

MATERIAL SAFETY DATA SHEET



Date of Issue: May 2, 2007

1. IDENTIFICATION OF MATERIAL AND SUPPLIER

Product name Thiodan[®] EC Insecticide

Other names None

Product codes and pack sizes 4208276 (20 L), 6370365 (110 L), 4208284 (200 L), 4208349 (1000 L)

Chemical group Organochlorine

Recommended use Agricultural insecticide

Formulation Emulsifiable concentrate

Supplier Bayer CropScience Pty Ltd ABN 87 000 226 022

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2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

HAZARDOUS SUBSTANCE (see Risk phrases below) - DANGEROUS GOOD
Combustible liquid. Dangerous Poison. Extremely dangerous to fish.

Hazard classification Hazardous (National Occupational Health and Safety Commission - NOHSC)

Risk phrases R23/24/25 – Toxic by inhalation, in contact with skin and if swallowed.
R36 – Irritating to eyes.
R65 – Harmful: May cause lung damage if swallowed.

Safety phrases See Sections 4, 5, 6, 7, 8, 9, 13

ADG classification "Dangerous good" for transport according to the Australian Code for the Transport of Dangerous Goods by Road and Rail – Class 6.1, ORGANOCHLORINE PESTICIDE, LIQUID, TOXIC (contains endosulfan), UN 2996, Packing Group II. For transport by sea this product is a SEVERE MARINE POLLUTANT. See Section 14.

SUSDP classification (Poison Schedule) Schedule 7 (Standard for the Uniform Scheduling of Drugs and Poisons)

3. COMPOSITION / INFORMATION ON INGREDIENTS

Ingredients	CAS Number	Concentration (g/L)
Endosulfan	[115-29-7]	350
Hydrocarbon solvent	[64742-94-5]	640
Naphthalene (in hydrocarbon solvent)	[91-20-3]	(< 64)
Other ingredients, including emulsifiers, wetting and stabilising agents	(non hazardous)	89

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4. FIRST AID MEASURES

If poisoning occurs, immediately contact a doctor or Poisons Information Centre (telephone 13 11 26), and follow the advice given. Show this Material Safety Data Sheet to the doctor.

Inhalation	If inhaled, remove to fresh air and keep at rest. Obtain medical advice immediately. If breathing stops or shows signs of failing, start artificial respiration. Call for urgent medical attention.
Skin contact	Immediately remove contaminated clothing. Wash affected areas with soap and water. Seek medical aid.
Eye contact	Rinse eyes immediately with clean water for at least 15 minutes and obtain urgent medical aid.
Ingestion	Wash out mouth with water. Do NOT induce vomiting. Keep patient at rest and seek urgent medical advice as above. DO NOT attempt to give anything by mouth to a semi-conscious or unconscious person. Avoid giving milk or oils.
First Aid Facilities	Provide eyewash and safety shower facilities in the workplace.
Medical attention	<p><u>Symptoms of poisoning:</u> <i>Local:</i> Skin and eye irritation <i>Systemic:</i> Headache, dizziness, ataxia, nausea, vomiting, abdominal pain, unconsciousness, convulsions.</p> <p><u>Risks:</u> There may be delayed neurological effects including brain oedema. Risk of product entering lungs on vomiting after ingestion. Must NOT be confused with organophosphorus compounds.</p> <p><u>Treatment:</u> For <i>local contamination</i> treatment should be symptomatic after decontamination. <i>In case of systemic poisoning, the following measures are advised:</i> As this product contains a hydrocarbon liquid, care should be taken to prevent pulmonary aspiration. Small amounts of liquid aspirated into the respiratory system during ingestion or from vomiting may cause bronchopneumonia or pulmonary oedema. If endosulfan, a highly toxic material, has been ingested, induction of vomiting is recommended under the following circumstances: Medical treatment is not readily available; the patient is fully conscious, and time since ingestion is less than 1- 2 hours. HOWEVER, this must be considered along with the presence of the hydrocarbon liquid. Carry out endotracheal intubation and gastric lavage followed by administration of charcoal and afterwards 30% aqueous magnesium or sodium sulphate solution. Monitor respiratory, cardiac, kidney, liver and central nervous system functions. Observe ECG (electrocardiogram) and EEG (electroencephalogram), particularly if unconscious. Elimination by dialysis - forced alkaline diuresis Anticonvulsant therapy with phenobarbital (supported by i.v diazepam) There is no specific antidote.</p> <p><u>Contraindications:</u> Adrenergic compounds, morphine derivatives, atropine and pralidoxime.</p>

