ETHIOPIAN STANDARD

ES 709-3:2021

Second edition
xx-xx-2021

Pesticides — Carbaryl
Part 3:
Wettable powders (WP) — Specification

ICS: 65.100.10
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 Canceles and replaces of the Ethiopian Standard ES 709-3:2002 - *Pesticides - Carbaryl Part 3: Wettable powders(WP) - 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, carbaryl wettable powders specification 26/WP/S 1989, Rome.

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

Pesticides — Carbaryl
Part 3:
Wettable powders (WP) — Specification

1 Scope

This Ethiopian Standard specifies requirements for carbaryl wettable 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 - Guidelines on good labelling practice.*

ES 697, *Pesticides - Guidelines for retail distribution, storage and handling.*

ES 700, *Pesticides - Guidelines for the disposal of bulk quantities of obsolete pesticides.*

ES 709-1, *Pesticides – Pesticides – Carbaryl – Part 1: Technical material (TC) – specification.*

ES 717, *Pesticides –Standard waters specification.*

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

ES 747, *Pesticides – Determination of suspensipility of wettable powders in water.*

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

ES 754, *Pesticides – Determination of persistent foaming.*

ES 755, *Pesticides – Determination of wetting of wettable powders.*

ES 756, *Pesticides – Sieve analysis.*

ES 757, *Pesticides – Determination of* P^{H} *value.*

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

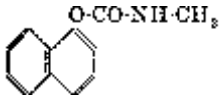
3 Definitions

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

4 General information

COMMON NAME: Carbaryl (ISO)

STRACYURAL FORMULA:



EMPIRICAL FORMULA: $C_{12}H_{11}NO_2$

RMM: 201.2

CAS REGISTRY NUMBER:63-25-2

CIPAC CODE NUMBER:26

CHEMICAL NAME:

l-naphthyl methylcarbamate (IUPAC)

l-naphthylenyl methylcarbamate (CA)

CEMICAL GROUP: Carbamet

USE CATEGORY: Insecticide

WHO CLASS[1)]

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.

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 724 (after extracting about 8 g of active ingredient with $CHCl_3$, and examine residue) and the isolated active ingredient shall comply with at least one additional test.

5.2.2 Carbaryl

The carbaryl content shall be declared in g/kg and, when determined in accordance with ES 763, the content obtained

1) Based on the technical material

shall not differ from that declared by more than the following amounts:

Declared Content	Permitted Tolerance
up to 500 g/kg	±5% of the declared content
Above 500 g/kg	± 25g/kg

5.3 Impurities

5.3.1 2-Naphthol

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

5.3.2 2-Naphthol methyl carbonate

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 PH range

5.4.1.1 PH range shall be 4.0 to 7.0

5.4.1.2 When determined in accordance with clause 6.3 of ES 757, if the pH is above 7.0, more than 1.0 - ml of 0.25 N hydrochloric acid shall be required to neutralize an 8.0 g sample using phenolphthalein indicator.

5.4.2 Wet sieve test

When determined in accordance with clause 5.2 of ES 756, retained amount on a 10 cm diameter 45µm test shall be 2.0% maximum. (use 20g sample).

5.4.3 Suspensibility

5.4.3.1 When determined in accordance with annex B, (use 20g of sample and a 10 cm diameter 45µm test sieve, don't dry before sieving) a minimum of 90% of the carbaryl content found in clause 4.2.2 shall be in suspension after 30 min in standard water C (see ES 717).

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

NOTE 1- The product should be tested at the highest and lowest rates of use recommended by the supplier, provided this does not exceed the conditions given in the method.

NOTE 2- This test will normally only be carried out after the heat stability test in clause 5.5.1.

5.4.4 Dispersibility

When determined in accordance with annex A, not less than 95% of the product shall pass completely through a 45µm test sieve without pretreatment; not less than 90% of product shall pass through the same sieve after pretreatment.

5.5 Storage stability

5.5.1 Stability at 54°C

After storage at (54 ± 2)°C for 14 days, when tested in accordance with clause 6.1.1 of ES 753, the product shall continue to comply with clauses 5.2.2, 5.4.1 and 5.4.4.

5.6 Wetting of the product

When determined in accordance with clause 8.1 of ES 755, it shall be completely wetted in 2min without swirling.

5.7 Persistent foam

When determined in accordance with ES 754, the maximum persistent foam after 1min shall be 25 ml.

