ChemicalBook

Chemical Safety Data Sheet MSDS / SDS

TRANS-CHLORDANE

Revision Date:2024-12-21 Revision Number:1

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

Product identifier

Product name	: TRANS-CHLORDANE
CBnumber	: CB3437050
CAS	: 5103-74-2
EINECS Number	: 225-826-0
Synonyms	: trans-Chlordane,γ-Chlordane

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

Carcinogenicity, Category 2

Hazardous to the aquatic environment, short-term (Acute) - Category Acute 1

Label elements

Pictogram(s)

Signal word	Danger

Hazard statement(s)

H225 Highly Flammable liquid and vapour

H302 Harmful if swallowed

H304 May be fatal if swallowed and enters airways

H315 Causes skin irritation

H336 May cause drowsiness or dizziness

H351 Suspected of causing cancer

H373 May cause damage to organs through prolonged or repeated exposure

H400 Very toxic to aquatic life

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.

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

P273 Avoid release to the environment.

P281 Use personal protective equipment as required.

P331 Do NOT induce vomiting.

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

P501 Dispose of contents/container to.....

Prevention

P264 Wash ... thoroughly after handling.

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

P203 Obtain, read and follow all safety instructions before use.

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

P273 Avoid release to the environment.

Response

P301+P317 IF SWALLOWED: Get medical help.

P330 Rinse mouth.

P318 IF exposed or concerned, get medical advice.

P391 Collect spillage.

Storage

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

no data available

SECTION 3: Composition/information on ingredients

Substance

Product name	: TRANS-CHLORDANE
Synonyms	: trans-Chlordane,γ-Chlordane
CAS	: 5103-74-2
EC number	: 225-826-0
MF	: C10H6Cl8
MW	: 409.78

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.

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

Rest. Refer for medical attention .

Most important symptoms and effects, both acute and delayed

SYMPTOMS: Symptoms of exposure to this compound include blurred vision, confusion, ataxia, delirium, coughing, abdominal pain, nausea, irritability and anuria. Other symptoms may include nervousness, loss of coordination, unconsciousness and dry red skin. It may also cause neuroblastoma. It is moderately irritating to the skin and can cause deep depression and liver changes. Symptoms of acute poisoning with this type of compound include vomiting, diarrhea, paraesthesia, excitement, giddiness, fatigue, tremors, convulsions, coma, possibly pulmonary edema; liver, kidney and myocardial toxicity and hypothermia. Also, respiration may be accelerated initially and later depressed. Symptoms of chronic poisoning with this type of compound may include headache, loss of appetite, muscular weakness, fine tremors, apprehensive mental state, aplastic anemia and acute leukemia. ACUTE/CHRONIC HAZARDS: This compound is readily absorbed through the skin as well as through other portals. It is toxic by skin absorption and orally. When heated to decomposition it emits toxic fumes of organo chloride products, carbon monoxide and carbon dioxide. (NTP, 1992)

Fatal oral dose to adult humans is between 6 and 60 g with onset of symptoms within 45 minutes to several hours after ingestion, although symptoms have occurred following very small doses either orally or by skin exposure. Some reports of delayed development of liver disease, blood disorders and upset stomach. Chlordane is considered to be borderline between a moderately and highly toxic substance. (EPA, 1998)

Indication of any immediate medical attention and special treatment needed

Treatment is symptomatic and supportive. Oils should not be used as either cathartics or dermal cleansing agents, as they increase absorption. Gastric lavage and use of activated charcoal and sodium sulfate are indicated for ingestion. If dermal exposure occurred, contaminated clothes should be removed, and the skin should be thoroughly cleansed with soap and water. Management of seizures in both children and adults is with Valium or phenobarbital. Respiratory depression and even respiratory arrest, especially with concomitant use of Valium and phenobarbital in children, may occur. These drugs preferably should be used only in critical care areas where emergency endotracheal intubation can be performed. /It is recommended/ that epinephrine not be utilized in patients with organochlorine poisoning, as the organochlorines induce myocardial irritability and ventricular arrhythmias may occur. However, dopamine may be necessary in the event of hypotension unresponsive to fluid administration, and epinephrine may be necessary in the event of cardiopulmonary arrest. ...

Organochlorine insecticides

SECTION 5: Firefighting measures

Extinguishing media

Fire fighting: Self-contained breathing apparatus with a full facepiece, operated in pressure-demand or other positive-pressure mode. ...

Specific Hazards Arising from the Chemical

This chemical is combustible. (NTP, 1992)

Flammable/combustible material; may be ignited by heat, sparks or flames. Vapors may travel to a source of ignition and flash back. Run-off to sewers may create fire or explosion hazard. Containers may explode in heat of fire. Vapors are toxic indoors and outdoors. Chlordane degrades under natural environmental conditions to photoisomers, such as photo-cis- chlordane, which are more toxic to certain animals than chlordane and also showed higher bioaccumulation. Loses chlorine in presence of alkaline reagents; should not be formulated with any solvent, carrier, diluent or emulsifier which has alkaline reaction. (EPA, 1998)

Advice for firefighters

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

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

A process for removing pollutants from Du pont's chambers works plant in Deepwater, NJ is described. Process involves neutralization of wastes & settling, followed by combined powdered carbon-biological process. Among pesticides listed as priority pollutants are heptachlor and chlordane.

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 food and feedstuffs, bases and incompatible materials. See Chemical Dangers. Well closed. Keep in a well-ventilated room.Ambient temperature for storage.

