



1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: **Nufarm Abamectin 0.15 EC Insecticide**
EPA Reg. No.: 228-658
Product Type: Miticide/Insecticide
Company Name: Nufarm Americas Inc.
 11901 S. Austin Avenue
 Alsip, IL 60803

Telephone Numbers: For Chemical Emergency, Spill, Leak, Fire, Exposure, or Accident,
 Call CHEMTREC Day or Night: 1-800-424-9300
 For Medical Emergencies Only, Call 1-877-325-1840

This product is an EPA FIFRA registered pesticide. Some classifications on this SDS are not exactly the same as on the FIFRA label. Certain sections are superseded by federal law governed by EPA for a registered pesticide. Please see Section 15. REGULATORY INFORMATION for explanation.

2. HAZARDS IDENTIFICATION

PHYSICAL HAZARDS:

Flammable liquid Category 4

HEALTH HAZARDS:

Acute toxicity, oral Category 4
 Acute toxicity, inhalation Category 4
 Skin irritation Category 3
 Eye irritation Category 2B
 Specific target organ toxicity – Repeat exposure Category 2

ENVIRONMENTAL HAZARDS:

Hazardous to aquatic environment, acute Category 1
 Hazardous to aquatic environment, chronic Category 1

SIGNAL WORD:

WARNING

HAZARD STATEMENTS:

Combustible liquid. Harmful if swallowed or inhaled. Causes mild skin irritation. Causes eye irritation. May cause damage to organs (kidney, livers, central nervous system, and respiratory system) through prolonged or repeated exposure. Very toxic to aquatic life with long lasting effects.



PRECAUTIONARY STATEMENTS:

Keep away from flames and hot surfaces. – No smoking. Wear protective gloves/eye protection/face protection. In case of fire: Use foam, carbon dioxide, dry chemical or water spray to extinguish. Keep cool.

Wash hands and exposed skin thoroughly after handling. Do not eat, drink or smoke when using this product. If swallowed: Call a poison center/doctor if you feel unwell. Rinse mouth.

Avoid breathing mists/vapors/spray. Use only outdoors or in well-ventilated area. If inhaled: Remove person to fresh air and keep comfortable for breathing.

If skin irritation occurs: Get medical advice/attention.

If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

Avoid release to the environment. Collect spillage. Dispose of contents/container in accordance with local/regional/national/international regulations.

3. COMPOSITION / INFORMATION ON INGREDIENTS

COMPONENT	CAS NO.	% BY WEIGHT
Abamectin	71751-41-2 (mixture of 65195-55-3 and 65195-56-4)	1.9 – 2.1
N-methyl pyrrolidone	872-50-4	21 – 22
Butylated hydroxytoluene	128-37-0	1.4 – 1.6
Other Ingredients	Trade Secret	Trade Secret

Synonyms: Abamectin; Avermectin B1; Mixture of Avermectin B1a + Avermectin B1b

Ingredients not precisely identified are proprietary or non-hazardous. Values are not product specifications.

4. FIRST AID MEASURES

If Swallowed: Call a poison control center or doctor immediately for treatment advice. Do not give any liquid to the person. Do not induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person.

If in Eyes: Hold eye open and rinse slowly and gently with water for 15 to 20 minutes. 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 on Skin or Clothing: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15 to 20 minutes. Call a poison control center or doctor for treatment advice.

If Inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. Call a poison control center or doctor for further treatment advice.

Most Important symptoms/effects, acute and delayed: Eye exposure may cause moderate irritation. Skin exposure may cause slight irritation

Indication of Immediate medical attention and special treatment if needed, if necessary: None expected.

Note to Physician: Early signs of intoxication due to overexposure include dilation of pupils, muscular incoordination, and muscle tremors. Toxicity following accidental ingestion of this product can be minimized by early administration of chemical adsorbents (e.g., activated charcoal). If toxicity from exposure has progressed to cause severe vomiting, the extent of resultant fluid and electrolyte imbalance should be gauged. Appropriate supportive parenteral fluid replacement therapy should be given, along with other required supportive measures (such as maintenance of blood pressure levels and proper respiratory functionality) as indicated by clinical signs, symptoms, and measurements.

In severe cases, observations should continue for at least several days until clinical condition is stable and normal. Since abamectin is believed to enhance GABA activity in animals, it is probably wise to avoid drugs that enhance GABA activity (barbiturates, benzodiazepines, valproic acid) in patients with potentially toxic abamectin exposure.

