
**Pesticides — Chlorpyrifos
Part 1:
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 a reaffirmation for reprint of the Ethiopian Standard ES 713-1:2002 "*Pesticides - chlorpyrifos Part 1: Technical material (TC) - Specifications*", 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 Specifications for plant protection products, chlorpyrifos technical tentative specification 221/TC/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 1: Technical material (TC) - Specification

1 Scope

This Ethiopian Standard specifies requirements for the technical material of chlorpyrifos (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 - 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.*

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

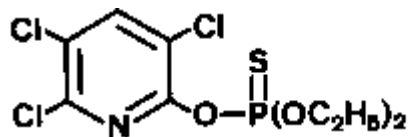
3 Definitions

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: C₉H₁₁Cl₃NO₃PS

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: II

5 Requirements

5.1 Descripton

The material shall consist of chlorpyrifos together with related manufacturing impurities. It shall be a white to pale-coloured crystalline solid. Some liquid may be present particularly in hot weather. It shall be free from visible extraneous matter and added modifying agents.

5.2 Active ingredient

5.2.1 identity tests

When the identity of the material is in doubt, it shall be determined in accordance with ES 769 and comply with the tests.

5.2.2 Chlorpyrifos

The chlorpyrifos content shall be declared in a minimum of 940 g/kg and when determined in accordance with ES 769, the content obtained shall not differ from that declared by more than ± 20 g.

5.3 Impurities

5.3.1 Water

When determined in accordance with clause 4.1 of ES 749, the maximum content of water shall be 1g/kg.

5.3.2 Acetone insoluble

Where determined in accordance with ES 737, the maximum acetone insoluble water shall be 5g/kg.

6 Physical and Chemical Properties

6.1 Acidity

When determined in accordance with ES 750 the maximum acidity content shall be 1g/kg, calculated as H₂SO₄.

Table 1.A detailed chemical and physical characterization of the active ingredient

S/N	Parameters	Typical Value	Test method
1	Appearance	Clear liquid	visual
2	Solubility - In water at 22 °C (mg l ⁻¹)	0.39 mg/l at 19.5 ⁰ C	EEC A6; OECD 105
3	Solubility - In organic solvents at 25 °C (mg l ⁻¹)	Soluble in most organic solvent	flask method
4	Melting point (°C)	Melting point = 42-44 ⁰ C	OECD 105, OPPTS
5	Boiling point (°C)	Decompose before boiling	796.1840, EEC A.6
6	Flashpoint (°C)	Not expected to self ignite; Not highly flammable	EEC A1; OECD 102;
7	Specific gravity (g ml ⁻¹)	1.31g/ml at 25 $\pm$ 0.5°C	differential scanning calorimetry (DSC)
8	Stability	No thermal effect found B/n room	OECD 103, OPPTS
9	Henry's law constant at 25 °C (Pa m ³ mol ⁻¹)	3.30 X 10-05 (Non volatile)	830.7220, EEC A.2

7 Handling

Pesticides shall be handled in accordance with ES 697.

8 Sampling

Samples shall be taken in accordance with ES 694.

9 Packaging

Products shall be packed in accordance with ES 695.

NOTE 1- Packing materials shall comply with pertinent national and international transport and safety regulations.

10 Labeling

Pesticides shall be labeled 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 1998.

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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