
**Pesticides — Emamectin
Benzoate Part1:Technical Material
(TC) -Specifications**

ICS: 65.100.10

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Foreword

This Ethiopian Standard has been prepared under the direction of the Technical Committee for Pesticides (TC 19) and published by the Ethiopian Standards Agency (ESA).

The standard is developed of Ethiopian Standard ES 6802: 2021 for "*Pesticides - emamectin benzoate Part 1: Technical Material (TC) - Specifications*" to be published.

In preparing this Ethiopian Standard reference has been made to the following:

Emamectin benzoate(247).vanderVelde-KoertsTCentre for Substances and Integrated Risk Assessment,
National Institute of Public Health and the Environment, The Netherlands

Acknowledgement is made for the use of information from the above publication.

Pesticides- Emamectin Benzoate Part 1: Technical material (TC)-Specification

1 Scope

This Ethiopian Standard specifies the requirements for the technical material of emamectin benzoate (for agricultural purpose).

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ES 693, Pesticides - Terminology.

ES 694, Pesticides - Methods of sampling.

ES 695, Pesticides - Packaging.

ES 696, Pesticides - Guidelines on good labelling practice.

ES 697, Pesticides - Guidelines for retail distribution, storage and handling.

ES 700, Pesticides - Guideline for the disposal of bulk quantities of obsolete pesticides.

ES 737, Pesticides - Determination of material insoluble in acetone.

ES 749, Pesticides - Determination of water content.

ES 750, Pesticides - Determination of free acidity or alkalinity

3 Definitions

For the purpose of this Ethiopian Standard terms defined in ES 693 shall apply.

4 General information

COMMON NAME: emamectin (BSI, E-ISO, ANSI)

mixture of >90% emamectin B1a and < 10% emamectin B1b.

STRUCTURAL FORMULA:

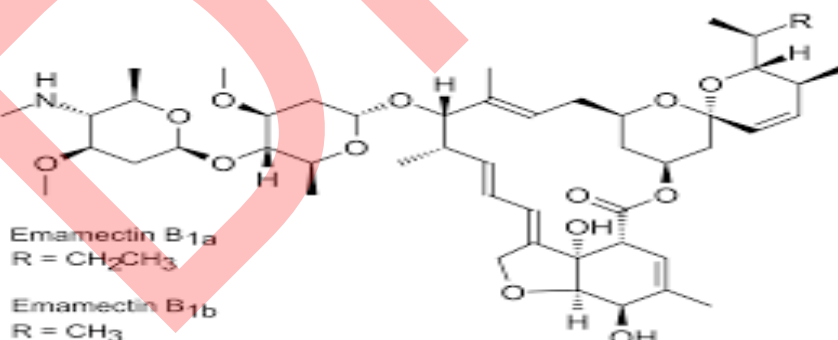


Table 1. Emamectin benzoate

EMPIRICAL FORMULA:	Emamectin B1a: C ₄₉ H ₇₅ NO ₁₃ Emamectin B1b: C ₄₈ H ₇₃ NO ₁₃
RMM:	Emamectin B1a: 886.1 Emamectin B1b: 872.1
CAS REGISTRY NUMBER:	CAS Registry No: emamectin benzoate: 155569-91-8 emamectin B1a benzoate: 138511-97-4 emamectin B1b benzoate: 138511-98-5)
CIPAC CODE NUMBER:	791

CHEMICAL NAMES:

IUPAC NAME: emamectin: no

IUPAC name available emamectin B1a: (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-yl 2,6-dideoxy-3-O-methyl-4-O-(2,4,6-trideoxy-3-O-methyl-4-methylamino-α-L-lyxo-hexapyranosyl)-α-L-arabino-hexapyranoside emamectin B1b: (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-α-L-lyxo-hexapyranosyl)-α-L-arabino-hexapyranoside.

CAS NAME: emamectin: (4''R)-4''-deoxy-4''-(methylamino) avermectin B1 or

4''-deoxy-4''-(methylamino)-

(4''R) avermectin B1 emamectin B1a: (4''R)-5-O-demethyl-4''-

deoxy-4''-(methylamino) avermectin A1a or

5-O-demethyl-4''-deoxy-4''-(methylamino)-(4''R)-avermectin A1a emamectin B1b:

(4''R)-5-O-demethyl-25-de(1-methylpropyl)-4''-deoxy-4''-(methylamino)-25-(1-

methylethyl)-avermectin A1a or 5-O-demethyl-25-de(1-methylpropyl)-4''-deoxy-4''-

(methylamino)-25-(1-methylethyl)-(4''R)-avermectin A1a.

CHEMICAL GROUP:

USE CATEGORY: Insecticide

WHO CLASS: ii

AVAILABLE FORMULATIONS: water dispersible granule (WG 7 or 20 g ai/kg), water soluble granule (SG 9.5 or 50 g ai/kg), emulsifiable concentrate (EC 10 or 19.2 g ai/L) or a liquid to be applied undiluted (AL 0.005 g ai/kg).

5 Requirements**5.1 Description**

The material shall consist of *emamectin benzoate* together with related manufacturing impurities and shall be a white solid at 25 °C.

5.2 Active ingredient

5.3 Emamectin benzoate Content

The *emamectin benzoate* content shall be declared in g/kg (not less than 950 g/kg), the content obtained shall not differ from that declared by more than +/- 25 g

2. Physical and Chemical Properties

S/N	Parameters	Typical Value	Test method
1	Appearance	a white solid	visual
2	Solubility - In water at 20 °C (mg l ⁻¹)	No data available	EEC A6; OECD 105
3	Solubility - In organic solvents at 20 °C (mg l ⁻¹)	Hydrated form is Soluble in most organic solvent	flask method
4	Melting point (°C)	141–146 °C (2 °C/min, under nitrogen) 142–147 °C (2 °C/min, under ambient air) 140–145 °C (1 °C/min, under nitrogen)	OECD 105, OPPTS
5	Boiling point (°C)	No data available	796.1840, EEC A.6
6	Flashpoint (°C)	No data available	EEC A1; OECD 102;
7	Specific gravity (g ml ⁻¹)	1.3 g/ml at 25 ± 0.5°C	differential scanning calorimetry (DSC)
8	Stability	stable in air	OECD 103, OPPTS
9	Henry's law constant at 25 °C (Pa m ³ mol ⁻¹)	No data available	830.7220, EEC A.2

6 Handling

Pesticides shall be handled in accordance with ES 697.

7 Sampling

Samples shall be taken in accordance with ES 694.

8 Packaging

Pesticides shall be packed in accordance with ES 695.

9 Labeling

Pesticides labeling shall be in accordance with ES 696.

10 Disposals

Disposal of bulk quantities of obsolete pesticides shall be in accordance with ES 700

Bibliography

WD¹⁾, Pesticides – Determination of R-isomer in emamectin benzoate

WD²⁾, Pesticides – Determination of acid chloride in emamectin benzoate

WD³⁾, Pesticides – Determination of acid + anhydride in emamectin benzoate

WD⁴⁾, Pesticides – Determination of optical rotation of emamectin benzoate

WD⁵⁾, Pesticides – Determination of emamectinbenzoatemelting point.

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- ❖ Develop Ethiopian standards and establish a system that enable to check whether goods and services are in compliance with the required standards,
- ❖ Facilitate the country's technology transfer through the use of standards,
- ❖ Develop national standards for local products and services so as to make them competitive in the international market.

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