

## SAFETY DATA SHEET

Version 8.4  
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**SECTION 1: Identification of the substance/mixture and of the company/undertaking****1.1 Product identifiers**

Product name : 4,4'-DDE  
Product Number : 43537  
Brand : Sigma-Aldrich  
CAS-No. : 72-55-9

**1.2 Relevant identified uses of the substance or mixture and uses advised against**

Identified uses : Laboratory chemicals, Synthesis of substances

**1.3 Details of the supplier of the safety data sheet**

Company : Sigma-Aldrich Inc.  
3050 SPRUCE ST  
ST. LOUIS MO 63103  
UNITED STATES

Telephone : +1 314 771-5765  
Fax : +1 800 325-5052

**1.4 Emergency telephone**

Emergency Phone # : 800-424-9300 CHEMTREC (USA) +1-703-  
527-3887 CHEMTREC (International) 24  
Hours/day; 7 Days/week

**SECTION 2: Hazards identification****2.1 Classification of the substance or mixture****GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)**

Acute toxicity, Oral (Category 3), H301  
Carcinogenicity (Category 2), H351  
Specific target organ toxicity - repeated exposure, Oral (Category 1), H372  
Short-term (acute) aquatic hazard (Category 1), H400  
Long-term (chronic) aquatic hazard (Category 1), H410

For the full text of the H-Statements mentioned in this Section, see Section 16.

**2.2 GHS Label elements, including precautionary statements**

Pictogram



Signal word

Danger

|                            |                                                                               |
|----------------------------|-------------------------------------------------------------------------------|
| Hazard statement(s)        |                                                                               |
| H301                       | Toxic if swallowed.                                                           |
| H351                       | Suspected of causing cancer.                                                  |
| H372                       | Causes damage to organs through prolonged or repeated exposure if swallowed.  |
| H410                       | Very 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.     |
| P260                       | Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.                          |
| 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. |
| P301 + P310 + P330         | IF SWALLOWED: Immediately call a POISON CENTER/ doctor. Rinse mouth.          |
| P308 + P313                | IF exposed or concerned: Get medical advice/ attention.                       |
| P391                       | Collect spillage.                                                             |
| P405                       | Store locked up.                                                              |
| P501                       | Dispose of contents/ container to an approved waste disposal plant.           |

### 2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

## SECTION 3: Composition/information on ingredients

### 3.1 Substances

|                  |                                                  |
|------------------|--------------------------------------------------|
| Formula          | : C <sub>14</sub> H <sub>8</sub> Cl <sub>4</sub> |
| Molecular weight | : 318.03 g/mol                                   |
| CAS-No.          | : 72-55-9                                        |
| EC-No.           | : 200-784-6                                      |

| Component                                           | Classification                                                                                                                            | Concentration |
|-----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| <b>2,2-bis(p-Chlorophenyl)-1,1-dichloroethylene</b> |                                                                                                                                           |               |
|                                                     | Acute Tox. 3; Carc. 2;<br>STOT RE 1; Aquatic Acute 1; Aquatic Chronic 1;<br>H301, H351, H372, H400, H410<br>M-Factor - Aquatic Acute: 100 | <= 100 %      |

For the full text of the H-Statements mentioned in this Section, see Section 16.

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## SECTION 4: First aid measures

### 4.1 Description of first-aid measures

#### General advice

Consult a physician. Show this material safety data sheet to the doctor in attendance. Move out of dangerous area.

#### If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

#### In case of skin contact

Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

#### In case of eye contact

Flush eyes with water as a precaution.

#### If swallowed

Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

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

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

### 4.3 Indication of any immediate medical attention and special treatment needed

No data available

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## SECTION 5: Firefighting measures

### 5.1 Extinguishing media

#### Suitable extinguishing media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

### 5.2 Special hazards arising from the substance or mixture

Carbon oxides

Hydrogen chloride gas

Combustible.

### 5.3 Advice for firefighters

Wear self-contained breathing apparatus for firefighting if necessary.

### 5.4 Further information

No data available

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## SECTION 6: Accidental release measures

### 6.1 Personal precautions, protective equipment and emergency procedures

Wear respiratory protection. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust. For personal protection see section 8.

