

MATERIAL SAFETY DATA SHEET

SECTION 1 — PRODUCT AND COMPANY IDENTIFICATION

Product identifier: ZORO™ Insecticide/Miticide

Product use: Insecticide.

EPA Reg. No. 67760-71

Supplier's name and address:

Cheminova Inc.

P.O. Box 110566

One Park Drive, Suite 150

Research Triangle Park, NC 27709

USA

Phone #: (919) 474-6600 (8 AM to 5:00 PM EST, Monday to Friday)

Emergency Telephone #: 1-866-303-6950 (Medical Emergencies)

1-800-424-9300 (24 Hr. Chemtrec Number)

MSDS Prepared by: Cheminova Inc.

MSDS Preparation date: February 16, 2012

Revision date:

Revision reasons:

Manufacturer's name and address:

Refer to supplier.

SECTION 2 — HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Pale yellow liquid. Almond-like odor.

Danger.

Harmful if swallowed. Risk of serious damage to eyes.

Avoid contact with skin, eyes and clothing.

Do not breathe vapor or mist.

May be dangerous for the environment.

The product is very toxic to aquatic organisms.

In case of small fire use CO₂, dry chemical. In case of large fire use water spray or foam.

POTENTIAL HEALTH EFFECTS

Routes of entry: Skin, eyes, ingestion, inhalation.

Target organs: Skin, eyes, respiratory system, digestive system, central nervous system.

Signs and symptoms of short-term (acute) exposure: Irritating to eyes, respiratory system and skin. Exposure causes symptoms of nervous system depression, such as pupil dilation, vomiting, excitation, incoordination, tremors, lethargy, coma. High doses cause death by respiratory failure.

Carcinogenicity: See TOXICOLOGICAL INFORMATION (Section 11).

Potential environmental effects: This product is very toxic to aquatic organisms. See ECOLOGICAL INFORMATION (Section 12).

Physical or chemical hazards: Protect from exposure to fire and heat.

SECTION 3 — COMPOSITION/INFORMATION ON INGREDIENTS

<u>Ingredients</u>	<u>CAS #</u>	<u>% (weight)</u>	<u>ACGIH TLV</u>	<u>OSHA PEL</u>
Abamectin	71751-41-2	2	NE	NE
Additional ingredients including:				
n-Methyl-2-pyrrolidone	871-50-4	29	NE	NE
2,6-Di-tert-butyl-p-cresol	128-37-0	1	2 mg/m ³	NE
			TWA	
Aliphatic alcohol		29	NE	NE
NE= None established				

This material is classified as hazardous under OSHA regulations (29CFR 1910.1200).

SECTION 4 — FIRST AID MEASURES

IF IN EYES: Hold eye open and rinse slowly and gently with water for 15-20 minutes.

IF ON SKIN OR CLOTHING:

Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.
Call a poison control center or doctor for treatment advice, if irritation develops.
Take off contaminated clothing and footwear.

IF INHALED:

Rinse skin immediately with plenty of water for 15-20 minutes.
Call a poison control center or doctor for treatment advice.
Move person to fresh air.
If person is not breathing, call 911 or ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible.

IF SWALLOWED:

Call a poison control center or doctor for further treatment advice.
If swallowed, get medical attention immediately.
Do not give any liquid to the person.
Do not induce vomiting unless directed to do so by a qualified medical personnel.
Do not give anything by mouth to an unconscious person.

Have the product container or label with you when calling a poison control center or doctor, or when going for treatment. You may also contact 1-866-303-6950 for emergency medical treatment information.

Note to Physician: There is no specific antidote for exposure to this material after decontamination, treatment should be directed at the control of symptoms and the clinical condition. Gastric lavage and/or the administration of activated charcoal can be considered. Since abamectin is believed to enhance GABA activity based on animal studies, it is probably wise to avoid drugs that enhance GABA activity (barbiturates, benzodiazepines, valproic acid).

SECTION 5 — FIRE FIGHTING MEASURES

Flash point (Method): 162° F (72° C)

Flammable limits (% by volume): Not applicable

Explosive properties: Not explosive

Suitable extinguishing media: Small fires: dry chemical, carbon dioxide. Large fires: water spray or foam.

