

MATERIAL SAFETY DATA SHEET

THIODAN® 3 EC INSECTICIDE



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This document has been prepared to meet the requirements of the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200; the EC directive, 91/155/EEC and other regulatory requirements. The information contained herein is for the concentrate as packaged, unless otherwise noted.

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: THIODAN® 3 EC INSECTICIDE

PRODUCT CODE: 3212; 1593

ACTIVE INGREDIENT: Endosulfan

CHEMICAL FAMILY: Organochlorine Pesticide

MOLECULAR FORMULA: C₉H₆Cl₆O₂S (endosulfan)

SYNONYMS: FMC 5462; Hexachlorohexahydromethano-2,4,3-benzodioxathiepin oxide; IUPAC: (1,4,5,6,7,7-hexachloro-8,9,10-trinorborn-5-en-2,3-ylenebismethylene) sulfite

MANUFACTURER

FMC CORPORATION
Agricultural Products Group
1735 Market Street
Philadelphia, PA 19103 USA

Emergency Telephone Numbers:

Emergency Phone (FMC) 800-331-3148 (U.S.A. & Canada)

Emergency Phone (FMC) 716-735-3765 (Reverse charges)

CHEMTREC (800) 424-9300 (U.S.A. & Canada)
(202) 483-7616 (All other countries)

2. COMPOSITION / INFORMATION ON INGREDIENTS

<u>Chemical Name</u>	<u>CAS #</u>	<u>Wt.%</u>	<u>PEL/TLV</u>	<u>EC No.</u>	<u>EC Class</u>
Endosulfan	115-29-7	33.7	0.1 mg/m ³ (skin)	602-052-00-5	R24/25-36
Aromatic Hydrocarbons	64742-95-6	<37	100 ppm (supplier)	650-001-00-0	None
1,2,4-trimethylbenzene	95-63-6	<19	25 ppm	None	None
Surfactant Blend	0000-00-0	<3.4	None	None	None
Xylene	1330-20-7	<1.8	100 ppm 150 ppm STEL	601-022-00-9	R11-20/21-38
Cumene	98-82-8	<1.2	50 ppm (skin)	601-024-00-X	R10-37
Ethylbenzene	100-41-1	<0.6	100 ppm 125 ppm STEL	601-023-00-4	R11-20
1-butanol	71-36-3	<0.3	50 ppm (skin) (ceiling)	603-004-00-6	R10-20

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

IMMEDIATE CONCERNS:

- Amber liquid with an aromatic hydrocarbon odor.
- Moderately combustible. May support combustion if heated above the product's flash point (see 'Fire Fighting Measures' in Section 5).
- Thermal decomposition and burning may form toxic by-products.
- For large exposures or fire, wear personal protective equipment.
- Highly toxic to fish and aquatic organisms. Keep out of drains and water courses.
- Highly toxic if swallowed, inhaled or absorbed through the skin.
- Moderately irritating to the eyes and skin.

POTENTIAL HEALTH EFFECTS: Effects from overexposure result from either swallowing, inhaling or absorption through the skin. Symptoms of overexposure include convulsions, tremors, decreased locomotion and oral discharge.

MEDICAL CONDITIONS AGGRAVATED: None presently known.

4. FIRST AID MEASURES

EYES: Flush with water for at least 15 minutes. If irritation occurs and persists, contact a medical doctor.

SKIN: Remove contaminated clothing and thoroughly wash with soap and water. If irritation occurs and persists, contact a medical doctor.

INGESTION: Rinse mouth with water. Dilute by giving 1 or 2 glasses of water. Do not induce vomiting. Never give anything by mouth to an unconscious person. See a medical doctor immediately.

INHALATION: Remove to fresh air. If breathing difficulty or discomfort occurs and persists, see a medical doctor. If breathing has stopped, give artificial respiration and see a medical doctor immediately.

NOTES TO MEDICAL DOCTOR: This product is highly toxic if swallowed, inhaled or absorbed through the skin. It is moderately irritating to the eyes and skin. Endosulfan is a central nervous system stimulant absorbable through oral, inhalation or dermal routes. It may cause convulsions. Central nervous system stimulation can be controlled with diazepam (i.v.) or barbituric acid derivatives. Epinephrine is contraindicated due to cardiac muscle stimulation. This product contains light aromatic hydrocarbons that can produce a severe pneumonitis or fatal pulmonary edema if aspirated. Consideration should be given to gastric lavage with an endotracheal tube in place. Treatment is otherwise controlled removal of exposure followed by symptomatic and supportive care.

5. FIRE FIGHTING MEASURES

FLASH POINT AND METHOD: 40°C (104°F) (TCC)

EXTINGUISHING MEDIA: Foam, CO₂ or dry chemical. Soft stream water fog only if necessary. Contain all runoff.

EXPLOSION HAZARDS: Moderately combustible. When heated above the flash point, this material releases vapors which, when mixed with air, can burn or be explosive.

