
**Pesticides-Imidacloprid-
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 developed of Ethiopian Standard ES 6799:2021 - *Pesticides –Imidaclopride - 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—Imidacloprid- Specification

1 Scope

This Ethiopian Standard specifies the requirements for imidacloprid(plant protectionpurpose).

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 names

Imidacloprid (BSI, E-ISO), imidaclopride ((m) draft F-ISO)

Synonyms

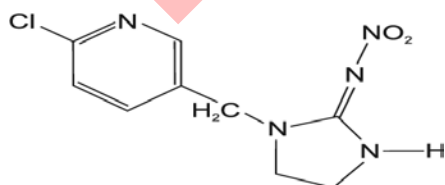
BAY NTN 33 893

Chemical names

IUPAC 1-(6-chloro-3-pyridinylmethyl)-N-nitroimidazolidin-2-ylideneamine

CA 1-[(6-chloro-3-pyridinyl)methyl]-N-nitro-2-imidazolidinimine

Structural formula



ES 6799:2021

Empirical formula

$C_9H_{10}ClN_5O_2$

Relative molecular mass 255.7

CAS Registry number 138261-41-3

CIPAC number 582

5 Requirements

5.1 Description

The material shall consist of imidacloprid together with related manufacturing impurities and shall be a beige powder, free from visible extraneous matter and added modifying agents.

5.2 Active ingredient

5.2.1 Identity tests (582/TC/M/2, CIPAC Handbook K, p.70,2003)

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 Imidacloprid content (582/TC/M/3, CIPAC Handbook K, p.70,2003)

The imidacloprid content shall be declared (not less than 970 g/kg) and, when determined, the average measured content shall not be lower than the declared minimum content.

6 Physical properties

Pour and tap density (MT 186, CIPAC Handbook K, p.151, 2003) Pour density: 1.4 to 1.6g/ml.

Tap density: 1.5 to 1.7 g/ml.

Nominal size range (MT 58, CIPAC Handbook F, p.173,1995)

Not less than 950 g/kg of the formulation shall be within the size range 300 to 900 μ m.

Dustiness (MT 171, CIPAC Handbook F, p.425, 1995) Nearly dust free (Note1).

Attrition resistance (MT178, CIPAC Handbook H, p.304,1998) Minimum: 99% attrition resistance.

Storage stability

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

After storage at $54 \pm 2^\circ\text{C}$ 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 2) and the formulation shall continue to comply with the clauses for:

- nominal size range(4.2);
- dustiness(4.3)
- attrition resistance(4.4).

Note 1 The optical method, MT 171, usually shows good correlation with the gravimetric method and can, therefore, be used as an alternative where the equipment is available. Where the correlation is in doubt, it must be checked with the formulation to be tested. In case of dispute the gravimetric method shall be used.

Note 2 Samples of the formulation taken before and after the storage stability test should be analyzed concurrently after the test in order to reduce the analytical error.

Table1. Physicochemical properties of pure imidacloprid

S/N	Parameters	Typical Value	Test method
1	Appearance	a beige powder	visual
2	Solubility - In water at 20 °C (mg l ⁻¹)	0.61 g/l at 20°C Solubility is not influenced by pH in the range pH 4 to 9.	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)	144°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)		differential scanning calorimetry (DSC)
8	Stability		OECD 103, OPPTS
9	Henry's law constant at 25 °C (Pa m ³ mol ⁻¹)	1.7 X 10 ⁻¹⁰ (Non volatile)	830.7220, EEC A.2

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

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 99.6 – 99.7%.
Declared minimum imidacloprid content:	970 g/kg
Relevant impurities ≥1 g/kg and maximum limits for them:	None
Relevant impurities <1 g/kg and maximum limits for them:	None
Stabilizers or other additives and maximum limits for them:	None
Melting temperature range (TC)	142-144 °C

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

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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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More Information?

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