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5. FIRE FIGHTING MEASURES

Extinguishing media	Foam, carbon dioxide, dry chemical, waterspray
Hazards from combustion products	In a fire, irritant and toxic fumes containing oxides of carbon and sulphur, and hydrogen chloride may be generated.
Precautions for fire fighters	The product is a Class C1 Combustible liquid. Fire fighters should wear full protective gear, including self-contained breathing apparatus (AS/NZS 1715/1716). Keep unnecessary people away and move all other personnel to windward side of fire. Consider evacuation, taking all relevant factors into account. In case of doubt, evacuate immediate vicinity and request emergency services assistance. Use water spray to cool fire-exposed containers. Avoid spraying directly into containers due to danger of boilover. Bund area with sand or earth to prevent contamination of drains or waterways. Dispose of fire control water or other extinguishing agent and spillage safely later.
Hazchem code	2X

6. ACCIDENTAL RELEASE MEASURES

Avoid contact with the spilled material or contaminated surfaces. Extinguish or remove possible sources of ignition. Do not smoke, eat or drink during the cleanup process. Personnel involved in cleanup should wear protective clothing and equipment as described in Section 8 - PERSONAL PROTECTION. Keep people and animals away and upwind. Prevent spilled material from entering drains or watercourses. Contain spill and absorb with earth, sand, clay, or other absorbent material. Collect and store in properly labelled drums for safe disposal. Clean floor with a damp cloth and place cloth in drum. Cover and label drums for safe disposal. Thoroughly ventilate the area after cleanup. Deal with all spillages immediately. If contamination of drains, streams, watercourses, etc. is unavoidable, warn the local water authority. Decontaminate tools and equipment used in the cleanup.

7. HANDLING AND STORAGE

Handling	Keep out of reach of children. Product is very dangerous - poisonous if absorbed by skin contact, inhaled or swallowed. Will damage eyes. Will irritate nose, throat and skin. Avoid contact with eyes and skin. Do not inhale vapour. Protect eyes while using. If clothing becomes contaminated with product or wet with spray remove clothing immediately. If product on skin, immediately wash area with soap and water. If product in eyes, wash it out immediately with water. After use and before eating, drinking or smoking, wash hands, arms and face thoroughly with soap and water. After each day's use, wash gloves, respirator (if rubber wash with detergent and warm water), goggles and contaminated clothing. Keep away from excessive heat, open flames and other sources of ignition.
Storage	Store in the closed, original container in a cool, well-ventilated area. Do not store for prolonged periods in direct sunlight. Keep away from all ignition sources. Store in a locked room or place away from children, animals, food, feedstuffs, seed and fertilisers.
Flammability	Combustible liquid, Class C1 - flashpoint between 61° C and 150° C.