5. FIRE FIGHTING MEASURES

Flash Point: 80.2° C (176.4° F)

Extinguishing Media: Recommended for large fires: foam or water spray. Recommended for small fires: dry chemical or carbon dioxide.

Special Fire Fighting Procedures: Firefighters should wear NIOSH approved self-contained breathing apparatus and full fire-fighting turn out gear. Dike area to prevent runoff and contamination of water sources. Dispose of fire control water later.

Unusual Fire and Explosion Hazards: Combustible liquid. Can release vapors that form explosive mixtures at temperatures at or above the flash point. Containers will burst from internal pressure under extreme fire conditions. If water is used to fight fire or cool containers, dike to prevent runoff contamination of municipal sewers and waterways.

Hazardous Decomposition Materials (Under Fire Conditions): May produce oxides of carbon, hydrogen and nitrogen.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: Wear appropriate protective gear for the situation. See Personal Protection information in Section 8.

Environmental Precautions: Prevent material from entering public sewer systems or any waterways. Do not flush to drain. Large spills to soil or similar surfaces may necessitate removal of topsoil. The affected area should be removed and placed in an appropriate container for disposal.

Methods for Containment: Dike spill using absorbent or impervious materials such as earth, sand or clay. Collect and contain contaminated absorbent and dike material for disposal.

Methods for Cleanup and Disposal: Pump any free liquid into an appropriate closed container. Collect washings for disposal. Decontaminate tools and equipment following cleanup. See Section 13: DISPOSAL CONSIDERATIONS for more information.

Other Information: Large spills may be reportable to the National Response Center (800-424-8802) and to state and/or local agencies.

7. HANDLING AND STORAGE

HANDLING:

Do not get in eyes, on skin or on clothing. Avoid breathing spray mist. Users should wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet. Remove clothing/Personal Protective Equipment (PPE) immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

STORAGE:

Store in a tightly closed container in a cool, dry place. Do not contaminate water, food, or feed by storage or disposal.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls:

Where engineering controls are indicated by specific use conditions or a potential for excessive exposure, use local exhaust ventilation at the point of generation.

Personal Protective Equipment:

Eye/Face Protection: To avoid contact with eyes, wear goggles or face shield. An emergency eyewash or water supply should be readily accessible to the work area.

Skin Protection: To avoid contact with skin, wear coveralls over short-sleeved shirt and short pants, chemical-resistant footwear plus socks and chemical-resistant gloves such as barrier laminate or butyl rubber ≥ 14 mils. Wear a chemical-resistant apron when cleaning equipment, mixing or loading. For overhead exposure, wear chemical-resistant headgear. An emergency shower or water supply should be readily accessible to the work area.

Respiratory Protection: Not normally required. If vapors or mists exceed acceptable levels, wear NIOSH approved air-purifying respirator with cartridges/canisters approved for use against pesticides. Refer to product label for specific use information related to respiratory protection requirements.

General Hygiene Considerations: Personal hygiene is an important work practice exposure control measure and the following general measures should be taken when working with or handling this material: 1) do not store, use and/or consume foods, beverages, tobacco products, or cosmetics in areas where this material is stored; 2) wash hands and face carefully before eating, drinking, using tobacco, applying cosmetics or using the toilet.

Exposure Guidelines:

Component	OSHA		ACGIH		WEEL	Unit
	TWA	STEL	TWA	STEL	TWA	
Abamectin	NE	NE	NE	NE	NE	
N-methyl pyrrolidinone*	NE	NE	NE	NE	10	ppm
Butylated hydroxytoluene	NE	NE	2 (IFV)	NE	NE	mg/m ³
Other Ingredients	NE	NE	NE	NE	NE	

IFV = Inhalable Fraction and Vapor

NE = Not Established

WEEL = AIHA Workplace Environmental Exposure Levels

* California OSHA PEL: 1 ppm

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Amber colored liquid
Odor:	No data available
Odor threshold:	No data available
pH:	4.41 (1% w/w solution in DIW)
Melting point/freezing point:	No data available
Initial boiling point and boiling range	No data available
Flash point:	80.2° C (176.4° F)
Evaporation rate:	No data available
Flammability (solid, gas):	No data available
Upper/lower flammability or explosive limits:	No data available
Vapor pressure:	No data available
Vapor density:	No data available
Relative density:	1.052 g/ml @ 20° C
Solubility(ies):	Soluble
Partition coefficient: n-octanol/water:	No data available
Autoignition temperature:	No data available
Decomposition temperature:	No data available
Viscosity:	15.797 cSt @ 20°C; 11.353 cSt @ 40° C
VOC Emission Potential (%)	70.50

Note: Physical data are typical values, but may vary from sample to sample. A typical value should not be construed as a guaranteed analysis or as a specification.

