
**Pesticides — Chlorpyrifos
Part 2:
Emulsifiable concentrate (EC) —
Specification**

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 Cancels and replaces of the Ethiopian Standard ES 713-2:2002 "*Pesticides - chlorpyrifos Part 2: Emulsifiable concentrate (EC) - 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/208:1984, FAO Specification for plant protection products, chlorpyrifos emulsifiable concentrates tentative specification 221/EC/ts/- 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 — Chlorpyrifos

Part 2: Emulsifiable concentrates (EC) — Specification

1 Scope

This Ethiopian Standard specifies requirements for chlorpyrifos emulsifiable concentrates (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 - Guideline for the disposal of bulk quantities of obsolete pesticides.*

ES 713-1, *Pesticides - Chlorpyrifos - Part 1: Technical material (TC) - Specification.*

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.*

ES 751, *Pesticides - Determination of characteristics of emulsifiable concentrates.*

ES 752, *Pesticides - Determination of stability of liquid formulation at 0 °C.*

ES 753, *Pesticides - Determination of accelerated storage stability.*

ES 760, *Petroleum products and other liquid - Determination of flash point.*

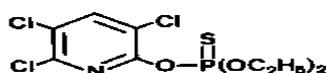
ES 769, *Pesticides - Determination of chlorpyrifos content.*

3 Definitions

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

4 General information

COMMON NAME:	Chlorpyrifos
STRUCTURAL FORMULA:	
CIPAC CODE NUMBER:	221
EMPIRICAL FORMULA:	C ₉ H ₁₁ Cl ₃ NO ₃ PS
RMM:	350.5



CAS REGISTRY NUMBER:	2921- 88- 2
CHEMICAL NAME:	0,0-diethyl 0-(3,5,6-trichloro-2-pyridyl) phosphorothioate (IUPAC)
	(CA;Registry No. 23184-66-9)
CHEMICAL GROUP:	Organophosphate
USE CATEGORY:	Insecticide
WHO CLASS ¹⁾ :	

5 Requirements

5.1 Description

The material shall consist of an emulsifiable concentrate containing chlorpyrifos complying with the ES 713-1 as the active ingredient together with suitable solvents and any necessary formulants. It shall be free from visible suspended matter and sediment.

¹⁾ Based on the technical material

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 ES 769 and the isolated active ingredient shall comply with the tests.

5.2.2 Chlorpyrifos

The chlorpyrifos content shall be declared in a g/l at 20°C or g/kg (see note 1) and when determined in accordance with ES 769 the content obtained shall not differ from that declared by more than the following amounts:

Declared Content	Permitted Tolerance
up to 400 g/l or 400 g/kg	+/- 5% of the declared content
above 400 g/l or 400 g/kg	+/- 20 g

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

Impurities

5.2.3 Water

When determined in accordance with clause 4.1 of ES 749, the maximum water content shall be 2 g/kg.

5.3 Physical properties

5.3.1 Acidity

When determined in accordance with clause 6.1 of ES 750, the maximum acidity content shall be 5 g/kg, calculated as H₂SO₄,

5.3.2 Emulsion stability and re-emulsification

When determined in accordance with clause 6.1 of ES 751, after the stability test at 54° C see clause 5.5.2, the product, when diluted at 30° C (Note 2) with the specified standard waters, shall comply with the following:

Time after dilution	Limits of stability
0 h	Initial emulsification: complete
0.5 h	'Cream' : maximum : 2 ml
2.0 h	'Cream' : maximum : 4 ml
	'Free oil', nil
24 h	Re-emulsification: complete
24.5 h	'Cream' : maximum : 4 ml
	'Free oil': maximum : 0.5 ml

The product shall be tested in standard water A and in standard water C.

Alternatively, if the buyer requires other standard waters to be used, then this shall be specified when ordering.

NOTE 2 -Unless another temperature is specified.

5.3.3 Flash point

If required, it shall be determined in accordance with ES 700 and the flash point of the product shall be not lower than the minimum declared flash point(a closed cup method shall be also used).

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

5.4 Storage stability

5.4.1 stability at 0°C

After storage at $0 \pm 1^\circ\text{C}$ for 7 days when determined in accordance with clause 6.1 of ES 752, the volume of solid or liquid which separates shall be not more than 3 ml/l.

5.4.2 Stability at 54°C

After storage at $(54 \pm 2)^\circ\text{C}$ for 14 days, when determined in accordance with clause 6.1.3 of ES 753, the product shall continue to comply with clauses 5.2.2, 5.4.1 and 5.5.1.

5.5 Biological properties

5.5.1 phytotoxicity

No single test can be specified to cover phytotoxicity of formulations to all crops. When a crop is not mentioned in the instructions for use, the buyer should check with the supplier that the material is suitable, always provided that such a use is not restricted or legally forbidden.

5.5.2 Wetting of crops

The dilute spray should satisfactorily wet the leaves of the specified crops when used in accordance with the instructions for use. The test described in clause 8.2 of ES 755 shall be useful.

6 Handling

Pesticides shall be handled in accordance with ES 697.

7 Sampling

Samples shall be taken in accordance with ES 694

8 Packaging

Products shall be packed in accordance with ES 695.

9 Labelling

Pesticides shall be labelled in accordance with ES 696.

10 Disposal

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

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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

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