## **6.2 Environmental precautions**

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

## **6.3 Methods and materials for containment and cleaning up**

Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

## **6.4 Reference to other sections**

For disposal see section 13.

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## **SECTION 7: Handling and storage**

### **7.1 Precautions for safe handling**

#### **Advice on safe handling**

Avoid contact with skin and eyes. Avoid formation of dust and aerosols.**Advice on safe handling**

Further processing of solid materials may result in the formation of combustible dusts. The potential for combustible dust formation should be taken into consideration before additional processing occurs.

#### **Advice on protection against fire and explosion**

Provide appropriate exhaust ventilation at places where dust is formed.

#### **Hygiene measures**

Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

For precautions see section 2.2.

### **7.2 Conditions for safe storage, including any incompatibilities**

#### **Storage conditions**

Keep container tightly closed in a dry and well-ventilated place.

#### **Storage stability**

Recommended storage temperature

2 - 8 °C

Moisture sensitive. Store under argon.

Storage class (TRGS 510): 6.1C: Combustible, acute toxic Cat.3 / toxic compounds or compounds which causing chronic effects

### **7.3 Specific end use(s)**

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

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## **SECTION 8: Exposure controls/personal protection**

### **8.1 Control parameters**

#### **Ingredients with workplace control parameters**

Contains no substances with occupational exposure limit values.

### **8.2 Exposure controls**

#### **Appropriate engineering controls**

Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

## Personal protective equipment

### Eye/face protection

Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

### Skin protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

### Body Protection

Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

### Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

### Control of environmental exposure

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

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## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

|                                                 |                                                        |
|-------------------------------------------------|--------------------------------------------------------|
| a) Appearance                                   | Form: solid                                            |
| b) Odor                                         | No data available                                      |
| c) Odor Threshold                               | No data available                                      |
| d) pH                                           | No data available                                      |
| e) Melting point/freezing point                 | Melting point/range: 88.0 - 90.0 °C (190.4 - 194.0 °F) |
| f) Initial boiling point and boiling range      | No data available                                      |
| g) Flash point                                  | ( )No data available                                   |
| h) Evaporation rate                             | No data available                                      |
| i) Flammability (solid, gas)                    | No data available                                      |
| j) Upper/lower flammability or explosive limits | No data available                                      |
| k) Vapor pressure                               | < 0.000 hPa                                            |
| l) Vapor density                                | No data available                                      |
| m) Relative density                             | No data available                                      |

- |    |                                           |                   |
|----|-------------------------------------------|-------------------|
| n) | Water solubility                          | No data available |
| o) | Partition coefficient:<br>n-octanol/water | log Pow: 6.51     |
| p) | Autoignition<br>temperature               | No data available |
| q) | Decomposition<br>temperature              | No data available |
| r) | Viscosity                                 | No data available |
| s) | Explosive properties                      | No data available |
| t) | Oxidizing properties                      | No data available |

## 9.2 Other safety information

No data available

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## SECTION 10: Stability and reactivity

### 10.1 Reactivity

No data available

### 10.2 Chemical stability

Stable under recommended storage conditions.

### 10.3 Possibility of hazardous reactions

No data available

### 10.4 Conditions to avoid

No data available

### 10.5 Incompatible materials

Strong oxidizing agents, Strong bases

### 10.6 Hazardous decomposition products

In the event of fire: see section 5

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## SECTION 11: Toxicological information

### 11.1 Information on toxicological effects

#### Acute toxicity

LD50 Oral - Rat - 87.0 mg/kg

Remarks: The value is given in analogy to the following substances: 1,1,1-Trichloro-2,2-bis(4-chlorophenyl)ethane

Inhalation: No data available

Dermal: No data available

No data available

#### Skin corrosion/irritation

No data available

#### Serious eye damage/eye irritation

No data available

**Respiratory or skin sensitization**

No data available

**Germ cell mutagenicity**

No data available

**Carcinogenicity**

This product is or contains a component that has been reported to be possibly carcinogenic based on its IARC, ACGIH, NTP, or EPA classification.

