incompatible with strong oxidizing and reducing agents. may be incompatible with many amines, nitrides, azo/diazo compounds, alkali metals, and epoxides.

Conditions to avoid

no data available

Incompatible materials

Alkalis, acids, water [Note: Corrosive to iron. Hydrolyzes slowly on contact with water or decomposes in the presence of alkalis and acids to form sulfur dioxide].

Hazardous decomposition products

When heated to decomposition it emits toxic fumes of /hydrogen chloride and sulfoxides/.

SECTION 11: Toxicological information

Acute toxicity

- Oral: LD50 Rat oral 18 mg/kg
- Inhalation: LC50 Rat inhalation 80 mg/cu m/4 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: Not Likely to be Carcinogenic to Humans

Reproductive toxicity

no data available

STOT-single exposure

The substance may cause effects on the central nervous system and blood. This may result in irritability, convulsions and renal failure. Exposure at high levels could cause death. The effects may be delayed. Medical observation is indicated.

STOT-repeated exposure

no data available

Aspiration hazard

Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly on spraying or when dispersed, especially if powdered.

SECTION 12: Ecological information

Toxicity

Toxicity to fish: LC50; Species: Danio rerio (Zebra danio, adult, length 3.5 cm, weight 0.18 g); Conditions: freshwater, renewal, 25 deg C, pH 7.1, hardness 35 mg/L CaCO3, dissolved oxygen 5.1 mg/L; Concentration: 1.6 ug/L for 24 hr (95% confidence interval: 1.3-2.1 ug/L) /97% purity mixture of Alpha
Toxicity to daphnia and other aquatic invertebrates: EC50; Species: Daphnia magna (Water flea, age <24 hr neonate); Conditions: freshwater, static, 25 deg C; Concentration: 166.44 ug/L for 5 hr (95% confidence interval: 138.25-218.66 ug/L); Effect: decreased food consumption
Toxicity to algae: EC50; Species: Pseudokirchneriella subcapitata (Green algae); Conditions: freshwater, static, 25 deg C; Concentration: 427.8 ug/L for 96 hr (95% confidence interval: 283.32-510.43 ug/L); Effect: decreased population abundance
Toxicity to microorganisms: no data available

Persistence and degradability

Degradation of endosulfan by soil microorganism of family pseudomonas was studied. the alcohol was main metabolite from either isomer, beta-isomer also yielded small amt of endosulfan ether as well as isomerized to more stable alpha-isomer ...

Bioaccumulative potential

A measured BCF of 2,650 was obtained for zebra fish exposed to 0.3 ug/L of endosulfan for 21 days in a flow-through aquarium(1). A BCF value of 11,583 was measured for endosulfan in yellow tetra fish exposed to 0.3 ug/L of endosulfan for 21 days in a flow-through aquarium(2). It was noted in both sets of experiments that endosulfan depuration by fish was rapid, with approximately 81% total endosulfan elimination within 120 hours when the fish were placed in a tank of pure water containing no endosulfan(1,2). According to a classification scheme(3), this BCF data suggests the potential for bioconcentration in aquatic organisms is very high, provided the compound is not metabolized by the organism(SRC).

Mobility in soil

Koc values from 350 to 1,135, and of 2,000 were reported for endosulfan in soil(1,2). The Koc of alpha-endosulfan in marine sediment was measured as 3,981 and the Koc for beta-endosulfan was measured as 19,953(3). According to a classification scheme(4), these Koc values suggests that endosulfan is expected to be moderately mobile to immobile in soil.

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: UN2995 (For reference only, please check.)

IMDG: UN2995 (For reference only, please check.)

IATA: UN2995 (For reference only, please check.)

UN Proper Shipping Name

ADR/RID: ORGANOCHLORINE PESTICIDE, LIQUID, TOXIC, FLAMMABLE, flash point not less than 23 °C (For reference only, please check.)

IMDG: ORGANOCHLORINE PESTICIDE, LIQUID, TOXIC, FLAMMABLE, flash point not less than 23 °C (For reference only, please check.)

IATA: ORGANOCHLORINE PESTICIDE, LIQUID, TOXIC, FLAMMABLE, flash point not less than 23 °C (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

Listed.

New Zealand Inventory of Chemicals (NZIoC)

Not 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

Use of alcoholic beverages enhances the harmful effect.If the substance is formulated with solvent(s) also consult the card(s) (ICSC) of the solvent(s).Carrier solvents used in commercial formulations may change physical and toxicological properties.Do NOT take working clothes home.