1. Identification

Product identifier 4,4'-DDT

Other means of identification

<table>
<thead>
<tr>
<th>Item</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS number</td>
<td>50-29-3</td>
</tr>
<tr>
<td>Synonyms</td>
<td>1,1,1-TRICHLORO-2,2-BIS(4-CHLOROPHENYL)ETHANE * 4,4'-Dichlorodiphenyl trichloroethane</td>
</tr>
</tbody>
</table>

Recommended use For Laboratory Use Only

Recommended restrictions None known.

Manufacturer/Importer/Supplier/Distributor information

Manufacturer

<table>
<thead>
<tr>
<th>Company name</th>
<th>Chem Service, Inc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address</td>
<td>660 Tower Lane</td>
</tr>
<tr>
<td></td>
<td>West Chester, PA 19380 United States</td>
</tr>
<tr>
<td>Telephone</td>
<td>Toll Free 800-452-9994</td>
</tr>
<tr>
<td></td>
<td>Direct 610-692-3026</td>
</tr>
<tr>
<td>Website</td>
<td><a href="http://www.chemservice.com">www.chemservice.com</a></td>
</tr>
<tr>
<td>E-mail</td>
<td><a href="mailto:info@chemservice.com">info@chemservice.com</a></td>
</tr>
</tbody>
</table>

Emergency phone number

<table>
<thead>
<tr>
<th>United States</th>
<th>Chemtrec US 800-424-9300</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Chemtrec outside US +1 703-527-3887</td>
</tr>
</tbody>
</table>

2. Hazard(s) identification

Physical hazards Not classified.

Health hazards

<table>
<thead>
<tr>
<th>Category</th>
<th>Hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Acute toxicity, oral</td>
</tr>
<tr>
<td>3</td>
<td>Acute toxicity, dermal</td>
</tr>
<tr>
<td>2</td>
<td>Carcinogenicity</td>
</tr>
<tr>
<td>1</td>
<td>Specific target organ toxicity, repeated exposure</td>
</tr>
</tbody>
</table>

Environmental hazards

<table>
<thead>
<tr>
<th>Category</th>
<th>Hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Hazardous to the aquatic environment, acute hazard</td>
</tr>
<tr>
<td>1</td>
<td>Hazardous to the aquatic environment, long-term hazard</td>
</tr>
</tbody>
</table>

OSHA defined hazards Not classified.

Label elements

Signal word Danger

Hazard statement Toxic if swallowed. Toxic in contact with skin. Suspected of causing cancer. Causes damage to organs through prolonged or repeated exposure. Very toxic to aquatic life. Very toxic to aquatic life with long lasting effects.

Precautionary statement

Prevention Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe dust/fume/gas/mist/vapors/spray. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Avoid release to the environment. Wear protective gloves/protective clothing/eye protection/face protection.

Response If swallowed: Immediately call a poison center/doctor. Rinse mouth. If on skin: Wash with plenty of water. If exposed or concerned: Get medical advice/attention. Call a poison center/doctor if you feel unwell. Take off immediately all contaminated clothing and wash it before reuse. Collect spillage.
3. Composition/information on ingredients

<table>
<thead>
<tr>
<th>Substances</th>
<th>Chemical name</th>
<th>Common name and synonyms</th>
<th>CAS number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>4,4'-DDT</td>
<td>1,1,1-TRICHLORO-2,2-BIS(4-CHLOROPHENYL)ETHANE 4,4'-Dichlorodiphenyltrichloroethane</td>
<td>50-29-3</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

4. First-aid measures

**Inhalation**
Move off to fresh air. Call a physician if symptoms develop or persist.

**Skin contact**
Take off immediately all contaminated clothing. Wash off with soap and water. Get medical advice/attention if you feel unwell. Get medical attention if irritation develops and persists. Wash contaminated clothing before reuse.

**Eye contact**
Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists.

**Ingestion**
Call a physician or poison control center immediately. Rinse mouth. Do not induce vomiting without advice from poison control center. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Do not use mouth-to-mouth method if victim ingested the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.

**Most important symptoms/effects, acute and delayed**

**Indication of immediate medical attention and special treatment needed**
Provide general supportive measures and treat symptomatically. Keep victim warm. Keep victim under observation. Symptoms may be delayed.