10. STABILITY AND REACTIVITY**Reactivity:** Not reactive**Chemical Stability:** This material is stable under normal handling and storage conditions.**Possibility of Hazardous Reactions:** Hazardous polymerization will not occur.**Conditions to Avoid:** Avoid temperatures near or above flash point 160°F (71°C), open flame, spark and static electricity.**Incompatible Materials:** Strong oxidizing agents: bases and acids.**Hazardous Decomposition Products:** Under fire conditions may produce oxides of carbon, hydrogen and nitrogen.**11. TOXICOLOGICAL INFORMATION****Likely Routes of Exposure:** Eye contact, Skin contact, Inhalation**Eye Contact:** Moderately irritating based on toxicity studies. Vapors and mist can cause irritation.**Skin Contact:** Minimally toxic and slightly irritating based on toxicity studies.**Ingestion:** Toxic based on toxicity studies.

Inhalation: Low inhalation toxicity based on toxicity studies.

Delayed, immediate and chronic effects of exposure: None reported.

Toxicological Data:

Data from laboratory studies on this product are summarized below:

Oral: Rabbit LD₅₀: 310.2 mg/kg (females)

Dermal: Rat LD₅₀: >5,000 mg/kg

Inhalation: Rat 4-hr LC₅₀: >2.09 mg/L (no mortalities based on highest dose tested)

Eye Irritation: Rabbit: Moderately irritating (MMTS = 29.3)

Skin Irritation: Rabbit: Slightly irritating (PDII = 0.7)

Skin Sensitization: Not a contact sensitizer in guinea pigs following repeated skin exposure.

Subchronic (Target Organ) Effects: Abamectin is a central nervous system depressant. Overexposure to abamectin may also affect skin and eyes. Abamectin is a GABA agonist. GABA is a major inhibitory neurotransmitter. Repeated overexposure to N-Methyl 2-pyrrolidinone (NMP) may cause effects to eyes, skin, respiratory system, central nervous system, liver and kidneys. Repeated overexposure to ethyl lactate may cause effects to eyes, skin and respiratory system. Inhalation of high vapor concentrations can cause central nervous system depression and narcosis.

Carcinogenicity / Chronic Health Effects: There was no evidence of carcinogenicity in animal studies using abamectin. No increase in tumors was seen in rats via dietary or inhalation exposure to NMP for two years; however, an increase in liver tumors was noted in mice receiving high dietary doses over a similar period. Liver tumors are not uncommon when non-genotoxic chemicals such as NMP are tested in the mouse bioassay. Prolonged overexposure to ethyl lactate may cause irritation of eyes and skin.

Reproductive Toxicity: In laboratory animal studies with abamectin, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals. NMP may adversely affect reproduction in rats after ingestion, although fertility is unaltered.

Developmental Toxicity: In animal studies with abamectin, developmental effects were observed at doses that were also toxic to the maternal animal. Fetal developmental effects were observed following ingestion, inhalation and dermal exposures to NMP in pregnant animals, and occurred both in the presence and absence of maternal toxicity.

Genotoxicity: Animal tests with abamectin did not demonstrate mutagenic effects. Neither *in vitro* nor *in vivo* tests on NMP demonstrated mutagenic effects.

Assessment Carcinogenicity: None listed with ACGIH, IARC, NTP or OSHA.

12. ECOLOGICAL INFORMATION

Ecotoxicity:

Data on Abamectin Technical:

96-hour LC ₅₀ Bluegill:	9.6 ppb	Bobwhite Quail Oral LD ₅₀ :	>2000 mg/kg
96-hour LC ₅₀ Rainbow Trout:	3.6 ppb	Bobwhite Quail 8-day Dietary LC ₅₀ :	3,102 ppm
48-hour EC ₅₀ Daphnia:	0.34 ppb	Mallard Duck 5-day Dietary LC ₅₀ :	383 ppm
48-hour Honey Bee Contact LD ₅₀ :	0.022 µg/bee		

Environmental Fate:

Abamectin is nearly insoluble in water and has a strong tendency to bind to soil particles. Abamectin is rapidly degraded by photolysis in both the soil and water. The average half-life in soil is 5 – 10 hours and in water 18 hours. Hydrolysis is not an important degradation mechanism.

