



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 Dichlorvos

1.2 Other means of identification

Product number -
Other names Task; DDVP; Mafu

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 3, Oral
Acute toxicity - Category 3, Dermal
Skin sensitization, Category 1
Acute toxicity - Category 2, Inhalation
Hazardous to the aquatic environment, short-term (Acute) - Category Acute 1

2.2 GHS label elements, including precautionary statements

Pictogram(s)



Signal word Danger
Hazard statement(s) H301 Toxic if swallowed
H311 Toxic in contact with skin

H317 May cause an allergic skin reaction
H330 Fatal if inhaled
H400 Very toxic to aquatic life

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.
P272 Contaminated work clothing should not be allowed out of the workplace.
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/...
P316 Get emergency medical help immediately.
P361+P364 Take off immediately all contaminated clothing and wash it before reuse.
P333+P317 If skin irritation or rash occurs: 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.
P320 Specific treatment is urgent (see ... on this label).
P391 Collect spillage.
P405 Store locked up.
P403+P233 Store in a well-ventilated place. Keep container tightly closed.
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.

Storage

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
Dichlorvos	Dichlorvos	62-73-7	200-547-7	100%

SECTION 4: First-aid measures

4.1 Description of necessary first-aid measures

If inhaled

Fresh air, rest. Refer immediately for medical attention. See Notes.

Following skin contact

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

Following eye contact

Rinse with plenty of water (remove contact lenses if easily possible). Refer for medical attention.

Following ingestion

Rinse mouth. Do NOT induce vomiting. Refer immediately for medical attention. See Notes.

4.2 Most important symptoms/effects, acute and delayed

Dichlorvos is a very toxic compound with a probable lethal oral dose in humans between 50 and 500 mg/kg, or between 1 teaspoonful and 1 oz. for a 70 kg (150 lb.) person. However, brief exposure (30-60 minutes) to vapor concentrations as high as 6.9 mg/liter did not result in clinical signs or depressed serum cholinesterase levels. Toxic changes are typical of organophosphate insecticide poisoning with progression to respiratory distress, respiratory paralysis, and death if there is no clinical intervention. (EPA, 1998)

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

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

SECTION 5: Fire-fighting measures

5.1 Suitable extinguishing media

If material is on fire or involved in a fire: Do not extinguish fire unless flow can be stopped. Use water in flooding quantities as fog. Solid streams of water may be ineffective. Cool all affected containers with flooding quantities of water. Apply water from as far a distance as possible. Use foam, dry chemical, or carbon dioxide. Keep run-off water out of sewers and water sources.

5.2 Specific hazards arising from the chemical

Toxic chloride fumes and phosgene formed if heated to decomposition or on contact with acid or acid fumes. Corrosive to iron and mild steel, acids or acid fumes. Hydrolyzes in water. (EPA, 1998)

5.3 Special protective actions for fire-fighters

Use water spray, foam, powder, carbon dioxide. 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

Evacuate danger area! Consult an expert! Personal protection: chemical protection suit including self-contained breathing apparatus. Do NOT let this chemical enter the environment. Do NOT wash away into sewer. Ventilation. Collect leaking liquid in sealable containers. Absorb liquid in sand or inert absorbent. Then store and dispose of according to local regulations.

6.2 Environmental precautions

Evacuate danger area! Consult an expert! Personal protection: chemical protection suit including self-contained breathing apparatus. Do NOT let this chemical enter the environment. Do NOT wash away into sewer. Ventilation. Collect leaking liquid in sealable containers. Absorb liquid in sand or inert absorbent. Then store and dispose of according to local regulations.

6.3 Methods and materials for containment and cleaning up

Environmental consideration: Land spill: Dig a pit, pond, lagoon, holding area to contain liquid or solid material. /SRP: If time permits, pits, ponds, lagoons, soak holes, or holding areas should be sealed with an impermeable flexible membrane liner./ Dike surface flow

using soil, sand bags, foamed polyurethane, or foamed concrete. Absorb bulk liquid with fly ash, or cement powder.

SECTION 7: Handling and storage

7.1 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.