FIRE FIGHTING PROCEDURES: Isolate fire area. Evacuate downwind. Wear full protective clothing and self-contained breathing apparatus. Do not breathe smoke, gases or vapors generated.

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide, carbon dioxide, hydrogen chloride and oxides of sulfur.

6. ACCIDENTAL RELEASE MEASURES

RELEASE NOTES: Isolate and post spill area. Wear protective clothing and personal protective equipment as prescribed in Section 8, "Exposure Controls/Personal Protection". Keep unprotected persons and animals out of the area.

Keep material out of lakes, streams, ponds and sewer drains. Dike to confine spill and absorb with a non-combustible absorbent such as clay, sand or soil. Vacuum, shovel or pump waste into a drum and label contents for disposal.

To clean and neutralize spill area, tools and equipment, wash with a suitable solution of caustic or soda ash, and an appropriate alcohol (i.e., methanol, ethanol or isopropanol). Follow this by washing with a strong soap and water solution. Absorb, as above, any excessive liquid and add to the drums of waste already collected. Repeat if necessary. Dispose of drummed waste according to the method outlined in Section 13, "Disposal Considerations".

7. HANDLING AND STORAGE

GENERAL PROCEDURES: Store in a cool, dry, well-ventilated place. Do not use or store near heat, open flame or hot surfaces. Keep out of reach of children and animals. Store in original containers only. Carefully open containers. After partial use, replace lid and close tightly. Do not contaminate other pesticides, fertilizers, water, food or feed by storage or disposal.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS: Use local exhaust at all process locations where vapor or mist may be emitted. Ventilate all transport vehicles prior to unloading.

PERSONAL PROTECTIVE EQUIPMENT

EYES AND FACE: For splash, mist or spray exposure, wear chemical protective goggles or a face shield.

RESPIRATORY: For splash, mist or spray exposure wear, as a minimum, a properly fitted half-face or full-face air-purifying respirator which is approved for pesticides (U.S. NIOSH/MSHA, EU CEN or comparable certification organization). Respirator use and selection must be based on airborne concentrations.

PROTECTIVE CLOTHING: Depending upon concentrations encountered, wear coveralls or long-sleeved uniform and head covering. For larger exposures as in the case of spills, wear full body cover barrier suit, such as a PVC suit. Leather items - such as shoes, belts and watchbands - that become contaminated should be removed and destroyed. Launder all work clothing before reuse (separately from household laundry).

WORK HYGIENIC PRACTICES: Clean water should be available for washing in case of eye or skin contamination. Wash skin prior to eating, drinking or using tobacco. Shower at the end of the workday.

GLOVES:

Wear chemical protective gloves made of materials such as nitrile or Viton® brand. Thoroughly wash the outside of gloves with soap and water prior to removal. Inspect regularly for leaks.

COMMENTS: Personal protective recommendations for mixing or applying this product are prescribed on the product label. Information stated above provides useful, additional guidance for individuals whose use or handling of this product is not guided by the product label.

9. PHYSICAL AND CHEMICAL PROPERTIES

ODOR: Aromatic hydrocarbon

APPEARANCE: Amber liquid

SOLUBILITY IN WATER: Emulsifies

SPECIFIC GRAVITY: 1.06 @ 20°C (water = 1)

MOLECULAR WEIGHT: 406.95 (endosulfan)

WEIGHT PER VOLUME: 8.82 lb/gal. (1060 g/L)

10. STABILITY AND REACTIVITY

CONDITIONS TO AVOID: Excessive heat and fire.

STABILITY: Stable

POLYMERIZATION: Will not occur

11. TOXICOLOGICAL INFORMATION

DERMAL LD₅₀: 256 mg/kg (rabbit)

ORAL LD₅₀: 44.9 mg/kg (rat)

INHALATION LC₅₀: 0.087 mg/L/4 hr (rat)

ACUTE EFFECTS FROM OVEREXPOSURE: This product is highly toxic if swallowed, inhaled or absorbed through the skin. It is moderately irritating to the eyes and skin. Signs of toxicity in laboratory animals included tremors, clonic convulsions, decreased locomotion, chromorhinorrhea and oral discharge. Inhalation of aromatic hydrocarbon vapors may cause dizziness, disturbances in vision, drowsiness, respiratory irritation, and eye, skin and mucous membrane irritation. Vomiting after ingestion of this product may cause aspiration of aromatic hydrocarbons into the lungs which may result in fatal pulmonary edema. Exposure to butanol vapors may produce headaches, drowsiness and irritation of the nose and throat. Excessive exposures to butanol liquid or vapors may result in contact dermatitis and irritation of the mucous membranes.

