International Standard 2291

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Cocoa beans — Determination of moisture content (Routine method)

Fèves de cacao — Détermination de la teneur en eau (Méthode pratique)

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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 2291 was developed by Technical Committee ISO/TC 34, *Agricultural food products.*

This second edition was submitted directly to the ISO Council, in accordance with clause 5.10.1 of part 1 of the Directives for the technical work of ISO. It cancels and replaces the first edition (i.e. ISO 2291-1972), which had been approved by the member bodies of the following countries :

Brazil	Hungary	Romania
Bulgaria	India	South Africa, Rep. of
Canada	Ireland	Spain
Ceylon	Israel	Sweden
Chile	Netherlands	Thailand
Egypt, Arab Rep. of	New Zealand	Turkey
France	Poland	United Kingdom
Germany, F.R.	Portugal	

The member body of the following country had expressed disapproval of the document on technical grounds :

Austria

Printed in Switzerland

Cocoa beans — Determination of moisture content (Routine method)

1 Scope and field of application

This International Standard specifies a routine method for the determination of the moisture content of cocoa beans.

2 Reference

ISO 2292, *Cocoa beans — Sampling.*

3 Definition

moisture content of cocoa beans: Conventionally, the loss in mass determined by the method specified in this International Standard, and expressed as a percentage by mass.

4 Principle

After crushing, drying of cocoa beans for 16 h in an oven controlled at 103 °C.

5 Apparatus

Usual laboratory equipment and :

5.1 Pestle and mortar, which will allow the beans to be crushed without heating.

5.2 Ventilated oven, preferably fitted with a fan, capable of being controlled at 103 ± 2 °C.

5.3 Dish with lid, of metal resistant to attack under the conditions of the test, or of glass, with at least 35 cm^2 of useful surface (for example minimum diameter 70 mm) and 20 to 25 mm deep.

5.4 Desiccator, containing an efficient desiccant.

5.5 Analytical balance.

6 Procedure

6.1 Preparation of the test sample

Carefully mix the laboratory sample (final lot sample) obtained by the method specified in ISO 2292.

By successive reductions of the mixed sample take approximately 10 g of cocoa beans, crush them roughly in the mortar (5.1), within 1 min, so that the greatest dimension of the particles does not exceed about 5 mm, but avoiding the formation of a paste. It is advisable to crush the beans individually, placing them in the mortar one by one.

The beans taken shall be representative of the laboratory sample.

6.2 Test portion

Weigh the previously dried empty dish (5.3) and lid; quickly place in it a test portion comprising practically all of the test sample prepared as described in 6.1.

Cover the dish with its lid and weigh to the nearest 1 mg.

6.3 Determination

Place the dish (5.3), containing the test portion, on its lid in the oven (5.2) controlled at 103 ± 2°C. Leave for 16 ± 1 h, taking care not to open the oven. At the end of this period, remove the dish, cover it immediately with its lid and place it in the desiccator (5.4). Allow to cool to ambient temperature (approximately 30 to 40 min after placing in the desiccator), and weigh, still covered, to the nearest 1 mg.

6.4 Number of determinations

Carry out two determinations, each on a quantity of beans which has been treated individually : crushing, taking the test portion and drying.

7 Note on procedure

The crushing and weighing operations for each determination shall be carried out as rapidly as possible, and in any event within 5 min. After weighing the test portion, the dish may be left to stand, for example in the case of a series of weighings.

8 Expression of results

8.1 Method of calculation and formula

The moisture content of the sample, expressed as a percentage by mass, is equal to

$$(m_1 - m_2) \times \frac{100}{m_1 - m_0}$$

where

m_0 is the mass, in grams, of the empty dish and its lid;

m_1 is the mass, in grams, of the dish and its lid and the test portion before drying;

m_2 is the mass, in grams, of the dish and its lid and the test portion after drying.

Take as the result the arithmetic mean of the two determinations (6.4), provided that the requirement for repeatability (see 8.2) is satisfied. If not, repeat the determinations.

Report the result to one decimal place.

8.2 Repeatability

The difference between the results of two determinations, carried out simultaneously or in rapid succession by the same analyst, shall not exceed 0,3 g loss in mass per 100 g of sample.

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 test report shall include all information necessary for complete identification of the sample.