NOTE 3 - The amount of sample to be used in the test should be specified.

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 dispersibility of carbaryl wettable powders

A.1 Outline of method

Test the dispersibility of the powder by a special sieve test, in which a suspension is simply poured onto a test sieve without any washing or agitation of the sieve (Note 1).

NOTE 1: Based on a method supplied by union carbide.

A.2 Reagents

Use standard water

NOTE2: Use standard water C (ES 717) unless otherwise specified.

A.3 Apparatus

A.3.1 Pre-treatment jar

Air-tight screw cap, glass jar, 35 ± 5 ml actual capacity.

A.3.2 Oven maintained at 55 ± 1^{o}C

A.3.3 Mixing jar

A screw cap, glass jar, 295 to 300 ml capacity, substantially cylindrical, approximately 9 cm deep, and without abrupt shoulders.

NOTE 3 : Some kind of conventional fruit jars may be suitable.

A.3.4 Tumbling machine

Any mechanical device for rotating the mixing jar around its center, end over end, at 60 rpm.

A.3.5 44 μm Test sieve 20 cm frame diameter

The wire cloth of the sieve must be free from any film of grease or other water-repellent material and must be tho

A.4 Sampling

Take at least 500 g sample in accordance with ES 694.

A.5 Procedure

A.5.1 Without pre-treatment

Deposit 8 g (w g) of the powder onto standard water (see clause B.2) (50 ml) in the mixing jar and allow to stand for 3 min for the powder to sink and/or soak undisturbed. Close the jar and tumble it on the machine at 60 rpm for 5 min. Dilute with standard water (185 ml). Tumble as before for 1 min. When the final tumbling is complete, remove the jar from the machine and with the sieve standing in a level position, pour the suspension as evenly as possible

over its whole area, taking care meanwhile not to allow any powder to settle in the jar. Raise one side of the sieve 255 mm by means of a prop and allow the residue to drain undisturbed for 5 min.

Transfer the residue to a filter, dry, and weigh (zg; Note 4). Calculate the dispersibility at 44 μm as the percentage of sample passing through the sieve.

$$Dispersibility \quad = \frac{100(w-z)}{w}\%$$

NOTE 4 - Determine the tare weight of the filter on an oven-dried basis (oven temperature not over 105^0C); dry the residue in an oven at the same temperature as was used for the tare weight

A.5.2 With pre-treatment

Store the opened jar and screw cap at a temperature of 4 ± 1^0C for at least 1h; then, without allowing the jar to cool, pour 8 g (w g) of sample into the jar, seal the jar air-tight and keep it in the oven at 54 ± 1^0C for 24 h. Remove from the oven and allow to stand, still sealed, for 3 h. Then immediately continue the tests as in clause A.5.1.

A.6 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.

Annex B

(normative)

Determination of suspensibility of carbaryl dispersible powders

B.1 Reagent

B.1.1 Chloroform

B.2 Apparatus

B.2.1 Evaporating basin

B.2.2 Water bath

B.3 Procedure

B.3.1 Determination of suspensibility

Determine the suspensibility by ES 747. Use amounts of sample sufficient to give concentration in the 250 ml suspensions equivalent to the highest and lowest rates of use recommended for the product (Note 1). Carry out the determination on the suspension at a temperature of 30 ± 1°C, and sample the suspension after allowing to stand for 30 min (Note 2).

NOTE 1: The method is not suitable for high concentrations, as recommended for aerial or low volume applications, i.e., above 1% carbaryl in the diluted spray.

NOTE 2: The temperature shall be 30 ± 1°C, and the time of sampling 30 min, unless otherwise specified.

B.3.2 Determination of carbaryl content in the bottom 25 ml of suspension

Transfer the 25 ml remaining in the cylinder to an evaporating dish, rinsing the cylinder to remove any residue. Evaporate to dryness on the water bath. Extract the dried residue with chloroform and determine the carbaryl content by ES 726.

B.3.3 Calculation

$$Suspensibility = \frac{111(c - Q)}{c}\ \%$$

Where:

a is percentage of carbaryl in the powder being examined;

b is weight of sample taken for the 250 ml suspension;

c = $\frac{ab}{100}$ is quantity of carbaryl in the sample taken; and

Q g is quantity of carbaryl in the 25 ml remaining in the cylinder.

B.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.

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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 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.

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).

<u>More Information</u>?
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