Special fire-fighting procedures/equipment: Use water spray to keep fire-exposed containers cool. Approach fire from upwind to avoid hazardous vapors and toxic decomposition products. Fight fire from protected location or maximum possible distance. Avoid heavy hose streams. Dike area to prevent water runoff. Fire fighters should wear self-contained breathing apparatus and protective clothing.

Unusual fire and explosion hazards: None.

Hazardous decomposition products in a fire: The essential breakdown products are carbon dioxide, nitrogen oxides, sulphur dioxide, and carbon monoxide.

SECTION 6 — ACCIDENTAL RELEASE MEASURES

Personal precautions: Observe all protection and safety precautions when cleaning up spills. Depending on the magnitude of the spill, this may mean wearing respirator, face mask or safety glasses, chemical resistant clothing, gloves and boots. See Section 8, Personal Protection.

Environmental precautions: Ensure spilled product does not enter drains, sewers, waterways, or confined spaces.

Spill response/Cleanup: Stop the source of the spill if safe to do so. Contain the spill to prevent any further contamination of surface, soil or water. Avoid and reduce formation of aerosol or mist as much as possible. Remove sources of ignition. Spills on the floor or other impervious surface should be absorbed onto an absorptive material such as hydrated lime, universal binder, Fuller's earth or other absorbent clays. Collect contaminated absorbent in suitable containers. Rinse area with strong industrial detergent and much water. Absorb wash liquid onto suitable absorbent and collect in suitable containers. Wash waters must be prevented from entering surface water drains. Large spills which soak into the ground should be dug up and transferred to suitable containers. The used containers should be properly closed and labelled. Refer to Section 13 for disposal.

Prohibited materials: None known.

SECTION 7 — HANDLING AND STORAGE

Safe handling procedures: Avoid contact with skin, eyes, and clothing. Avoid breathing vapour or mist.

Storage recommendations: Do not store or use near heat or open flame. Product should be stored in the original container in a secure, dry place. Do not contaminate with other pesticides or fertilizers. Storage temperatures should not exceed 95° F (35° C). Protect against strong heat from sunshine or other source. Protect from exposure to fire and heat.

Other information: In an industrial environment it is recommended to avoid all personal contact with the product, if possible by using closed systems and remote system control. Otherwise the material should preferably be handled by

mechanical means. Adequate ventilation or local exhaust ventilation is required. The exhaust gases should be filtered or treated otherwise. For personal protection, see section 8.

SECTION 8 — EXPOSURE CONTROLS AND PERSONAL PROTECTION

Ventilation and engineering controls: If handled indoors, provide mechanical exhaust ventilation to minimize concentrations.

Protective gloves: Wear chemical-resistant gloves, such as barrier laminate, nitrile rubber, butyl rubber, or viton.

Eye protection: Wear safety glasses or face mask.

Other protective equipment: Wear appropriate chemical resistant clothing.

Permissible exposure levels: See Section 3.

General hygiene considerations: Persons working with this material for a longer period should be careful to minimize exposure. Pregnant women must avoid all work with the product, because it may damage the unborn child. Keep all unwanted person and children away from working area. Avoid contact with eyes, skin or clothing. Do not breathe vapour or mist. Remove contaminated clothing immediately. Wash thoroughly after handling. Before removing gloves, wash them with water and soap. After work, take off all work clothes and footwear. Take a shower, using water and soap. Wear only clean clothes when leaving job. Wash protective clothing and protective equipment with water and soap after each use.

SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES

Physical state, odor and appearance: Pale yellow liquid.

Odor threshold: Almond-like

pH: 6

Flash point: 162° F (72° C) (Pensky-Martens closed cup)

Melting point: Not available

Specific gravity: 0.96g/mL @ 20° C

SECTION 10 — REACTIVITY AND STABILITY DATA

Stability and reactivity: This product is stable under the recommended storage and handling conditions described in Section 7.

Hazardous polymerization: Not known to occur.

Conditions to avoid: Keep away from heat or flame.

Materials to avoid (incompatibles): None known.

Hazardous decomposition products in a fire: The essential breakdown products are carbon dioxide, nitrogen oxides, sulphur dioxide, and carbon monoxide.

Fire and explosion precautions: Keep away from sources of ignition and protect from exposure to fire and heat.

SECTION 11 — TOXICOLOGICAL INFORMATION

Routes of exposure: Skin contact, ingestion, inhalation.

