
**Pesticides — Carbaryl
Part 2:
Dustable powders (DP) —
Specification**

ICS: 65.100.10

Published by Ethiopian Standards Agency

© ESA



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 709-2:2002 - *Pesticides - Carbaryl Part 2: Dustable powders(DP) - 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:

- W. Dorbat and A Martijn, CIPAC Handbook, Volume 1, Analysis of Technical and Formulated Pesticides, Collaborative International Pesticides Analytical Council Limited (CIPAC) ,Great Britain.
- AGP:CP/231:1988, FAO-Specification for plant protection products- Specification 26/DP/S (1989), published by the Food and Agriculture Organization of the United Nations (FAO), Rome.

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

Pesticides — Carbaryl

Part 2:

Dustable powders (DP) — Specification

1 Scope

This Ethiopian Standard specifies requirements for the carbaryl dustable powders (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 709-1, *Pesticides – Carbaryl, Part 1: Technical material (TC) – Specification.*

ES 724, *Pesticides – Determination of identity and impurities in carbaryl technical.*

ES 750, *Pesticides – Determination of free acidity or alkalinity.*

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

ES 756, *Pesticides - sieve analysis.*

ES 762, *Pesticides – Determination of flowability.*

ES 763, *Pesticides – Determination of carbaryl content in carbaryl dusts technical.*

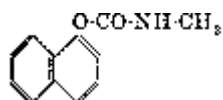
3 Definition

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

4 General information

COMMON NAME: Carbaryl (ISO)

STRUCTURAL FORMULA:



EMPIRICAL FORMULA: C₁₂H₁₁NO₂

RMM: 201.2

CAS REGISTRY NUMBER:63-25-2

CIPAC CODE NUMBER:26

CHEMICAL NAME:

1-naphthyl methylcarbamate (IUPAC)

1-naphthylenyl methylcarbamate (CA)

CHEMICAL GROUP: Carbamet

USE CATEGORY: Insecticide

WHO CLASS¹⁾

5 Requirements

5.1 Description

The material shall consist of homogeneous mixture of technical carbaryl complying with the requirements of ES 709-1 together with filler(s) and any other necessary formulants. It shall be in the form of a fine powder free from visible extraneous matter and hard lumps.

NOTE 1- If the product has found content of 100 g/kg of carbaryl and 20 g of sample is used in the test, then the amount of carbaryl in the residue on the sieve should not exceed 0.6 g or 0.4 g, respectively, i.e.

$$\frac{(0.03 \times 100) \times 20}{100} = 0.6 \text{ g carbaryl in the residue on the } 75 \mu\text{m sieve}$$

$$\text{or } \frac{(0.02 \times 100) \times 20}{100} = 0.4 \text{ g carbaryl in the residue on the } 45 \mu\text{m sieve.}$$

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, extracting about 8 g of active ingredient from the sample with CHCl_3 , evaporate the CHCl_3 and it shall be determined in accordance with ES 763 and the isolated active ingredient shall comply with at least one additional test. Retain the rest of the dried material for clause 5.3.

5.2.2 Carbaryl

The carbaryl content shall be declared in g/kg and when determined in accordance with ES 763, the content obtained shall not differ from that declared by more than the following amounts:

<u>Declared Content</u>	<u>Permitted tolerance</u>
Up to 20 g/kg	$\pm 15\%$ of the declared content
above to 20 g/kg to 100 g/kg	$\pm 10\%$ of the declared content
Above 100 g/kg	± 6 g/kg

5.3 Impurities

5.3.1 2-Naphthol

When determined in accordance with ES 724, the maximum 2-Naphthol content shall not exceed 0.05% of the carbaryl content found under clause 5.2.2.

5.3.2 2-Naphthol methyl carbamate

When determined in accordance with ES 724, the maximum content of 2-Naphthol methylcarbamate shall be 0.05% of the carbaryl content found in clause 5.2.2.

