
**Pesticides– Deltamethrin
Part 5:
Ultra low volume liquids (ULV) –
Specification**

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 Cancels and replace of the Ethiopian Standard ES 704-5:2002 - *Pesticides - Deltamethrin Part 5: Ultra low volume liquids (ULV) - Specification*, with some editorial changes without altering the technical contents in the former text.

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

- AGP:CP/243:1991, FAO specification for plant protection products, “ Deltamethrin ultra low volume liquids,FAO specification 333/UL/S (1990)”, published by the Food and Agriculture Organization of the United Nations FAO),Rome.

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

Pesticides — Deltamethrin Part 5: Ultra low volume liquids(ULV) Specification

1. Scope

This Ethiopian Standard specifies the requirements for the ultra low volume liquids of deltamethrin (for plant protection 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 – Guideline on good labelling practice.

ES 697, Pesticides – Guideline for retail distribution, storage and handling.

ES 700, Pesticides –Guidelines on the disposal of bulk quantities of obsolete pesticides.

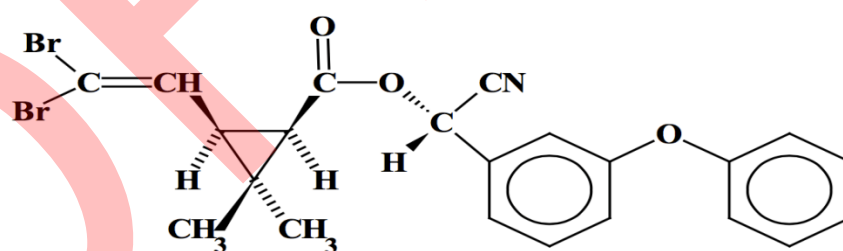
3. Definitions

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

4. General information

COMMON NAME: Deltamethrin(ISO)

STRUCTURAL FORMULA:



EMPIRICAL FORMULA: $C_{22}H_{19}Br_2NO_3$

RMM: 505.2

CAS REGISTRY NUMBER:(52918-

63-5) CIPAC CODE NUMBER: 333

CHEMICALNAMES:

(S)-2-cyano-3-phenoxybenzyl (1R, 3R)-3-(2,2-dibromovinyl)- 2,2-dimethylcyclopropanecarboxylate
(IUPAC)

(IR)-[12(S*), 32]-cyano(3-phenoxyphenyl)methyl 3 -

(2,2-dibromoethenyl)-2,2-dimethylcyclopropanecarboxylate(CA) CHEMICALGROUP: Pyrethroid

USE CATEGORY: Insecticide

WHO CLASS¹⁾ ii

5. Requirements

5.1. Description

The material shall consist of a solution of technical deltamethrin complying with the requirements of ES 704-1 together with any convent and other necessary formulates. It shall be in the form of a stable liquid free from visible suspended matter and sediment.

5.2. Active ingredient

5.2.1. Identity tests

Where the identity of the active ingredient is in doubt, it shall be determined in accordance with clause 5.5 of

ES 761, and then the isolated active ingredient shall comply with at least one additional test.

¹⁾ Based on the technical material

5.2.2. Deltamethrin

The deltamethrin content shall be declared in g/kg or g/l at 20°C; and, when determined in accordance with clause

5.5 of ES 761, the content obtained shall not differ from that declared by more than the following amounts:

NOTE 1 - If the buyer requires both g/kg and g/l at 20°C, then in case of dispute, the analytical results shall be calculated as g/kg.

Declared content

Permitted tolerance

up to 25 g/kgorg/l

+/- 15% of the declared content

above 25 g/kgorg/l

+/- 10% of the declared content

NOTE 2 - Nominal contents higher than 100 g/kg are not recommended.

5.3. Impurities

5.3.1. Deltamethrin R isomer

When determined in accordance with WD¹⁾ the maximum content of deltamethrin R isomer shall be 1% of the deltamethrin content found under clause 5.2.2.

5.3.2. Water

When determined in accordance with method 4.1 of ES 749, the maximum water content shall be 5 g/kg.

5.4. Physical properties

5.4.1. Acidity

5.4.2. Flashpoint

When determined in accordance with ES 760, the flash point of the product shall not be lower than 22.8°C.

NOTE 3 - Attention is drawn to the appropriate national and international regulations on handling and transport of flammable materials.

5.4.3. Kinematic viscosity range

When determined in accordance with ES 748 at 30°C, it shall be in the range of 5 to 10 mm²/s.