5. Fire-fighting measures

**Suitable extinguishing media**

**Unsuitable extinguishing media**
Do not use water jet as an extinguisher, as this will spread the fire.

**Specific hazards arising from the chemical**
During fire, gases hazardous to health may be formed.

**Special protective equipment and precautions for firefighters**
Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

**Fire fighting equipment/instructions**
Use water spray to cool unopened containers.

**Specific methods**
Use standard firefighting procedures and consider the hazards of other involved materials.

**General fire hazards**
No unusual fire or explosion hazards noted.

6. Accidental release measures

**Personal precautions, protective equipment and emergency procedures**
Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.
The product is immiscible with water and will spread on the water surface. Prevent entry into waterways, sewer, basements or confined areas.

Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use. Put material in suitable, covered, labeled containers. For waste disposal, see section 13 of the SDS.

Environmental precautions
Avoid release to the environment. Inform appropriate managerial or supervisory personnel of all environmental releases. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage
Precautions for safe handling
Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not taste or swallow. Avoid contact with eyes, skin, and clothing. Avoid prolonged exposure. When using, do not eat, drink or smoke. Should be handled in closed systems, if possible. Provide adequate ventilation. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Avoid release to the environment. Wash contaminated clothing before reuse. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities
Store locked up. Store in original tightly closed container. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection
Occupational exposure limits
The following constituents are the only constituents of the product which have a PEL, TLV or other recommended exposure limit. At this time, the other constituents have no known exposure limits.

<table>
<thead>
<tr>
<th>Material</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>4,4'-DDT (CAS 50-29-3)</td>
<td>PEL</td>
<td>1 mg/m3</td>
</tr>
<tr>
<td>US. ACGIH Threshold Limit Values</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Material</td>
<td>Type</td>
<td>Value</td>
</tr>
<tr>
<td>4,4'-DDT (CAS 50-29-3)</td>
<td>TWA</td>
<td>1 mg/m3</td>
</tr>
<tr>
<td>US. NIOSH: Pocket Guide to Chemical Hazards</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Material</td>
<td>Type</td>
<td>Value</td>
</tr>
<tr>
<td>4,4'-DDT (CAS 50-29-3)</td>
<td>TWA</td>
<td>0.5 mg/m3</td>
</tr>
</tbody>
</table>

Biological limit values
No biological exposure limits noted for the ingredient(s).

Exposure guidelines
US - California OELs: Skin designation
4,4'-DDT (CAS 50-29-3)
Can be absorbed through the skin.

US - Tennessee OELs: Skin designation
4,4'-DDT (CAS 50-29-3)
Can be absorbed through the skin.

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)
4,4'-DDT (CAS 50-29-3)
Can be absorbed through the skin.

Appropriate engineering controls
Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Individual protection measures, such as personal protective equipment
Eye/face protection
Wear safety glasses with side shields (or goggles).

Skin protection
Hand protection
Wear appropriate chemical resistant gloves.

Other
Wear appropriate chemical resistant clothing. Use of an impervious apron is recommended.

Respiratory protection
In case of insufficient ventilation, wear suitable respiratory equipment.

Thermal hazards
Wear appropriate thermal protective clothing, when necessary.
Observe any medical surveillance requirements. Keep away from food and drink. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance
- Physical state: Solid.
- Form: Crystalline Solid
- Color: Colorless

Odor and Odor Threshold
- Odor: Not available.
- Odor threshold: Not available.

pH
- Not available.

Melting point/freezing point
- 227.3 °F (108.5 °C)

Initial boiling point and boiling range
- 500 °F (260 °C)
- 366.8 °F (186 °C) 0.006666 kPa

Flash point
- 162.0 - 171.0 °F (72.2 - 77.2 °C) Closed Cup

Evaporation rate
- Not available.

Flammability (solid, gas)
- Not available.

Upper/lower flammability or explosive limits
- Flammability limit - lower (%): Not available.
- Flammability limit - upper (%): Not available.
- Explosive limit - lower (%): Not available.
- Explosive limit - upper (%): Not available.

Vapor pressure
- < 0.0000001 kPa (68 °F (20 °C))

Vapor density
- Not available.

Relative density
- Not available.

Solubility(ies)
- Solubility (water): Insoluble
- Partition coefficient (n-octanol/water): 6.91

Auto-ignition temperature
- Not available.

Decomposition temperature
- 230 °F (110 °C)

Viscosity
- Not available.

Other information
- Density: 1.56 g/cm3 at 15 °C
- Explosive properties: Not explosive.
- Molecular formula: C14-H9-Cl5
- Molecular weight: 354.49 g/mol
- Oxidizing properties: Not oxidizing.

10. Stability and reactivity

Reactivity
- The product is stable and non-reactive under normal conditions of use, storage and transport.

Chemical stability
- Material is stable under normal conditions.

