
INTERNATIONAL STANDARD



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**Green coffee – Determination of moisture content
(Routine method)**

Café vert – Détermination de la teneur en eau (Méthode de routine)

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FOREWORD

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Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 1447 was developed by Technical Committee ISO/TC 34, *Agricultural food products*.

It was submitted directly to the ISO Council, in accordance with clause 6.12.1 of the Directives for the technical work of ISO. It cancels and replaces ISO Recommendation R 1447-1970, which had been approved by the member bodies of the following countries :

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Brazil	Israel	Spain
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India	Romania	
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The member bodies of the following countries had expressed disapproval of the document on technical grounds :

Colombia
Czechoslovakia
Netherlands
U.S.A.

Green coffee — Determination of moisture content (Routine method)

0 INTRODUCTION

The routine method for the determination of the moisture content of green coffee is based on the principle of the compensation of errors leading to a low result (moisture not completely removed, oxidation of products) and errors leading to a high result (removal of substances other than water).

It is observed, indeed, that the loss in mass after the first period in the oven is less than the moisture content determined by the basic reference method (ISO 1446) and that the total loss in mass after the second period of drying is greater than this moisture content. The loss in mass after the first period in the oven may, therefore, be considered as an underestimate of the moisture content.

The compensation between these two errors is made by means of an empirical correction determined experimentally.

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a routine method for the determination of the moisture content of green coffee.

2 REFERENCES

ISO 1446, *Green coffee — Determination of moisture content (Basic reference method)*.

ISO 4072, *Green coffee in bags — Sampling*.¹⁾

3 DEFINITION

moisture of green coffee : Conventionally, the loss in mass determined under the operating conditions specified below.

The moisture content is expressed as a percentage by mass.

4 PRINCIPLE

Drying of a test portion at a temperature of 130 ± 2 °C, at atmospheric pressure, in two stages with an intermediate rest period, in order to redistribute uniformly the moisture in the bean.

The result thus obtained, after a correction has been applied, is regarded as agreeing with that provided by the basic reference method (ISO 1446).

5 APPARATUS

5.1 Electrically heated constant-temperature oven having effective ventilation and capable of being regulated in such a way that the temperature of the air and of the shelves carrying the test portions is 130 ± 2 °C in the vicinity of the test portions.

The oven shall have a heating capacity such that having been set at a temperature of 130 °C, it is able to regain this temperature in less than 45 min (preferably in less than 30 min) after the insertion of the maximum number of test portions that can be dried simultaneously.

5.2 Dish with lid, of corrosion-resistant metal or of glass, with an effective surface area of at least 18 cm² (for example 50 mm minimum diameter and 25 to 30 mm deep).

5.3 Desiccator containing reagent-grade phosphorus(V) oxide (P₂O₅) or any other effective dehydrating agent.

5.4 Analytical balance.

6 PROCEDURE

6.1 Test portion

Weigh the dried dish (5.2) with its lid, to the nearest 0,002 g. Introduce approximately 5 g of green coffee taken from the laboratory sample obtained as specified in ISO 4072. Spread this test portion over the bottom of the dish in a single layer of beans. If the test portion contains a heavy impurity (nail, stone, piece of wood, etc.), discard the test portion and take a new portion from the laboratory sample. Cover the dish with its lid and weigh the dish plus lid plus test portion to the nearest 0,002 g. (See 8.1.)

1) At present at the stage of draft.

6.2 Determination

6.2.1 First period in the oven

Place the lid of the dish in the oven (5.1), controlled at $130 \pm 2^\circ\text{C}$, and place on the lid the dish containing the test portion (6.1). Remove the dish after a period of $6\text{ h} \pm 15\text{ min}$, cover it with the lid and place it in the desiccator (5.3). After cooling to ambient temperature (from 30 to 40 min after placing it in the desiccator), weigh it, still closed, to the nearest 0,002 g. After weighing, replace the dish in the desiccator for at least 15 h.

6.2.2 Second period in the oven

Under the same conditions as specified in 6.2.1, replace the dish in the oven at $130 \pm 2^\circ\text{C}$ and let it remain there for $4\text{ h} \pm 15\text{ min}$. Remove it, allow it to cool to ambient temperature in the desiccator and weigh again.

6.3 Number of determinations

Carry out at least two determinations on the same sample.

7 EXPRESSION OF RESULTS

7.1 Method of calculation and formulae

7.1.1 First period in the oven

The loss in mass, P_1 , during the first drying in the oven, expressed in grams per 100 g of initial sample, is given by the following formula:

$$P_1 = (m_0 - m_1) \times \frac{100}{m_0}$$

where

m_0 is the initial mass, in grams, of the test portion (6.1);

m_1 is the mass, in grams, of the test portion after the first (6 h) period in the oven (6.2.1).

7.1.2 Second period in the oven

The loss in mass, P_2 , during the two periods ($6 + 4 = 10\text{ h}$) in the oven, expressed in grams per 100 g of initial sample, is given by the following formula:

$$P_2 = (m_0 - m_2) \times \frac{100}{m_0}$$

where

m_0 is the initial mass, in grams, of the test portion (6.1);

m_2 is the mass, in grams, of the test portion after the second (4 h) period in the oven (6.2.2).

7.1.3 Moisture content (see 8.2)

The moisture content of the sample, P , expressed as a percentage by mass, is equal to the loss in mass observed after the first period in the oven, plus half the additional loss in mass observed after the second period in the oven:

$$P = P_1 + \frac{P_2 - P_1}{2}$$

Take as the result the arithmetic mean of the two determinations, provided that the requirement concerning repeatability (see 7.2) is satisfied.

7.2 Repeatability

The difference between the results of two determinations carried out simultaneously or in rapid succession by the same analyst should not be greater than 0,3 g of moisture per 100 g of sample.

The individual results generally differ from the moisture content obtained by the basic reference method (ISO 1446) by less than 0,3 g of moisture per 100 g of sample.

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8 NOTES

8.1 After the test portion has been weighed, the dish may be left standing, for example in the case of a series of weighings.

8.2 The difference between the losses in mass observed after 6 h (see 7.1.1) and $6 + 4 = 10\text{ h}$ (see 7.1.2) in the oven at 130°C , i.e. the difference between P_1 and P_2 , should normally be less than 1,0 g per 100 g of sample. If this is not the case, the test should be repeated or the basic reference method (ISO 1446) should be used.

9 TEST REPORT

The test report shall show the method used and the result obtained. It shall also mention any operating conditions not specified in this International Standard, or regarded as optional, as well as any circumstances that may have influenced the result.

The report shall include all details required for complete identification of the sample.