

## Chemical Safety Data Sheet MSDS / SDS

**4,4'-DDE**Revision Date:2023-12-07 Revision Number:1

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

Product name : 4,4'-DDE  
CBnumber : CB9776968  
CAS : 72-55-9  
EINECS Number : 200-784-6  
Synonyms : p,p'-DDE,4,4' -DDE

**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 : 400-158-6606

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**SECTION 2: Hazards identification****Classification of the substance or mixture**

Not classified.

**Label elements****Pictogram(s)**

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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  
H350 May cause cancer  
H351 Suspected of causing cancer  
H370 Causes damage to organs

H410 Very toxic to aquatic life with long lasting effects

H411 Toxic to aquatic life with long lasting effects

**Precautionary statement(s)**

P201 Obtain special instructions before use.

P202 Do not handle until all safety precautions have been read and understood.

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 thoroughly after handling.

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

P273 Avoid release to the environment.

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

P281 Use personal protective equipment as required.

P311 Call a POISON CENTER or doctor/physician.

P331 Do NOT induce vomiting.

P391 Collect spillage. Hazardous to the aquatic environment

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

P308+P313 IF exposed or concerned: Get medical advice/attention.

P405 Store locked up.

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

**Prevention**

none

**Response**

none

**Storage**

none

**Disposal**

none

**Other hazards**

no data available

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## SECTION 3: Composition/information on ingredients

**Substance**

Product name : 4,4'-DDE  
Synonyms : p,p'-DDE,4,4' -DDE  
CAS : 72-55-9  
EC number : 200-784-6  
MF : C14H8Cl4  
MW : 318.03

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## SECTION 4: First aid measures

### Description of first aid measures

#### If inhaled

Move the victim into fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration and consult a doctor immediately. Do not use mouth to mouth resuscitation if the victim ingested or inhaled the chemical.

#### Following skin contact

Take off contaminated clothing immediately. Wash off with soap and plenty of water. Consult a doctor.

#### Following eye contact

Rinse with pure water for at least 15 minutes. Consult a doctor.

#### Following ingestion

Rinse mouth with water. Do not induce vomiting. Never give anything by mouth to an unconscious person. Call a doctor or Poison Control Center immediately.

### Most important symptoms and effects, both acute and delayed

**SYMPTOMS:** Symptoms of exposure to this compound may include liver and kidney damage. Based on data for a similar compound, symptoms may also include vomiting, headache, fatigue, malaise, numbness and partial paralysis of the extremities, moderate ataxia, exaggeration of part of the reflexes, mild convulsions, loss of proprioception and vibratory sensation of the extremities, hyperactive knee-jerk reflexes, excitement, confusion and increased respiration. It may also cause nausea and diarrhea. Other symptoms may include tremors of the head and neck muscles, cardiac and respiratory failure and even death. It may also cause paresthesias of the tongue, lips and face, irritability and dizziness. It may cause tonic and clonic convulsions. Other symptoms include apprehension and hyperesthesia of the mouth and face. It may also cause "yellow vision". **ACUTE/CHRONIC HAZARDS:** This compound is harmful if ingested, inhaled or absorbed through the skin. It may cause irritation. There is clear evidence that this compound is an animal carcinogen. When heated to decomposition it emits very toxic fumes of carbon monoxide and carbon dioxide. It may also emit toxic fumes of hydrogen chloride gas. (NTP, 1992)

### 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

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## SECTION 5: Firefighting measures

### Extinguishing media

Fires involving this material can be controlled with a dry chemical, carbon dioxide or Halon extinguisher. (NTP, 1992)

### Specific Hazards Arising from the Chemical

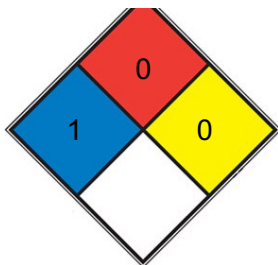
Flash point data for this chemical are not available. It is probably combustible. (NTP, 1992)

### Advice for firefighters

Wear self-contained breathing apparatus for firefighting if necessary.

### NFPA 704





■ HEALTH 1 Exposure would cause irritation with only minor residual injury (e.g. [acetone](#), sodium bromate, potassium chloride)

Materials that will not burn under typical fire conditions, including intrinsically noncombustible materials such as concrete,

■ FIRE 0 stone, and sand. Materials that will not burn in air when exposed to a temperature of 820 °C (1,500 °F) for a period of 5 minutes.(e.g. Carbon tetrachloride)

■ REACT 0 Normally stable, even under fire exposure conditions, and is not reactive with water (e.g. helium,[N2](#))

□ SPEC.

□ HAZ.

## 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

Prevent further spillage or leakage if it is safe to do so. Do not let the chemical enter drains. Discharge into the environment must be avoided.