5.4 Physical properties

5.4.1 Acidity or alkalinity

When determined in accordance with clause 6.1.4 or 6.2.4 of ES 750, the maximum acidity (calculated as H_2SO_4) or alkalinity (calculated) as NaOH, shall not be more than 1g/kg and 2g/kg respectively.

5.4.2 Dry sieve test

5.4.2.1 When determined in accordance with annex-A the maximum retained amount shall comply with the following requirements:

- On a 150 μm test sieve 5%
- On a 75 μm test sieve 30% (see note 1); and
- Not more than 80% of the product shall pass through a 45 μm test sieve (Note 1).

5.4.2.2 Not more than $(0.03 \times x)\%$ of the amount sample used for the determination shall be present as carbaryl in the residue on the 75 μm sieve, nor more than $(0.02 \times x)\%$ of the material passing the 45 μm sieve, where x is the carbaryl content (g/kg) found under clause 5.2.2 (Note 1).

NOTE 1- If the product has found content of 100 g/kg of carbaryl and 20 g of sample is used in the test, then the amount of carbaryl in the residue on the sieve should not exceed 0.6 g or 0.4 g, respectively, i.e.

$$\frac{(0.03 \times 100) \times 20}{100} = 0.6 \text{ g carbaryl in the residue on the } 75\mu\text{m sieve}$$

or $\frac{(0.02 \times 100) \times 20}{100} = 0.4\text{g carbaryl}$ in the residue on the 45 μm sieve.

5.4.3 Flowability

When determined in accordance with ES 762, the maximum flowability number shall be 12.

5.5 Storage stability

5.5.1 Stability at 54°C

After storage at $(54 \pm 2)^\circ\text{C}$ for 14 days, when tested in accordance with clause 6.1.4 of ES 753, the product shall continue to comply with clauses 5.2.2, 5.4.1 and 5.4.4.

6 Handling

Pesticides shall be handled in accordance with ES 697.

7 Sampling

Samples shall be taken in accordance with ES 694.

8 Packaging

Pesticides shall be packed in accordance with ES 695.

9 Labeling

Pesticides labeling shall be in accordance with ES 696.

10 Disposal

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

Annex A (Normative)

Determination of particle size (dry method) for carbaryl dusts

A.1 Apparatus

A.1.1 150 μ test sieve.

A.1.2 75 μ test sieve.

A.1.3 45 μ test sieve

A.2 Sampling

Take at least 250g sample in accordance with ES 694.

A.3 Procedure

A.3.1 Sieve test

Carry out on 20 g in accordance with ES 756.

A.3.2 Carbaryl content in residues

A.3.2.1 Invert the 150 μ and 75 μ test sieves and the receiver over pieces of tared glazed black paper, brush the residues onto the papers, and determine the weights of the residues.

A.3.2.2 If the weights of the material remaining on the 150 μ and 75 μ test sieves are equal to, or less than any specification requirements, it is unnecessary to determine the carbaryl.

A.3.2.4 If greater, then determine the carbaryl in the residues and also in the material passing the 45 μ test sieve in accordance with clause A.3.2 above, using sufficient of the residues to contain about 0.3 g of carbaryl or, where appropriate, all the residue.

A.4 Test report

The test report shall include the following information:

- a) the result and method of expression used;
- b) all information necessary for complete identification of sample;
- c) a reference to this Ethiopian Standard;
- d) any unusual feature noted during the determination;
- e) any operation included in this Ethiopian Standard or in the Ethiopian Standard to which reference is made or regarded as optional; and
- f) the date of test.

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

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 Standard 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.

ESA has the copyright of all its publications. No part of these publications may be reproduced in any form without the prior permission in writing of ESA.

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?

Contact us at the following address.

The Head Office of ESA is at Addis Ababa.

☎ 011- 646 06 85, 011- 646 05 65

☎ 011-646 08 80

✉ 2310 Addis Ababa, Ethiopia

E-mail: info@ethiostandards.org,

Website: www.ethiostandards.org



Standard Mark