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8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure standards	<p>The NOHSC Exposure Standard for endosulfan is: TWA 0.1 mg/m³</p> <p>The manufacturer of the solvent recommends an Occupational Exposure Limit for solvent naphtha (petroleum), heavy aromatic: TWA: 100 mg/m³ (17 ppm). For the small amount of naphthalene present in the solvent the NOHSC Occupational Exposure Limits are: TWA: 10 ppm (52 mg/m³, STEL: 15 ppm (79 mg/m³).</p> <p><u>Definitions:</u> <i>Exposure standard – Time Weighted Average (TWA)</i> means the average airborne concentration of a particular substance when calculated over a normal eight-hour working day, for a five-day working week.</p>
Biological limit values	None allocated.
Engineering controls	Control process conditions to avoid contact. Use local exhaust ventilation during manufacture and spark proof equipment. Use in a well-ventilated area only.
Personal Protective Equipment	<p>Product is very dangerous - poisonous if absorbed by skin contact, inhaled or swallowed.</p> <ul style="list-style-type: none">• Wear full facepiece respirator - AS/NZS 1715/1716 approved, to protect eyes and avoid inhalation.• Wear cotton overalls buttoned to the neck and wrist or equivalent clothing.• Wear elbow-length PVC gloves.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Clear pale yellow to amber liquid
Odour:	Aromatic hydrocarbon odour
pH:	Approx. 6 (1% aqueous emulsion)
Vapour pressure:	0.3 kPa (at 38° C) – solvent
Vapour density:	> 1.00 – solvent
Boiling point:	179 - 213° C (boiling point range of solvent)
Freezing/melting point:	Not available
Solubility:	Emulsifies in water
Density:	1.079 g/mL at 20° C
Flash Point:	65° C (Pensky Martens Closed Cup)
Flammability (explosive) limits:	LEL: 0.6; UEL: 7.0 Vol. % in air (hydrocarbon solvent)
Auto-ignition temperature:	> 400° C (hydrocarbon solvent)
Partition coefficient (octanol/water):	<i>Endosulfan</i> : LogP _{ow} = 4.7 at 25 °C

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10. STABILITY AND REACTIVITY

Chemical stability	Stable under normal conditions of use.
Conditions to avoid	Avoid sources of ignition and extreme heat.
Incompatible materials	Decomposes in the presence of acids and alkalis. Incompatible with strong oxidising agents.
Hazardous decomposition products	In a fire, sulphurous oxides and chlorine compounds may be formed.
Hazardous reactions	Decomposes in the presence of acids and alkaline substances. Reacts with certain metals (e.g. iron).

11. TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS

Inhalation	Poisonous by inhalation. High vapour concentrations may be irritating to the respiratory tract and may cause headaches, dizziness, drowsiness, anaesthesia, and other central nervous system effects.
Skin contact	Poisonous if absorbed by skin contact. Will irritate the skin. Repeated exposure may cause skin dryness or cracking.
Eye contact	Will cause irritation and damage to the eyes.
Ingestion	Very dangerous. Poisonous if swallowed. Symptoms and signs of poisoning - headache, dizziness, ataxia, nausea, vomiting, abdominal pain, unconsciousness and convulsions. Small amounts of liquid aspirated into the respiratory system during ingestion or from vomiting may cause bronchopneumonia or pulmonary oedema.

ANIMAL TOXICITY DATA - *PRODUCT*

Acute:

Oral toxicity	LD ₅₀ rat (M+F): 36 mg/kg (<i>similar product</i>)
Dermal toxicity	LD ₅₀ rat: ~ 400 mg/kg (<i>similar product</i>)
Inhalation toxicity	LC ₅₀ (4 h) rat: 0.34 – 0.76 mg/L air (<i>similar product</i>)
Skin irritation	No data – expected to be irritating to skin
Eye irritation	No data – expected to be very irritating and damaging to eyes
Sensitisation	<i>Endosulfan</i> : Non-sensitising (guinea pig)

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11. TOXICOLOGICAL INFORMATION - continued

Chronic:

Endosulfan is not a cumulative poison; i.e. it is not stored in body fat. Endosulfan was not mutagenic in the Ames test, was not genotoxic, showed no indications of toxic effects in reproduction studies in animals, and gave no indications of carcinogenic effects from long-term trials. Endosulfan does not affect the human immune system and is not an endocrine disruptor.

This product contains naphthalene. The International Agency for Research on Cancer evaluated naphthalene and concluded that there was sufficient evidence for carcinogenicity in experimental animals, but inadequate evidence for cancer in exposed humans. Accordingly, IARC classified naphthalene as a possible human carcinogen (Group 2B). Frequent or prolonged contact with the hydrocarbon solvent in this product may defat and dry the skin, leading to discomfort and dermatitis.

12. ECOLOGICAL INFORMATION

Extremely dangerous to fish. May be harmful to wildlife. Endosulfan is dangerous to bees in laboratory conditions, but formulations are not hazardous under field conditions if used properly.

DO NOT contaminate streams, rivers or waterways with Thiodan EC or the used containers.