Toxicological data:

LC₅₀, inhalation (mg/L/4 hrs) = 2.02 (4-hrs)

LD₅₀, oral, (mg/kg) = 524

LD₅₀, dermal, (mg/kg) = 2000

Eye irritation = Moderate

Skin irritation = Moderate

Skin sensitizer = Not a skin sensitizer

Carcinogenicity: Not carcinogenic.

Teratogenicity, mutagenicity, other reproductive effects: No known teratogenic, mutagenic or reproductive effects.

SECTION 12 — ECOLOGICAL INFORMATION

Environmental hazards: This product is highly toxic to aquatic invertebrates, aquatic life stages of amphibians and insects.

It is very toxic to fish. It is not considered as harmful to algae, birds and soil macro- and microorganisms.

Ecotoxicological information: The ecotoxicity measured on the active ingredient is:

Fish	Zebrafish (<i>Danio rerio</i>)	96-h LC ₅₀ : 32.8 µg/l
	Fathead minnow (<i>Pimephales promelas</i>)	28-Day NOEC: 4.4 µg/l
Invertebrates	Daphnids (<i>Daphnia magna</i>)	48-h EC ₅₀ : 0.23 µg/l
		21-day NOEC: 0.03 µg/l
Algae	Green algae (<i>Selenastrum capricornutum</i>)	72-h EC ₅₀ : 70 mg/l
Birds	Japanese quail (<i>Coturnix coturnix japonica</i>)	LD ₅₀ : > 2000 mg/kg

Earthworms	<i>Eisenia foetida</i>	14-day LC ₅₀ : 16 mg/kg dry soil
Insects	Honey bees (<i>Apis mellifera</i>)	48-h LC ₅₀ , topical: 0.00083 µg/bee

Mobility: Abamectin is mobile in soil.

Persistence and degradability: Abamectin is not readily biodegradable. However, it undergoes degradation in the environment and in waste water treatment plants.

Bioaccumulative potential: Abamectin is not expected to bioaccumulate. The Bioconcentration Factor (BCF) was measured to be 54 in zebrafish (*Danio rerio*; whole fish).

SECTION 13 — DISPOSAL CONSIDERATIONS

Handling for disposal: To avoid wastes, use all material by application according to label directions. If wastes cannot be avoided, offer remaining product to a waste disposal facility or pesticide disposal program.

Methods of disposal: Do not contaminate water, food, or feed by storage or disposal. Refer to product label for specific container disposal instructions. Disposal of waste and packaging must always be in accordance with all applicable local regulations.

SECTION 14 — TRANSPORTATION INFORMATION

US DOT 49 CFR information:

For **non-bulk** shipments (<119 gals):

This material is not regulated for transport.

For **bulk** shipments (≤119 gals) by all modes of transportation:

NA1993, Combustible liquid, n.o.s. (aliphatic alcohol), PGIII

INTERNATIONAL:

IMDG/IMO (vessel): UN3082, Environmentally hazardous substance, liquid, n.o.s. (abamectin), 9, PGIII

IATA/ICAO (air): UN3082, Environmentally hazardous substance, liquid, n.o.s. (abamectin), 9, PGIII

SECTION 15 — REGULATORY INFORMATION

Regulations under FIFRA: All pesticides are governed under FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act). Therefore, the regulations presented are pertinent only when handled outside of the normal use and applications of pesticides. This includes waste streams resulting from manufacturing/formulating facilities, spills or misuse of products, and storage of large quantities of products containing hazardous or extremely hazardous substances.

EPA/CERCLA Reportable Quantity (RQ): Not applicable

SARA TITLE III:

Sec. 302, Extremely Hazardous Substance Notification: This material is not known to contain any Extremely Hazardous Substances.

Sec. 311/312, Hazard Categories: Immediate (acute) health hazard

Chronic (delayed) health hazard

Sec. 313, Toxic Chemicals Notification: Abamectin (CAS #: 71751-41-2) 2%

n-Methyl-2-pyrrolidone (CAS #: 872-50-4) 29%

California Proposition 65: This product contains n-Methyl-2-pyrrolidone which is known to the state of California to cause development toxicity.

SECTION 16 — OTHER INFORMATION

HMIS Rating: 2 Health; 2 Flammability; 0 Reactivity

NFPA Rating: 2 Health; 2 Flammability; 0 Reactivity

0-minimal 1-slight 2-moderate 3-severe 4-extreme

Prepared by: Cheminova Inc.

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