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MATERIAL SAFETY DATA SHEET

Section 1. Chemical Product and Company Identification

Qingdao Audis Bio-Tech Co., Ltd

Address: Changyang Industrial Zone, Laixi City, Qingdao, China

Tel: +086 532 66961544 Fax: +086 532 66961544

Product Name: Emamectin Benzoate 2.3%EC

Common Name: Emamectin Benzoate

Chemical Name (IUPAC): mixture containing 90% of (10E,14E,16E,22Z)-(1R, 4S,5'S,6S,6'R,8R,12S,13S,20R,21R,24S)-6'-[(S)-sec-butyl]-21,24-dihydroxy-5',11,13,22-tetramethyl-2-oxo-3,7,19-trioxatetracyclo[15.6.1.14,8.020,24]pentacosa-10,14,16,22-tetraene-6-spiro-2'-(5',6'-dihydro-2'H-pyran)-12-yl2,6dideoxy-3-O-methyl-4-O-(2,4,6-trideoxy-3-O-methyl-4-methylamino-alpha-L-lyxo-hexopyranosyl)-alpha-L-arabinohexopyranosidebenzoate and 10% of (10E,14E,16E,22Z)-(1R,4S,5'S,6S,6'R,8R,12S,13S,20R,21R,24S)-21,24-dihydroxy-6'-isopropyl-5',11,13,22-tetramethyl-2-oxo-3,7,19-trioxatetracyclo[15.6.1.14,8.020,24]pentacosa-10,14,16,22-tetraene-6-spiro-2'-(5',6'-dihydro-2'H-pyran)-12-yl 2,6-dideoxy-3-O-methyl-4-O-(2,4,6-trideoxy-3-O-methyl-4-methylamino-alpha-L-lyxo-hexopyranosyl)-alpha-L-arabinohexopyranoside benzoate.

Section 2. Composition/Information on Ingredients

Component CAS Number Content (g/kg)

Component	CAS Number	Content
Emamectin benzoate	155569-91-8	Min 2.3%
Inerts	Not applicable	Max 97.7%

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Section 3. Hazards Identification

Symptoms of Acute Exposure:

Harmful if inhaled or swallowed. Causes severe eye irritation. Injury may be permanent. May cause skin irritation. Inhalation can cause irritation to the respiratory tract and can result in chemical pneumonitis if aspirated. Ingestion results in central nervous system effects such as muscle tremors, decreased activity, ataxia (unsteadiness or incoordination), and dilated pupils (mydriasis).

Exposure to high vapor levels may cause headache, dizziness, numbness, nausea, incoordination, or other central nervous system effects.

Hazardous Decomposition Products:

Can decompose at high temperatures forming toxic gases.

Unusual Fire, Explosion and Reactivity Hazards:

During a fire, irritating and possibly toxic gases may be generated by thermal decomposition or combustion. Combustible liquid. Can release vapors that form explosive mixtures at temperatures at or above the flash point. Heavy vapors can flow along surfaces to distant ignition sources and flash back.

Section 4. First Aid Measures

In case of poisoning by any exposure route contact a doctor or Poisons Information Centre.

Swallowed: If swallowed, do not induce vomiting. Give large quantities of water and seek immediate medical assistance.

Eye: If product gets in eyes immediately flush skin or eyes with running water for at least 15 minutes.

Skin: In case of contact with material, immediately flush skin with running water for at least 15 minutes. Remove contaminated clothing and wash affected areas thoroughly

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with soap and water. Wash contaminated clothing before re-use.

Inhaled: Move person to fresh air and keep at rest until recovered. If any signs or symptoms occur or persist, get medical attention.

Section 5. Fire Fighting Measures

Fire and Explosion Hazards:

This product is non-flammable, non-explosive and is combustible. Extinguish warehouse and factory fires using fine water-spray or foam. Do not allow fire-water to enter drains.

Unusual Fire, Explosion and Reactivity Hazards:

During a fire, irritating and possibly toxic gases may be generated by thermal decomposition or combustion. Combustible liquid Can release vapors that form explosive mixtures at temperatures at or above the flash point. Heavy vapors can flow along surfaces to distant ignition sources and flash back.

In Case of Fire:

Use appropriate extinguishing media for combustibles in the area. Wear full protective clothing and self-contained breathing apparatus. Evacuate nonessential personnel from the area to prevent human exposure to fire, smoke, fumes or products of combustion. Prevent use of contaminated buildings, area, and equipment until decontaminated. Water runoff can cause environmental damage. If water is used to fight fire, dike and collect runoff.