13. DISPOSAL CONSIDERATIONS

Waste Disposal Method:

Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

Container Handling and Disposal:

Nonrefillable container. Do not reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container 1/4 full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use

or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by State and local authorities. Plastic containers are also disposable by incineration, or, if allowed by State and local authorities, by burning. If burned stay out of smoke.

14. TRANSPORTATION INFORMATION

Follow the precautions indicated in Section 7: HANDLING AND STORAGE of this MSDS.

DOT

< 119 gallons per complete package

UN2902, Pesticide, liquid, toxic, n.o.s., (Abamectin), 6.1, III

≥ 119 gallons per complete package

UN2902, Pesticide, liquid, toxic, n.o.s., (Abamectin), 6.1, III, Marine pollutant

IMDG

UN2902, Pesticide, liquid, toxic, n.o.s., (Abamectin), 6.1, III, Marine pollutant

IATA

UN2902, Pesticide, liquid, toxic, n.o.s., (Abamectin), 6.1, III

15. REGULATORY INFORMATION

EPA FIFRA INFORMATION

This chemical is a pesticide product registered by the United States Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets (SDS), and for workplace labels of non-pesticide chemicals. The hazard information required on the pesticide label is reproduced below. The pesticide label also includes other important information, including directions for use.

WARNING. May be fatal if swallowed. Causes substantial but temporary eye injury. Wear protective eyewear (goggles or face shield). **DO NOT** get in eyes, on skin, or on clothing. Harmful if inhaled or absorbed through the skin. Avoid breathing spray mist. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, or using tobacco. Remove and wash contaminated clothing before reuse.

U.S. FEDERAL REGULATIONS

TSCA Inventory: This product is exempted from TSCA because it is solely for FIFRA regulated use.

SARA Hazard Notification/Reporting:

Hazard Categories Under Criteria of SARA Title III Rules (40 CFR Part 370):

Immediate, Delayed and Fire

Section 313 Toxic Chemical(s):

Abamectin - CAS No. 71751-41-2 (65195-55-3 B1a and 65195-56-4 B1b), 1.9 – 2.1% by weight
N-Methyl-2-pyrrolidinone (CAS No. 872-50-4), 21 - 22% by weight

Reportable Quantity (RQ) under U.S. CERCLA:

None

RCRA Waste Code:

None

State Information:

Other state regulations may apply. Check individual state requirements.

California Proposition 65: WARNING. This product contains chemicals known to the State of California to cause cancer or birth defects or other reproductive harm.

16. OTHER INFORMATION

National Fire Protection Association (NFPA) Hazard Rating:**Rating for this product: Health: 2 Flammability: 2 Reactivity: 0**

Hazards Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

This Safety Data Sheet (SDS) serves different purposes than and DOES NOT REPLACE OR MODIFY THE EPA-ACCEPTED PRODUCT LABELING (attached to and accompanying the product container). This SDS provides important health, safety and environmental information for employers, employees, emergency responders and others handling large quantities of the product in activities generally other than product use, while the labeling provides that information specifically for product use in the ordinary course.

Use, storage and disposal of pesticide products are regulated by the EPA under the authority of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) through the product labeling, and all necessary and appropriate precautionary, use, storage, and disposal information is set forth on that labeling. It is a violation of Federal law to use a pesticide product in any manner not prescribed on the EPA-accepted label.

Although the information and recommendations set forth herein (hereinafter "Information") are presented in good faith and believed to be correct as of the date hereof, Nufarm Americas Inc. makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for their purposes prior to use. In no event will Nufarm Americas Inc. be responsible for damages of any nature whatsoever resulting from the use of or reliance upon Information. NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OF ANY OTHER NATURE ARE MADE HEREUNDER WITH RESPECT TO INFORMATION OR THE PRODUCT TO WHICH INFORMATION REFERS AND ALL SUCH WARRANTIES ARE HEREBY SPECIFICALLY DISCLAIMED.

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