



SAFETY DATA SHEETS

According to the UN GHS revision 9

Version: 1.0
Creation Date: July 15, 2019
Revision Date: July 15, 2019

SECTION 1: Identification

1.1 GHS Product identifier

Product name Endosulfan

1.2 Other means of identification

Product number -

Other names Endosulfan; thiodan; benzoepin

1.3 Recommended use of the chemical and restrictions on use

Identified uses Industrial and scientific research use.

Uses advised against no data available

1.4 Supplier's details

Company Shanghai Yien Chemical Technology Co., Ltd
Address Building 6, 28 Yingong Road, Fengxian District, Shanghai
Chemical Industry Zone, Shanghai, 201400, China
Telephone +86-400-133-2688

1.5 Emergency phone number

Emergency phone number +86-400-133-2688

Service hours Monday to Friday, 9am-5pm (Standard time zone: UTC/GMT +8 hours).

SECTION 2: Hazard identification

2.1 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

2.2 GHS label elements, including precautionary statements

Pictogram(s)



Signal word

Danger

Hazard statement(s)

H300 Fatal if swallowed

H312 Harmful in contact with skin

	H330 Fatal if inhaled 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/... 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.

2.3 Other hazards which do not result in classification

no data available

SECTION 3: Composition/information on ingredients

3.1 Substances

Chemical name	Common names and synonyms	CAS number	EC number	Concentration
Endosulfan	Endosulfan	115-29-7	204-079-4	100%

SECTION 4: First-aid measures

4.1 Description of necessary 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

4.2 Most important symptoms/effects, 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)

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

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: Fire-fighting measures

5.1 Suitable 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 water out of sewers and water sources. Endosulfan (organochlorine pesticides, liquid, toxic); Endosulfan (organochlorine pesticides, solid, toxic)

5.2 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)

5.3 Special protective actions for fire-fighters

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

6.1 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.

6.2 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.

6.3 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

7.1 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.

7.2 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

8.1 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

8.2 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.

8.3 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 local exhaust or breathing protection.

Thermal hazards

no data available

SECTION 9: Physical and chemical properties and safety characteristics

Physical state	PHYSICAL DESCRIPTION: Brown crystals. Melting point 208-210°C. Used as an insecticide.
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	no data available

explosion limit/flammability limit	
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	7.42E-08mmHg at 25°C
Density and/or relative density	1.94g/cm ³
Relative vapour density	no data available
Particle characteristics	no data available

SECTION 10: Stability and reactivity

10.1 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.

10.2 Chemical stability

Stable to sunlight

10.3 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.

10.4 Conditions to avoid

no data available

10.5 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].

10.6 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

12.1 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

12.2 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 ...

12.3 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).

12.4 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.

12.5 Other adverse effects

no data available

SECTION 13: Disposal considerations

13.1 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

14.1 UN Number

ADR/RID: UN2995 (For reference only, please check.)

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

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

14.2 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.)

14.3 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.)

14.4 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.)

14.5 Environmental hazards

ADR/RID: Yes

IMDG: Yes

IATA: Yes

14.6 Special precautions for user

no data available

14.7 Transport in bulk according to IMO instruments

no data available

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations specific for the product in question

Chemical name	Common names and synonyms	CAS number	EC number
Endosulfan	Endosulfan	115-29-7	204-079-4
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.
Philippines Inventory of Chemicals and Chemical Substances (PICCS)	Listed.
Vietnam National Chemical Inventory	Listed.
Chinese Chemical Inventory of Existing Chemical Substances (China IECSC)	Listed.
Korea Existing Chemicals List (KECL)	Listed.

SECTION 16: Other information

Information on revision

Creation Date July 15, 2019

Revision Date July 15, 2019

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.

Any questions regarding this SDS, Please send your inquiry to sds@xixisys.com

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