SECTION 8: Exposure controls/personal protection

Control parameters

Occupational Exposure limit values

Component	(1α,2β,3aα,4β,7β,7aα)-1,2,4,5,6,7,8,8-octachloro-2,3,3a,4,7,7a-hexahydro-4,7-methano-1H-indene
CAS No.	5103-74-2
	NIOSH considers chlordane to be a potential occupational carcinogen. NIOSH usually recommends that occupational exposures to carcinogens be limited to the lowest feasible concn. Recommended Exposure Limit: 10 Hr Time-Weighted Avg: 0.5 mg/cu m, skin.

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 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

Information on basic physicochemical properties

Physical state	Solid
Colour	Viscous, amber-colored liquid
Odour	PENETRATING; AROMATIC; SLIGHTLY PUNGENT, LIKE CHLORINE
Melting point/freezing point	223-225° F (cis); 219-221° F (trans) (NTP, 1992)
Boiling point or initial boiling point and boiling range	424.7°C at 760mmHg
Flammability	Noncombustible Liquid, but may be utilized in flammable solutions.
Lower and upper explosion limit/flammability limit	0.7%-5% (in kerosene soln)
Flash point	212.5°C
Auto-ignition temperature	410° F (USCG, 1999)
Decomposition temperature	no data available
pH	no data available
Kinematic viscosity	69 poises at 25 deg C (about that of 95% glycerol); viscosity reduced by heating to 120-140 deg F
Solubility	Miscible with aliphatic and aromatic solvents (U.S. EPA, 1985)
Partition coefficient n-octanol/water	log Kow= 6.16

Vapour pressure	5.03 x 10^{-5} mmHg at 25 °C (subcooled liquid vapor pressure calculated from GC retention time data,Hinckley et al., 1990)
Density and/or relative density	1.8g/cm3
Relative vapour density	14.3 (NTP, 1992) (Relative to Air)
Particle characteristics	no data available

SECTION 10: Stability and reactivity

Reactivity

NIOSH considers chlordane to be a potential occupational carcinogen.
Decomposes on burning. Decomposes on contact with bases. This produces toxic fumes including phosgene and hydrogen chloride. Attacks iron, zinc, plastics, rubber and coatings.

Chemical stability

Dehydrohalogenates in presence of alkali

Possibility of hazardous reactions

CHLORDANE, a mixture of related chlorinated cyclodienes, is decomposed by alkalis. Corrodes iron and zinc. Can react with strong oxidizing agents. Attacks some forms of plastics, rubber and coatings (NTP, 1992)

Conditions to avoid

no data available

Incompatible materials

Loses ...chlorine in presence of alkaline reagents and should not be formulated with any solvent, carrier, diluent or emulsifier, which has alkaline reaction.

Hazardous decomposition products

Hazardous decomposition products: Toxic gases and vapors, such as hydrogen chloride, chlorine, phosgene, and carbon monoxide. ...

SECTION 11: Toxicological information

Acute toxicity

- Oral: LD50 Rat oral 590 mg/kg
- Inhalation: LC50 Cat inhalation 100 mg/cu m/4 hours
- Dermal: LD50 Rat (female) percutaneous 690 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

EPA: Probable human carcinogen, IARC: Not classifiable as to carcinogenicity to humans, NTP: Not evaluated

Reproductive toxicity

A study of women living in homes repeatedly treated for termites with chlordane revealed an increased incidence of ovarian and uterine disease, compared with a reference population. However, it is not possible to state whether these effects were solely due to chlordane or to other chemicals as well. An animal study reported biochemical and behavioral laterations mimicking male sex steroids, while another study reported alterations in reproductive behavior, both in male rats exposed to chlordane.

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 Rainbow trout 42 ug/l/96 hr (95% confidence limit 37-48 ug/l) @ 12 deg C, wt 1.0 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.

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

A pure culture of Nocardiopsis sp. isolated from soil was able to degrade chlordane with dichlorochlordene, oxychlordane, heptachlor, heptachlor-endo-epoxide, chlordene, chlorohydrin, and 3-hydroxy-trans-chlordene produced as metabolites(1).

Bioaccumulative potential

Lagodon rhomboides (pinfish) exposed to chlordane exhibited a bioconcentration factor of 6227. Duration of 96 hr.

Mobility in soil

The extremely low mobility of chlordane within soil ... after 14 months and 72 inches (183 cm) of rainfall /was observed/. Chlordane was found not to have extensively penetrated below nine inches (23 cm). Most of the residues (85-90%) were found in the 0-3 inch (0-8 cm) cultivated layer. Nine to 15% and 1.2-1.6% were found in the 3-6 inch (8-15 cm) and 6-9 inch (15-23 cm) layers, respectively.

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: UN2761 (For reference only, please check.)

IMDG: UN2761 (For reference only, please check.)

IATA: UN2761 (For reference only, please check.)

UN Proper Shipping Name

ADR/RID: ORGANOCHLORINE PESTICIDE, SOLID, TOXIC (For reference only, please check.)

IMDG: ORGANOCHLORINE PESTICIDE, SOLID, TOXIC (For reference only, please check.)

IATA: ORGANOCHLORINE PESTICIDE, SOLID, 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)

Not Listed.

PICCS

Not Listed.

Vietnam National Chemical Inventory

Listed.

IECSC

Not Listed.

Korea Existing Chemicals List (KECL)

Not 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/