Possibility of hazardous reactions
- No dangerous reaction known under conditions of normal use.

Conditions to avoid
- Avoid temperatures exceeding the decomposition temperature. Avoid temperatures exceeding the flash point. Contact with incompatible materials.

Incompatible materials
- Strong oxidizing agents.

Hazardous decomposition products
- No hazardous decomposition products are known.
11. Toxicological information

Information on likely routes of exposure

<table>
<thead>
<tr>
<th>Route</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inhalation</td>
<td>Prolonged inhalation may be harmful.</td>
</tr>
<tr>
<td>Skin contact</td>
<td>Toxic in contact with skin.</td>
</tr>
<tr>
<td>Eye contact</td>
<td>Direct contact with eyes may cause temporary irritation.</td>
</tr>
<tr>
<td>Ingestion</td>
<td>Toxic if swallowed.</td>
</tr>
</tbody>
</table>

Symptoms related to the physical, chemical and toxicological characteristics


Information on toxicological effects

Acute toxicity: Toxic in contact with skin. Toxic if swallowed.

Skin corrosion/irritation: Prolonged skin contact may cause temporary irritation.

Serious eye damage/eye irritation: Direct contact with eyes may cause temporary irritation.

Respiratory or skin sensitization

Respiratory sensitization: Not a respiratory sensitizer.

Skin sensitization: This product is not expected to cause skin sensitization.

Germ cell mutagenicity: No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Carcinogenicity: Suspected of causing cancer.

IARC Monographs. Overall Evaluation of Carcinogenicity

4,4'-DDT (CAS 50-29-3) 2A Probably carcinogenic to humans.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not regulated.

US. National Toxicology Program (NTP) Report on Carcinogens

4,4'-DDT (CAS 50-29-3) Reasonably Anticipated to be a Human Carcinogen.

Reproductive toxicity: This product is not expected to cause reproductive or developmental effects.

Specific target organ toxicity - single exposure: Not classified.

Specific target organ toxicity - repeated exposure: Causes damage to organs through prolonged or repeated exposure.

Aspiration hazard: Not an aspiration hazard.

Chronic effects: Causes damage to organs through prolonged or repeated exposure. Prolonged inhalation may be harmful. Prolonged exposure may cause chronic effects.

12. Ecological information

Ecotoxicity: Very toxic to aquatic life with long lasting effects.

<table>
<thead>
<tr>
<th>Product</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>4,4'-DDT (CAS 50-29-3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aquatic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crustacea</td>
<td>EC50</td>
<td>Water flea (Daphnia magna)</td>
</tr>
<tr>
<td>Fish</td>
<td>LC50</td>
<td>Bluegill (Lepomis macrochirus)</td>
</tr>
</tbody>
</table>

* Estimates for product may be based on additional component data not shown.

Persistence and degradability

Bioaccumulative potential

Partition coefficient n-octanol / water (log Kow)

6.91

Mobility in soil: No data available.

Other adverse effects: No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.
13. Disposal considerations

**Disposal instructions**
Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.

**Local disposal regulations**
Dispose in accordance with all applicable regulations.

**Hazardous waste code**
The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

**US RCRA Hazardous Waste U List: Reference**
4,4'-DDT (CAS 50-29-3) U061

**Waste from residues / unused products**
Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

**Contaminated packaging**
Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

**DOT**
Not regulated as dangerous goods.

**IATA**

| UN number | UN2811 |
| UN proper shipping name | Toxic solid, organic, n.o.s. (4,4'-DDT) |
| Transport hazard class(es) | 6.1(PGIII) |
| Class | 6.1(PGIII) |
| Subsidiary risk | - |
| Packing group | III |
| Environmental hazards | No. |
| ERG Code | 6L |
| Special precautions for user | Read safety instructions, SDS and emergency procedures before handling. |
| Other information | Allowed with restrictions. |
| Passenger and cargo aircraft | Allowed with restrictions. |
| Cargo aircraft only | Allowed with restrictions. |

**IMDG**

| UN number | UN2811 |
| UN proper shipping name | TOXIC SOLID, ORGANIC, N.O.S. (4,4'-DDT) |
| Transport hazard class(es) | 6.1(PGIII) |
| Class | 6.1(PGIII) |
| Subsidiary risk | - |
| Packing group | III |
| Environmental hazards | No. |
| Marine pollutant | No. |
| EmS | F-A, S-A |
| Special precautions for user | Read safety instructions, SDS and emergency procedures before handling. |
| Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code | Not applicable. |

**General information**
IMDG Regulated Marine Pollutant.
15. Regulatory information

US federal regulations
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)
4,4'-DDT (CAS 50-29-3) 0.1 % One-Time Export Notification only.