Ecotoxicity

Thiodan EC – similar formulation:

Fish toxicity:

LC₅₀: 2.1 µg/L (96 h); rainbow trout (*Oncorhynchus mykiss*)

Aquatic invertebrate toxicity:

EC₅₀: 0.004 mg/L (48 h); *Daphnia magna*

Endosulfan:

Fish toxicity:

LD₅₀, (96 h) for golden orfe 0.002 mg/kg

LC₅₀ (96 h) rainbow trout 0.9 µg/L

Daphnia toxicity: EC₅₀ (48 h) for *Daphnia* 75 - 750 µg/L

Algal toxicity: EC₅₀ (72 h) for green algae(*Scenedesmus subspicatus*) > 0.56 mg/L

Bird toxicity:

LD₅₀ mallard ducks 205 - 245 mg/kg; ring-necked pheasants 620 - 1000 mg/kg

Environmental fate, persistence, degradability, mobility

Endosulfan is degraded in soil with a DT₅₀ of 30-70 days. The DT₅₀ for total endosulfan (including its metabolites) is 5-8 months. No leaching tendency was observed. Endosulfan is nor readily biodegradable.

13. DISPOSAL CONSIDERATIONS

20, 200 litre containers - Triple or preferably pressure rinse containers before disposal. Add rinsings to spray tank. Do not dispose of undiluted chemicals on site. If recycling, replace cap and return clean containers to recycler or designated collection point. If not recycling, break, crush, or puncture and bury empty containers in a local authority landfill. If no landfill is available, bury the containers below 500 mm in a disposal pit specifically marked and set up for this purpose clear of waterways, desirable vegetation and tree roots. Empty containers and product should not be burnt.

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13. DISPOSAL CONSIDERATIONS - continued

110 litre container - If tamper evident seals are broken prior to initial use then the integrity of the contents cannot be assured. Empty container by pumping through dry-break connection system. Do not attempt to breach the valve system or the filling point, or contaminate the container with water or other products. Ensure that the coupler, pump, meter and hoses are disconnected, triple rinsed and drained after each use. When empty, or contents no longer required, return the container to the point of purchase. This container remains the property of Bayer CropScience Pty Ltd.

1000 litre container - If tamper evident seals are broken prior to initial use then the integrity of the contents cannot be assured. The container must be vented before discharging contents. To empty connect a camlock fitted hose to the bottom valve. Remove top cap when discharging for venting purposes. When the container is empty, close all caps and valves and return the container to the point of purchase.

Dispose of waste product as hazardous waste via a licensed disposal contractor to an approved landfill. Do not discharge into drains or sewers.

14. TRANSPORT INFORMATION

UN number	2996
Proper shipping name	ORGANOCHLORINE PESTICIDE, LIQUID, TOXIC (contains endosulfan)
Class and	6.1
Subsidiary Risk	No subsidiary risk
Packing Group	II
EPG	Guide 34 – Dangerous Goods - Initial Emergency Response Guide
Hazchem code	2X
Marine Pollutant	Yes – SEVERE MARINE POLLUTANT

15. REGULATORY INFORMATION

Registered according to the Agricultural and Veterinary Chemicals Act 1988.

Australian Pesticides and Veterinary Medicines Authority approval number: 50004.

RESTRICTED CHEMICAL PRODUCT – ONLY TO BE SUPPLIED TO OR USED BY AN AUTHORISED PERSON.

See also Section 2.

16. OTHER INFORMATION

Trademark information Thiodan® is a Registered Trademark of Bayer.

Preparation information Replaces September 23, 2002 MSDS.
Reasons for revision: SEVERE Marine Pollutant, naphthalene content in hydrocarbon solvent, First Aid, Exposure Standards, Chronic Toxicity, Ecological Information.

This MSDS summarises our best knowledge of the health and safety hazard information of the product and how to safely handle and use the product in the workplace. Each user should read this MSDS and consider the information in the context of how the product will be handled and used in the workplace including in conjunction with other products. If clarification or further information is needed to ensure that an appropriate risk assessment can be made, the user should contact this company.

Our responsibility for products sold is subject to our standard terms and conditions, a copy of which is sent to our customers and is also available on request.

END OF MSDS