Limited evidence of carcinogenicity in animal studies

IARC: 2A - Group 2A: Probably carcinogenic to humans (2,2-bis(p-Chlorophenyl)-1,1-dichloroethylene)

NTP: No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

**Reproductive toxicity**

No data available

**Specific target organ toxicity - single exposure**

No data available

**Specific target organ toxicity - repeated exposure**

Remarks:

No data available

The value is given in analogy to the following substances: 1,1,1-Trichloro-2,2-bis(4-chlorophenyl)ethane

Ingestion - Causes damage to organs through prolonged or repeated exposure.

**Aspiration hazard**

No data available

**11.2 Additional Information**

RTECS: KV9450000

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

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**SECTION 12: Ecological information****12.1 Toxicity**

Toxicity to fish

LC50 - Pimephales promelas (fathead minnow) - 0.01 mg/l - 96 h  
Remarks: The value is given in analogy to the following substances:  
1,1,1-Trichloro-2,2-bis(4-chlorophenyl)ethane

LC50 - Lepomis macrochirus (Bluegill sunfish) - 0.01 mg/l - 96 h

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Remarks: The value is given in analogy to the following substances:  
1,1,1-Trichloro-2,2-bis(4-chlorophenyl)ethane

LC50 - Oncorhynchus mykiss (rainbow trout) - 0.003400 mg/l - 96 h  
Remarks: The value is given in analogy to the following substances:  
1,1,1-Trichloro-2,2-bis(4-chlorophenyl)ethane

|                                                           |                                                                                                                                                                                                |
|-----------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Toxicity to daphnia<br>and other aquatic<br>invertebrates | Immobilization EC50 - Daphnia magna (Water flea) - 0.00108 mg/l - 48 h<br>Remarks: The value is given in analogy to the following substances:<br>1,1,1-Trichloro-2,2-bis(4-chlorophenyl)ethane |
|-----------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## 12.2 Persistence and degradability

No data available

## 12.3 Bioaccumulative potential

|                 |                                                                                                      |
|-----------------|------------------------------------------------------------------------------------------------------|
| Bioaccumulation | Gambusia affinis (Mosquito fish) - 33 d<br>- 3.84 µg/l(2,2-bis(p-Chlorophenyl)-1,1-dichloroethylene) |
|-----------------|------------------------------------------------------------------------------------------------------|

Bioconcentration factor (BCF): 12,037

## 12.4 Mobility in soil

No data available

## 12.5 Results of PBT and vPvB assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

## 12.6 Other adverse effects

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Very toxic to aquatic life with long lasting effects.

No data available

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## SECTION 13: Disposal considerations

### 13.1 Waste treatment methods

#### Product

Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

#### Contaminated packaging

Dispose of as unused product.

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## SECTION 14: Transport information

### DOT (US)

UN number: 2811 Class: 6.1

Packing group: III

Proper shipping name: Toxic solids, organic, n.o.s. (2,2-bis(p-Chlorophenyl)-1,1-dichloroethylene)

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Reportable Quantity (RQ): 1 lbs

1)

Marine pollutant: yes Poison Inhalation Hazard: No

#### IMDG

UN number: 2811 Class: 6.1 Packing group: III EMS-No: F-A, S-A

Proper shipping name: TOXIC SOLID, ORGANIC, N.O.S. (2,2-bis(p-Chlorophenyl)-1,1-dichloroethylene)

Marine pollutant : yes

#### IATA

UN number: 2811 Class: 6.1 Packing group: III

Proper shipping name: Toxic solid, organic, n.o.s. (2,2-bis(p-Chlorophenyl)-1,1-dichloroethylene)

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## SECTION 15: Regulatory information

### SARA 302 Components

No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

### SARA 313 Components

This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

### SARA 311/312 Hazards

Acute Health Hazard, Chronic Health Hazard

### Massachusetts Right To Know Components

No components are subject to the Massachusetts Right to Know Act.

### Pennsylvania Right To Know Components

2,2-bis(p-Chlorophenyl)-1,1-dichloroethylene

CAS-No.  
72-55-9

Revision Date  
1993-02-16

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## SECTION 16: Other information

### Further information

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