CERCLA Hazardous Substance List (40 CFR 302.4)
4,4'-DDT (CAS 50-29-3) Listed.

SARA 304 Emergency release notification
Not regulated.

SARA 304 Emergency release notification
Not regulated.

Superfund Amendments and Reauthorization Act of 1986 (SARA)
Hazard categories
Immediate Hazard - Yes
Delayed Hazard - Yes
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

SARA 302 Extremely hazardous substance
Not listed.

SARA 311/312 Hazardous chemical
Yes

SARA 313 (TRI reporting)
Not regulated.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List
4,4'-DDT (CAS 50-29-3)

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)
Not regulated.

Clean Water Act (CWA)
Section 112(r) (40 CFR 68.130)
Hazardous substance
Priority pollutant
Bioaccumulative chemical of concern
Toxic pollutant
Not regulated.

Safe Drinking Water Act (SDWA)

US state regulations
WARNING: This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm.

US - California Proposition 65 - CRT: Listed date/Carcinogenic substance
4,4'-DDT (CAS 50-29-3) Listed: October 1, 1987

US - California Proposition 65 - CRT: Listed date/Developmental toxin
4,4'-DDT (CAS 50-29-3) Listed: May 15, 1998

US - California Proposition 65 - CRT: Listed date/Female reproductive toxin
4,4'-DDT (CAS 50-29-3) Listed: May 15, 1998

US - California Proposition 65 - CRT: Listed date/Male reproductive toxin
4,4'-DDT (CAS 50-29-3) Listed: May 15, 1998

US. California. Candidate Chemicals List. Safer Consumer Products Regulations (Cal. Code Regs, tit. 22, 69502.3, subd. (a))
4,4'-DDT (CAS 50-29-3)

International Inventories

Country(s) or region Inventory name On inventory (yes/no)*
Australia Australian Inventory of Chemical Substances (AICS) Yes
Canada Domestic Substances List (DSL) No
Canada Non-Domestic Substances List (NDSL) No
China Inventory of Existing Chemical Substances in China (IECSC) Yes
Europe European Inventory of Existing Commercial Chemical Substances (EINECS) Yes
Europe European List of Notified Chemical Substances (ELINCS) No
Country(s) or region | Inventory name                                                                 | On inventory (yes/no)*
-------------------------------|-------------------------------------------------------------------------------|---------------------------
Japan                          | Inventory of Existing and New Chemical Substances (ENCS)                       | Yes                       
Korea                          | Existing Chemicals List (ECL)                                                 | Yes                       
New Zealand                    | New Zealand Inventory                                                          | No                        
Philippines                    | Philippine Inventory of Chemicals and Chemical Substances (PICCS)              | Yes                       
United States & Puerto Rico    | Toxic Substances Control Act (TSCA) Inventory                                 | Yes                       

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s).
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

<table>
<thead>
<tr>
<th>Issue date</th>
<th>06-09-2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revision date</td>
<td>02-25-2020</td>
</tr>
<tr>
<td>Version #</td>
<td>02</td>
</tr>
</tbody>
</table>

NFPA ratings

Health: 3
Flammability: 0
Instability: 0

Disclaimer

Chem Service, Inc. cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The above information is believed to be correct on the date it was last revised and must not be considered all inclusive. The information has been obtained only by a search of available literature and is only a guide for handling the chemicals. OSHA regulations require that if other hazards become evident, an upgraded SDS must be made available to the employee within three months. RESPONSIBILITY for updates lies with the employer and not with CHEM SERVICE, Inc.

Persons not specifically and properly trained should not handle this chemical or its container. This product is furnished FOR LABORATORY USE ONLY! Our products may NOT BE USED as drugs, cosmetics, agricultural or pesticide products, food additives or as household chemicals.

This Safety Data Sheet (SDS) is intended only for use with Chem Service, Inc. products and should not be relied on for use with materials from any other supplier even if the chemical name(s) on the product are identical! Whenever using an SDS for a solution or mixture the user should refer to the SDS for every component of the solution or mixture. Chem Service warrants that this SDS is based upon the most current information available to Chem Service at the time it was last revised. THIS WARRANTY IS EXCLUSIVE, AND CHEM SERVICE, INC. MAKES NO OTHER WARRANTY, EXPRESSED OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE. This SDS is provided gratis and CHEM SERVICE, INC. SHALL NOT BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL OR CONTINGENT DAMAGES.

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Revision information

This document has undergone significant changes and should be reviewed in its entirety.