7.2 Conditions for safe storage, including any incompatibilities

Store only in original container. Well closed. Keep in a well-ventilated room. Provision to contain effluent from fire extinguishing. Separated from food and feedstuffs. Store in an area without drain or sewer access. It must be stored at temperatures below 80 deg F to assure proper shelf life.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure limit values

TLV: 0.1 mg/m³, as TWA; (skin); (SEN); A4 (not classifiable as a human carcinogen); BEI issued. MAK: 1 mg/m³, 0.11 ppm; peak limitation category: II(2); skin absorption (H); pregnancy risk group: C

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 ventilation, local exhaust or breathing protection.

Thermal hazards

no data available

SECTION 9: Physical and chemical properties and safety characteristics

Physical state	Dichlorvos is a colorless to amber liquid with an aromatic odor. When heated to high temperatures may emit toxic chloride fumes and phosgene gas. Toxic by inhalation, skin absorption or ingestion. Used as a pesticide. May be found in the form of a dry mixture where the liquid is absorbed onto a dry carrier.
Colour	Colorless to amber liquid
Odour	Aromatic odor
Melting point/freezing point	-60°C
Boiling point or initial boiling point and boiling	140°C

range	
Flammability	Class III Combustible Liquid
Lower and upper explosion limit/flammability limit	no data available
Flash point	14.7°C
Auto-ignition temperature	no data available
Decomposition temperature	no data available
pH	no data available
Kinematic viscosity	no data available
Solubility	10 to 50 mg/mL at 68° F (NTP, 1992)
Partition coefficient n-octanol/water	log Kow = 1.43
Vapour pressure	184 mm Hg (20 °C)
Density and/or relative density	1.415
Relative vapour density	2 (vs air)
Particle characteristics	no data available

SECTION 10: Stability and reactivity

10.1 Reactivity

On combustion, forms toxic and corrosive fumes including phosphorus oxides, phosgene and chlorine. Attacks iron, steel, plastics and rubber.

10.2 Chemical stability

Stable to heat

10.3 Possibility of hazardous reactions

DICHLORVOS is incompatible with strong acids and bases. It is slowly hydrolyzed in acidic media and rapidly hydrolyzed by alkalis. It is corrosive to iron and mild steel. (NTP, 1992). Organophosphates 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.

10.4 Conditions to avoid

no data available

10.5 Incompatible materials

Hydrolyzes in water

10.6 Hazardous decomposition products

Readily decomp in strong acid or alkali

SECTION 11: Toxicological information

Acute toxicity

- Oral: LD50 Rat oral 17 mg/kg
- Inhalation: LC50 Rat inhalation 15 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: Suggestive Evidence of Carcinogenicity, but Not Sufficient to Assess Human Carcinogenic Potential

Reproductive toxicity

No information is available on the reproductive or developmental effects of dichlorvos in humans. In one study, birth defects in fetuses were observed in rats exposed to dichlorvos by injection; however, in several other animal studies, birth defects were not observed. Sperm abnormalities were observed in mice injected with dichlorvos.

STOT-single exposure

The substance is irritating to the skin. The substance may cause effects on the nervous system by a cholinesterase inhibiting effect. Exposure above the OEL could cause death. The effects may be delayed. Medical observation is indicated.

STOT-repeated exposure

Repeated or prolonged contact with skin may cause dermatitis. Repeated or prolonged contact may cause skin sensitization. Cholinesterase inhibition. Cumulative effects are possible. See Acute Hazards/Symptoms. This substance is possibly carcinogenic to humans.

Aspiration hazard

A harmful contamination of the air can be reached rather quickly on evaporation of this substance at 20°C, on spraying or dispersing much faster.