Flammability Class: This product is NON-FLAMMABLE, however it is combustible

Section 6. Accidental Release Measures

In Case of Spill or Leak:

Control the spill at its source. Contain the spill to prevent from spreading or

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contaminating soil or from entering sewage and drainage systems or any body of water. Clean up spills immediately, observing precautions in Protective Equipment Section. Cover entire spill with absorbing material and place into compatible disposal container. Scrub area with hard water detergent (e.g. commercial products such as Tide, Joy, Spic and Span). Pick up wash liquid with additional absorbent and place into compatible disposal container. Once all material is cleaned up and placed in a disposal container, seal container and arrange for disposition.

Section 7. Handling and Storage

Store the material in a well-ventilated, secure area out of reach of children and domestic animals. Do not store food, beverages or tobacco products in the storage area. Prevent eating, drinking, tobacco use, and cosmetic application in areas where there is a potential for exposure to the material. Wash thoroughly with soap and water after handling.Store in tightly sealed original containers in a dry secure place away from fertilisers, seed, feed and food. Store out of direct sunlight.

Section 8. Exposure Controls/Personal Protection

Ingestion: Prevent eating, drinking, tobacco usage and cosmetic application in areas where there is a potential for exposure to the material. Always wash thoroughly after handling.

Eye Contact: Where eye contact is likely, use chemical splash goggles. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.

Skin Contact: Where contact is likely, wear chemical-resistant (such as nitrile or butyl) gloves, coveralls, socks and chemical-resistant footwear. For overhead exposure, wear

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chemical-resistant headgear.

Inhalation: Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below exposure limits. A NIOSH-certified combination air-purifying respirator with an N, P or R 95 or HE class filter and an organic vapor cartridge may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Protection provided by air-purifying respirators is limited. Use a pressure demand atmosphere-supplying respirator if there is any potential for uncontrolled release, exposure levels are not known, or under any other circumstances where air-purifying respirators may not provide adequate protection.

Section 9. Physical and Chemical Properties

Colour： yellow or light brown

Vapour Pressure: Not available

Specific Gravity: 0.90 g/mL at 25°C

Flammability: Non-flammable

Behaviour in Water: Dispersible

pH: < 8

Corrosiveness: None to HDPE

Section 10. Stability and Reactivity

Stability: Stable

Hazardous Polymerization: Will Not Occur

Conditions to Avoid: Heat; light

Materials to Avoid: Strong oxidizers.

Hazardous Decomposition Products: Can decompose at high temperatures forming

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toxic gases.

Section 11. Toxicological Information

Acute Toxicity/Irritation Studies

Oral LD50 (Rat) : ≥ 2000mg/kg body weight

Dermal LD50 (Rabbit) : > 2000mg/kg body weight

Eye Contact: Slightly- irritating (Rabbit)

Skin Contact: Non-irritating (Rabbit)

Inhalation: LC_{50} (4 h) for rats > 2.03 mg/L

Section 12. Ecological Information

Birds LD_{50}=274.5 mg/kg b.w. (Coturnix coturnix japonica); LD_{50} 82.5 mg/kg b.w. (Mallard Duck)

Fish LC_{50} =187.7 µg/L (Brachydonio rerio,96 h); LC_{50}=175.3µg/L (rainbow trout, 96 h)

Daphnia EC_{50} (for 48h): 1.22 µg/L

Algae EC_{50} (for 96h): 4.36 µg/L(Scenedesmus obliquus)

Bees LD_{50}:0.0038µg/bee (Honeybee 48 h)

Worms LC_{50} (for 14d): >1000 mg/kg (Eisenia foetida dry soil)

Plants: Metabolism has been investigated in lettuce, cabbage and sweet corn. It is non-systemic, and rapidly degrades in sunlight to various complex residues in which undegraded parent is the only significant residue. The residues were very low.

Soil/Environment: Rapidly degraded

Section 13. Disposal Considerations

Dispose of empty, used containers by:

(a) Triple or preferably pressure rinse containers before disposal. Add rinsings to the spray tank. DO NOT dispose of undiluted chemicals on site.

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(b) If recycling, replace cap and return clean containers to recycler or designated collection point.

(c) 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.

Section 14. Transport Information

ADG Code: This product is not classified as a Dangerous Good. No special transport conditions are necessary unless required by other regulations.

Section 15. Regulator Information

Follow all regulations in your country.

Section 16. Other Information

ADG Code: Australian Code for the Transport of Dangerous Goods by Road and Rail

CAS Number Chemical Abstracts Service Registry Number

Disclaimer: The information provided by Qingdao Audis Bio-Tech Co., Ltd contained herein is given in good faith and to the best of our knowledge. However, no warranty is expressed or implied.

Prepared by: Register Department

Updated on: September 08, 2012