CHRONIC EFFECTS FROM OVEREXPOSURE: No data available for the formulation. In chronic studies with laboratory animals, endosulfan showed no evidence of carcinogenicity. Endosulfan caused toxic nephropathy in rat chronic feeding studies. In a two-generation reproduction study with laboratory animals, endosulfan caused decreased litter weights at the highest dose. Endosulfan was non-mutagenic in a battery of tests. Chronic exposure to aromatic hydrocarbons may cause headaches, dizziness, loss of sensations or feelings (such as numbness), and liver and kidney damage. Inhalation of xylene vapors at high doses has also resulted in an increased incidence of malformations and decreases in fetal weight in laboratory animals. Damage from xylene may be potentiated by alcohol. Disturbances in hearing and balance have been reported in workers exposed to butanol vapors.

CARCINOGENICITY:

IARC: Not listed

NTP: Not listed

OSHA: Not listed

OTHER: (ACGIH) Not listed

12. ECOLOGICAL INFORMATION

Unless otherwise indicated, the data presented below are based on the active ingredient.

ENVIRONMENTAL DATA: In natural waters, endosulfan is more readily degraded at pH 7 (half-life = 5 weeks) than at pH 5.5 (half-life = 5 months). The half-life in soils varies with soil type and environmental conditions, with 120 days being average under agricultural conditions. The α - and β -isomers degrade at different rates, with the β -isomer being more persistent. Endosulfan has a slight potential for movement in soils, however, the potential is decreased with increasing organic matter content of the soil. The bioconcentration factor for endosulfan varies by species and length of exposure but is generally less than 100.

ECOTOXICOLOGICAL INFORMATION: Endosulfan is considered highly toxic to fish with LC50 values of 1.0 to 10.0 $\mu\text{g/L}$. Crustaceans and mollusks are less sensitive with LC50 values of 10 to 1600 $\mu\text{g/L}$. Endosulfan is slightly toxic to birds and oral LD50 values range from 200 to 1000 mg/kg.

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHOD: Open dumping or burning of this material or its packaging is prohibited. If spilled material cannot be disposed of by use according to label instructions, an acceptable method of disposal is to incinerate in accordance with local, state and national environmental laws, rules, standards and regulations. However, because acceptable methods of disposal may vary by location, and regulatory requirements may change, the appropriate agencies should be contacted prior to disposal.

EMPTY CONTAINER: Non-returnable containers which held this material should be cleaned, prior to disposal, by triple rinsing. Containers which held this material may be cleaned by being triple-rinsed, and recycled, with the rinsate being incinerated. Do not cut or weld metal containers. Vapors that form may create an explosion hazard.

14. TRANSPORT INFORMATION

U.S. DOT (DEPARTMENT OF TRANSPORTATION)

PROPER SHIPPING NAME: Organochlorine pesticides, liquid, toxic, flammable, n.o.s.

TECHNICAL NAME: Endosulfan

PRIMARY HAZARD CLASS/DIVISION: 6.1

UN/NA NUMBER: UN2995

PACKING GROUP: II

REPORTABLE QUANTITY (RQ): Listed (endosulfan)

U.S. SURFACE FREIGHT CLASS: Insecticides, NOI, Poison other than Class A Poison. NMFC Item 102100.

MARINE POLLUTANT #1: endosulfan (Severe Marine Pollutant)

MARINE POLLUTANT #2: 1,2,4-trimethylbenzene

NAERG: 131

15. REGULATORY INFORMATION

UNITED STATES

SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)

311 HAZARD CATEGORIES (40 CFR 370): Immediate, Delayed, Fire

SECTION 312 THRESHOLD PLANNING QUANTITY (40 CFR 370): The threshold planning quantity (TPQ) for this product, if treated as a mixture, is 10,000 lbs. This product contains the following ingredients with a TPQ of less than 10,000 lbs.: endosulfan (10 lbs.)

SECTION 313 REPORTABLE INGREDIENTS (40 CFR 372): This product contains the following ingredients subject to Section 313 reporting requirements: (1,2,4-trimethylbenzene) (xylene, mixed isomers) (cumene)

SARA TITLE III SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355): Endosulfan

SECTION 302.4 REPORTABLE QUANTITY (40 CFR 355)

<u>Chemical Name</u>	<u>RQ</u>
Endosulfan	1 lb.

CERCLA (COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY ACT):

<u>Chemical Name</u>	<u>Wt.%</u>	<u>RQ</u>
Endosulfan	33.7	1 lb.
Xylene	<1.8	1000 lbs.
Cumene	<1.2	5000 lbs.
Ethylbenzene	<0.6	1000 lbs.
1-butanol	<0.3	5000 lbs.

COMMENTS: Australian Hazard Code : 3XE

U.S. EPA Signal Word : DANGER-POISON

16. OTHER INFORMATION

Viton - E.I. du Pont de Nemours and Co. Trademark; Thiodan - Hoechst AG Trademark; FMC Logo - FMC Trademark

Section(s) Revised : New Format