### 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

PRECAUTIONS FOR "CARCINOGENS": Storage site should be as close as practicable to lab in which carcinogens are to be used, so that only small quantities required for ... expt need to be carried. Carcinogens should be kept in only one section of cupboard, an explosion-proof refrigerator or freezer (depending on chemophysical properties ...) that bears appropriate label. An inventory ... should be kept, showing

## SECTION 8: Exposure controls/personal protection

### Control parameters

#### Occupational Exposure limit values

no data available

#### 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

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## SECTION 9: Physical and chemical properties

### Information on basic physicochemical properties

Physical state	neat
Colour	White, crystalline, odorless powder
Odour	no data available
Melting point/freezing point	4°C(lit.)
Boiling point or initial boiling point and boiling range	124°C/16mmHg(lit.)
Flammability	no data available
Lower and upper explosion limit/flammability limit	no data available
Flash point	107°C(lit.)
Auto-ignition temperature	no data available
Decomposition temperature	no data available
pH	no data available

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Kinematic viscosity	no data available
Solubility	ethanol: soluble
Partition coefficient n-octanol/water	log Kow = 6.51
Vapour pressure	13 at 30 °C (Wescott et al., 1981)
Density and/or relative density	no data available
Relative vapour density	no data available
Particle characteristics	no data available

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## SECTION 10: Stability and reactivity

### Reactivity

no data available

### Chemical stability

no data available

### Possibility of hazardous reactions

P,P'-DDE is sensitive to exposure to light. This compound is incompatible with strong oxidizing agents and strong bases. Oxidation is catalyzed by UV radiation. (NTP, 1992)

### Conditions to avoid

no data available

### Incompatible materials

no data available

### Hazardous decomposition products

When heated to decomposition it emits very toxic fumes of /chlorides/.

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## SECTION 11: Toxicological information

### Acute toxicity

- Oral: LD50 Rat oral 880 mg/kg
- Inhalation: no data available
- 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: Group B2 Probable Human Carcinogen

### **Reproductive toxicity**

No information is available on the reproductive or developmental effects of DDT or DDE in humans via inhalation exposure. No studies are available on the developmental effects in humans after oral exposure to DDT or DDE. However, DDT and DDE have been found in human blood, placental tissue, and umbilical cord blood. Epidemiologic studies did not find an association between DDT maternal blood levels and miscarriages or premature rupture of fetal membranes in humans. Oral animal studies have reported reproductive effects, such as reduced fertility, adverse effects on spermatogenesis, and decreased testicular and ovarian weights from DDT exposure. Developmental effects, such as embryotoxicity and fetotoxicity, but not teratogenicity (birth defects) have also been observed in oral animal studies. DDT has been shown to elicit estrogenic activity in rats after oral exposure .

### **STOT-single exposure**

no data available

### **STOT-repeated exposure**

no data available

### **Aspiration hazard**

no data available

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## **SECTION 12: Ecological information**

### **Toxicity**

Toxicity to fish: LC50; Species: *Oncorhynchus mykiss* (Rainbow trout, weight 0.8 g); Conditions: freshwater, static, 12 deg C, pH 7.1, hardness 44 mg/L CaCO<sub>3</sub>; Concentration: >87 ug/L for 24 hr /99% purity, technical material

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**

AEROBIC: DDE was not degraded in static screening tests using settled domestic wastewater inoculum with yeast extract, with 3 additional subcultures added every 7 days(1). No degradation of DDE exposed to ocean sediments in seawater under aerobic conditions were observed after 12 months(2). No degradation of DDE observed after 8 weeks of exposure of DDE in lab tests to raw water from a stream which received domestic and industrial wastes and farm runoff(3). Half-life of DDE exposed to river sediments was 1,100 days(4). BOD after 30 days of <1.0 ug O<sub>2</sub>/mL for DDE exposed to soil inoculum indicated only slight biodegradation(5).

### **Bioaccumulative potential**

BCF values of DDE have been reported in the following aquatic organisms: rainbow trout, 81,000(2); fathead minnow, 51,000(3); fish (no

species reported, static microcosm study), 27,500(4); *Gambusia affinis*, 217 (3 days exposure)(1); trout,  $1.8 \times 10^5$ , bluegill sunfish,  $1.1 \times 10^5$ (6). According to a classification scheme(7), these BCF data suggest bioconcentration in aquatic organisms is very high(SRC). BCF values of 28,600 have been reported in zooplankton(5).

### **Mobility in soil**

The Koc value of p,p'-DDE in soil from Taichung, Taiwan was measured as 26,300(1) and 75,860(2) in soil column batch experiments. The avg log Koc value of DDE in lake sediment was 4.58(3). According to a classification scheme(4), these Koc values suggest that DDE is expected to be immobile in soil(SRC).

### **Other adverse effects**

no data available

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## **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.

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## **SECTION 14: Transport information**

### **UN Number**

ADR/RID: UN3077 (For reference only, please check.)

IMDG: UN3077 (For reference only, please check.)

IATA: UN3077 (For reference only, please check.)

### **UN Proper Shipping Name**

ADR/RID: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (For reference only, please check.)

IMDG: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (For reference only, please check.)

IATA: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (For reference only, please check.)

### **Transport hazard class(es)**

ADR/RID: 9 (For reference only, please check.)

IMDG: 9 (For reference only, please check.)

IATA: 9 (For reference only, please check.)

### **Packing group, if applicable**

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

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



IATA: III (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

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## 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)**

Not Listed.

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## 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?pagelD=0&request\\_locale=en](http://www.echemportal.org/echemportal/index?pagelD=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/>

### Disclaimer:

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