ETHIOPIAN SATNDARD

ES 6801:2021

First edition
xx-xx-2021

Pesticides — Indoxacarb Specification

ICS: 65.100.01
Published by Ethiopian Standards Agency

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 the Ethiopian Standard ES 6801:2021 - *Pesticides –Indoxacarb - 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:

FAO specification for plant protection product - Imidacloprid:582/TC April 2006.

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

Pesticides Indoxacarb —Specification

1 Scope

This Ethiopian Standard specifies the requirements for indoxacarb(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.*

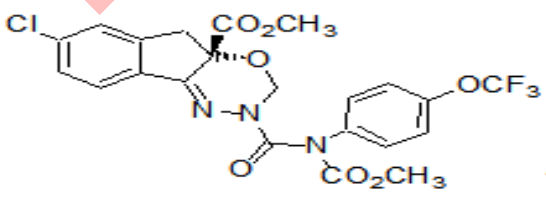
3 Definitions

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

4 General information

ISO common name
Indoxacarb (ISO 1750 published)
Synonyms none

Chemical name(s)
IUPAC (S)-7-chloro-2-[methoxycarbonyl-(4-trifluoromethoxyphenyl)-carbamoyl]-2,5-dihydroindeno[1,2-e][1,3,4]oxadiazine-4a(3H)-carboxylic acid, methylester
CA (S)-methyl7-chloro-2,5-dihydro-2-[[(methoxycarbonyl)[4-(trifluoromethoxy)phenyl]amino]carbonyl]indeno[1,2-e][1,3,4]oxadiazine- 4a(3H)-carboxylate
Structural formula



Molecular formula

C22H17ClF3N3O7

Relative molecular mass 527.8

CAS Registry number 173584-44-6

144171-61-9 (R/S- ratio 50/50; DPX-JW062)

CIPAC number 612

Identity tests

HPLC retention time, UV and IR spectra

5 Requirements

5.1 Description

The material shall consist of indoxacarb together with related manufacturing impurities, in the form of a tan to light brown amorphous solid, and shall be free from visible extraneous matter and added modifying agents.

5.2 Active ingredient

5.2.1 Identity tests(612/TC/M/2, CIPAC Handbook N, p. 74,2011)

The active ingredient shall comply with an identity test and, where the identity remains in doubt, shall comply with at least one additional test.

5.2.2 Indoxacarb content (612/TC/M/3, CIPAC Handbook N, p. 74,2011)

The indoxacarb content shall be declared (not less than 900 g/kg) and, when determined, the average measured content shall not be lower than the declared minimum content.

6 Physical properties

6.1 Wettability (MT 53.3.1, CIPAC Handbook F, p. 165,1995)

The formulation shall be completely wetted in 60 seconds, without swirling.

6.2 Wet sieve test (MT 185, CIPAC Handbook K, p. 149, 2003) Maximum: 2 % retained on a 75 µm test sieve.

6.3 Spontaneity of dispersion (MT 174, CIPAC Handbook F, p. 435,1995)

A dispensability of 80 % minimum shall be obtained after 1 minute of stirring.

6.4 Suspensibility(MT 184.1) (Notes 1, 2 &3)

A minimum of 60% of the indoxacarb content found under 2.2 shall be in suspension after 30 minutes in CIPAC standard water D at 25 ± 5º C

6.5 Persistent foam (MT 47.3, CIPAC Handbook O, p. 177, 2017) (Note 4). Maximum: 10 ml after 1minute.

6.6 Dustiness(MT 171.1) (Notes 5 & 6). Nearly dustfree.

6.7 Flow ability(MT 172.1, CIPAC Handbook O, p. 187,2017)

A minimum of 99% of the product shall pass through a 5 mm test sieve after 20 drops of the sieve.

6.8 Attrition resistance (MT 178.2, CIPAC Handbook K, p .140, 2003) Minimum: 98% attrition resistance.

6.9 Storage Stability

6.9.1 Stability at elevated temperature (MT 46.3, CIPAC Handbook J, p. 128,2000)

After storage at 54 ± 2°C for 14 days, the determined average active ingredient content must not be lower than 95% relative to the determined average content found before storage (Note 7) and the formulation shall continue to comply with the clauses for:

- wet sieve test, spontaneity of dispersion,suspensibility,dustiness and attrition resistance.

7 Physico-chemical properties of indoxacarb

Table 1. Physico-chemical properties of indoxacarb

S/N	Parameters	Typical Value	Test method
1	Appearance	a tan to light brown amorphous solid,	visual
2	Solubility - In water at 20 °C (mg l^{-1})	0.20 mg/l at 25°C in distilled water	EEC A6; OECD 105
3	Solubility - In organic solvents at 20 °C (mg l^{-1})	Soluble in most organic solvent	flask method
4	Melting point (°C)	88.1°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})	1.44 g/ml at at 20°C	differential scanning calorimetry (DSC)
8	Stability	It is stable to ultra violate radiation, pH and temperature extremes	OECD 103, OPPTS
9	Henry's law constant at 25 °C (Pa m^3 mol^{-1})	6.00 X 10-05(Non volatile)	830.7220, EEC A.2

Table 2. Chemical composition and properties of indoxacarb technical concentrate (TK) (*indoxacarb 3S+1R*)

Manufacturing process, maximum limits for impurities **>**1 g/kg, 5 batch analysis data	Confidential information supplied and held on file by FAO. Mass balances were in the range of 982.5 to 995.8 g per kg, *.
Declared minimum [a.i.] content	467 g/kg (indoxacarb)
Relevant impurities **<**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
Melting temperature range of the TK	87.1-141 0C
pH	4.2 (1% solution in deionized water) DPX-MP062-91 (53.55% purity**) U.S. EPA OPPTS 830.7000 (See Reference 10, AMR 4822-97)
Density	0.7 g/mL DPX-MP062-91 (53.55% purity**) U.S. EPA OPPTS 830.7300 (See Reference 3, AMR 4822-97)

***** Values were corrected for the contents of residual humidity and the diluent.

8 Handling

Pesticides shall be handled in accordance with ES 697.

9 Sampling

Samples shall be taken in accordance with ES 694.

10 Packaging

Pesticides shall be packed in accordance with ES 695.

11 Labeling

Pesticides labeling shall be in accordance with ES 696.

12 Disposal

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

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Ethiopian Standards Agency

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. Orders for all Ethiopian Standards, International Standards and ASTM standards, including electronic versions, should be addressed to the Documentation and Publication Team at the Head office and Branch (Liaisons) offices. A catalogue of Ethiopian Standards is also available freely and can be accessed in from our website.

International Involvement

ESA, representing Ethiopia, is a member of the International Organization for Standardization (ISO), and Codex Alimentarius Commission (CODEX). It also maintains close working relations with the international Electro-technical Commission (IEC) and American Society for Testing and Materials (ASTM).It is a founding member of the African Regional Organization for Standardization (ARSO).

More Information?
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