5.4.4. Volatility

When determined in accordance with WD²⁾, the volatility (evaporation rate) of the product shall not exceed 500 g/kg.

5.5. Storage stability

5.5.1. Stability at 0°C

When determined in accordance with ES 752, (after storage at 0 +/- 1°C for 7 days), the volume of solid and/or liquid which separates shall be not more than 0.3 ml.

5.5.2. Stability at 54°C

When determined in accordance with clause 6.1.3 of ES 753, after storage at 54 +/- 2°C for 14 days), the product shall continue to comply with clauses 5.2.2, 5.3.1 and 5.4.1.

NOTE 4 - The sample should be stored in sealed glass ampoules.

6. Physico-chemical properties of deltamethrin

Table 1. Physico-chemical properties of pure deltamethrin

Parameter	Value(s) and conditions	Purity %	Method reference (and technique if the reference gives more than one)	Study number
Vapour pressure	3.936×10^{-6} Pa at 25°C	98.59%	EEC A.4, OECD 104, CIPAC 333/TC/M/-	0722
Melting point	101.2°C - 101.9°C	98.59%	EEC A.1	0721
Temperature of decomposition	The decomposition of the test item begins at 506 K (233°C) and the test item is totally decomposed at 513 K (240°C)	98.51%	EEC A2	R B2205
Solubility in water	0.035 mg/L at 20.0°C	98.59%	EEC A.6	0721
Octanol/water partition coefficient	log Pow = 6.0	98.59%	EEC A.8	0721
Hydrolysis characteristics	pH 4.0: t _{0.5} > 1 year at 25°C pH 7.0: t _{0.5} > 1 year at 25°C pH 9.0: t _{0.5} = 2.41 days at 25°C (No major hydrolysis products those representing ≥ 10% of the applied dose were observed)	98.51%	EEC C.7, OECD 111	0963
Photolysis characteristics	No pH dependence is observed in the UV spectra recorded under acidic, neutral nor basic medium. Under the experimental conditions used (pH = 5.9 and T° = 30°C ± 2°C), the half life time of the test item, t _{1/2} (mean) = 2.0 hours	98.51%	OECD 316	R B2205
Dissociation characteristics	No dissociation constant	98.51%	OECD 112	0963
Solubility in organic solvents	n-heptane: 2.53 g/L at 20.0°C methanol: 8.43 g/L at 20.0°C acetone: > 250 g/L at 25.0°C ethyl acetate: > 250 g/L at 25.0°C 1,2-dichloroethane: > 250 g/L at 25.0°C o-xylene: > 250 g/L at 25.0°C	98.59%	EEC A.6	0721

Table 2. Chemical composition and properties of deltamethrin technical material(TC)

Manufacturing process, maximum limits for impurities $\leq$ 1 g/kg, 5 batch analysis data		Confidential information supplied and held on file by FAO and WHO. Mass balances were 99.32-99.94% with unknowns from 0.06 to 0.68%.		
Declared minimum deltamethrin content		985 g/kg		
Relevant impurities $\leq$ 1 g/kg and maximum limits for them		None		
Relevant impurities $<$ 1 g/kg and maximum limits for them		None		
Stabilisers or other additives and maximum limits for them		None		
Parameter	Value and conditions	Purity %	Method reference	Study number
Melting temperature range of the TC	101.2°C - 101.9°C	98.5%	EEC A.1	0721

7. Handling

Pesticides shall be handled in accordance with ES 697.

8. Sampling

Samples shall be taken in accordance with ES 694.

9. Packaging

Pesticides shall be packed in accordance with ES 695.

10. Labeling

Pesticides labeling shall be in accordance with ES 696.

11. Disposal

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

Organization and Objectives

The Ethiopian Standards Agency (ESA) is the national standards body of Ethiopia established in 2010 based on regulation No. 193/2010. ESA is established due to the restructuring of Quality and Standards Authority of Ethiopia (QSAE) which was established in 1970.

ESA's objectives are:-

- ❖ 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.

Ethiopian Standards

The Ethiopian Standards are developed by national technical committees which are composed of different stakeholders consisting of educational Institutions, research institutes, government organizations, certification, inspection, and testing organizations, regulatory bodies, consumer association etc. The requirements and/or recommendations contained in Ethiopian Standards are consensus based that reflects the interest of the TC representatives and also of comments received from the public and other sources. Ethiopian Standards are approved by the National Standardization Council and are kept under continuous review after publication and updated regularly to take account of latest scientific and technological changes.

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More Information?

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