SECTION 12: Ecological information

12.1 Toxicity

- Toxicity to fish: LC50 /Pimephales promelas/ (Fathead minnow, weight 0.7 g) 11,600 ug/L/96 hr at 17 deg C (95% confidence limit: 7,830-17,200 ug/L); static bioassay /Technical material, 93%
- Toxicity to daphnia and other aquatic invertebrates: EC50 Daphnia magna (Water flea; intoxication, immobilization) 1000 ppb/48 hr (95% confidence limit: 800-1400 ppb); static /formulated product
- Toxicity to algae: no data available
- Toxicity to microorganisms: no data available

12.2 Persistence and degradability

AEROBIC: Dichlorvos was reported to have a half-life of less than 1 day in biologically active soils and water systems(1). Another study reported dichlorvos to have an aerobic soil biodegradation half-life of less than 1 day(2). Dichlorvos was listed as being amenable to biodegradation after acclimation(3). The biodegradation rate constant and half-life for dichlorvos was determined to be 0.20 L/d and 3.5 days, respectively, in an aerobic biodegradability test using activated sludge inoculum at 20 deg C and GC analysis(4). Dichlorvos (present at high levels) was degraded but not completely removed when incubated with sewage for 7 days at 29 deg C; biodegradation products were dichloroethanol, dichloroacetic acid, and ethyl dichloroacetate(5). Dichlorvos was found to have 8-14% of theoretical BOD in an 8 day laboratory test using a sewage inoculum(6). Dichlorvos was degraded by soil microorganisms, although much of the degradation in soil was chemical in nature(7). In a soil perfusion experiment using Houston Black Clay (pH 7.7), 71% degradation occurred in 10 days but only 30% was due to biodegradation(7). The presence of active microorganisms reduced the half-life of dichlorvos in clay and calcareous soil from 0.9 to 0.75 days and 0.85 to 0.70 days, respectively(8). The average first-order rate constants of dichlorvos in an acidic silty clay soil and a neutral sandy clay soil were 0.0423 and 0.04443 L/day, respectively; the half-life in both soils was 16 days(4). Dichlorvos was completely degraded on passage through a sand column, whereas no degradation occurred when the sand was sterilized(9).

12.3 Bioaccumulative potential

The whole-body BCF measured in carp was <0.5 after 168 hours(1). The excretion rate and half-life were 0.56 L/hour and 0.6 hours, respectively, indicating that dichlorvos is readily eliminated from carp(1). The average whole-body BCF of dichlorvos in willow shiner after 24 and 168 hours was 0.8(2). According to a classification scheme(3), this BCF suggests the potential for bioconcentration in aquatic organisms is low(SRC).

12.4 Mobility in soil

Measured Koc values reported in the 1993 UK Database for dichlorvos ranged from 27.5 to 151.0(1). The Freundlich adsorption constants for dichlorvos in 3 Japanese black soils with organic carbon content ranging from 2.3% to 6.8% were determined to be 3.6, 2.4, and 1.0; the Koc of dichlorvos derived from these data was 47(2). According to a classification scheme(3), these Koc values suggest that dichlorvos is expected to have very high to moderate mobility in soil. In a field experiment, 18-20% of the dichlorvos which was sprayed on the ground had penetrated the soil to a depth of 30 cm within 5 days(4). The mobility of dichlorvos in soil is decreased by the addition of soil amendments such as calcium carbonate(5). Mobility of dichlorvos in soil decreases with increasing soil pH(6).

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: UN2783 (For reference only, please check.)

IMDG: UN2783 (For reference only, please check.)

IATA: UN2783 (For reference only, please check.)

14.2 UN Proper Shipping Name

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

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

IATA:
ORGANOPHOSPHORUS
PESTICIDE, SOLID,
TOXIC (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
Dichlorvos	Dichlorvos	62-73-7	200-547-7
European Inventory of Existing Commercial Chemical Substances (EINECS)			Listed.
EC Inventory			Listed.
United States Toxic Substances Control Act (TSCA) Inventory			Listed.
China Catalog of Hazardous chemicals 2015			Listed.
New Zealand Inventory of Chemicals (NZIoC)			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

Do NOT take working clothes home. Do NOT use in the vicinity of a fire or a hot surface, or during welding. 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. Following the disappearance of symptoms from a short-term exposure, delayed effects could become manifest (after several days or weeks). Carrier solvents used in commercial formulations may change physical and toxicological properties. If the substance is formulated with solvents also consult the ICSCs of these materials.

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

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