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Cocoa beans — Specification

Fèves de cacao — Spécifications

[Revision of first edition (ISO 2451:1973)]

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Foreword

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ISO 2451 was prepared by Technical Committee ISO/TC 34, *Food products*.

This second/third/... edition cancels and replaces the first/second/... edition (i), [clause(s) / subclause(s) / table(s) / figure(s) / annex(es)] of which [has / have] been technically revised.

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Cocoa beans — Specification

1 Scope

This International Standard specifies the requirements, methods of test and sampling for cocoa beans.

Recommendations relating to storage and disinfestation are given as a guide in Annexes A and B respectively.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 1114, *Cocoa beans — Cut test*

ISO 2291, *Cocoa beans — Determination of moisture content (routine method)*

ISO 2292, *Cocoa beans — Sampling*

3 Terms and Definitions

3.1 adulteration

alteration of the composition of graded cocoa by any means whatsoever so that the resulting mixture or combination is either not of the grade prescribed, or its quality or flavour is injuriously affected, or its bulk or mass is altered

3.2 bean cluster

two or more beans joined together which cannot be separated by finger and thumb

3.3 bean count

the total number of whole beans per 100g derived in accordance with the test method specified in Annex C

3.4 broken bean

a cocoa bean of which a fragment is missing, the remaining part being more than half of a whole bean

3.5 cocoa bean

the seed of the cocoa tree (*Theobroma cacao* Linnaeus); commercially, and for the purpose of this International Standard, the term refers to the whole seed, which has been fermented and dried

3.6 contamination

the presence of a smoky, hammy or other smell not typical to cocoa, or a substance not natural to cocoa which is revealed during the Cut Test or physical inspection of a sample

- 3.7**
cut test
the procedure by which the cotyledons of cocoa beans are exposed for the purpose of determining the incidence of defective and/or slaty cocoa beans, and/or violet or purple beans and/or the presence of contamination within a sample
- 3.8**
dry cocoa
a commercial term designating cocoa beans which have been evenly dried throughout and of which the moisture content corresponds to the requirements of this International Standard
- 3.9**
defective bean
an internally mouldy or insect damaged bean
- 3.10**
fair fermented
means cocoa beans that are not more than 10 % slaty and 10 % defective by count
- 3.11**
flat bean
a cocoa bean which is too thin to be cut to give a complete surface of the cotyledons
- 3.12**
foreign matter
any substance other than cocoa beans and residue
- 3.13**
fragment
a piece of cocoa bean equal to or less than half the original bean
- 3.14**
germinated bean
a cocoa bean the shell of which has been pierced, split or broken by the growth of the seed-germ
- 3.15**
good fermented
means cocoa beans that are not more than 5 % slaty and 5 % defective by count
- 3.16**
insect-damaged /infested bean
a cocoa bean the internal parts of which are found to contain insects or mites at any stage of development, or to show signs of damage caused thereby, which are visible to the naked eye
- 3.17**
mouldy bean
a cocoa bean on the internal parts of which mould ¹⁾ is visible to the naked eye
- 3.18**
piece of shell
part of the shell without any of the kernel

1) Mould is not to be confused with **WHITE SPOT** which is a concentration of theobromine or cocoa fat.

3.19**residue**

any cocoa element other than whole cocoa beans and flat beans (broken beans, fragments and pieces of shell)

3.20**sieve**

means a screen with round holes the diameter of which shall be 5.0 mm min/max

3.21**sievings**

the material which will pass through the sieve

3.22**slaty bean**

a cocoa bean which shows a slaty colour on at least half of the surface of the cotyledons exposed by the cut test

3.23**violet or purple bean**

a cocoa bean which shows a violet or purple colour on at least half of the surface of the cotyledons exposed by the cut test

4 Preparation

Cocoa beans shall have been fermented and then dried until their moisture content no longer exceeds that specified in 5.2.

5 Requirements**5.1 General requirements****5.1.1 Odour and flavour**

Lots of cocoa bean shall be free from contamination.

5.1.2 Adulteration

Lots of cocoa beans shall be free from any evidence of adulteration.

5.1.3 Foreign matter

Lots of cocoa beans shall be virtually free from foreign matter.

5.1.4 Living insects and other infestation

Lots of cocoa beans shall be virtually free from living insects, insect eggs, larvae and any developmental stages, free from mites, rodents or other types of infestation.

5.1.5 Broken beans, fragments and pieces of shell

Lots of cocoa beans shall be reasonably free from broken beans, fragments and pieces of shell.

5.1.6 Violet or purple beans

Lots of cocoa beans shall be within the standard for violet or purple beans typical of the specified grade or origin

5.2 Moisture content

The moisture content of lots of cocoa beans in trade outside the producing country, as determined at the first port of destination or subsequent points of delivery, shall not exceed 7.5 % (m/m).

5.3 Other quality characteristics

Lots of cocoa beans shall be reasonably:

- uniform in size;
- properly fermented; and
- dry.

Lots of cocoa beans shall be:

- fit for processing;
- reasonably free from bean clusters, flat beans, germinated beans, residue and sieving.

5.4 Grade standards

5.4.1 Grade standards

Lots of cocoa beans are graded, according to the proportion of defective beans determined by the method of test specified in ISO 1114 into three grades as specified in the table below:

Table 1 — Grade standards

Grade	Percentage of beans		
	mouldy	slaty	Insect- damaged, germinated, or flat
1	3	3	3
2	4	8	6
3	4	20	6

NOTE The percentages are the maximum: they should be verified in relation to the quantity examined. The percentages given in the last column apply to all the defects mentioned therein, taken together.

When a bean has several defects, it shall be classified in one category only, i.e. the least favourable. The decreasing order of gravity is as follows:

- mouldy beans;
- slaty beans;
- insect damaged beans, germinated beans, flat beans

Good Fermented beans shall not be more than 5 % slaty and 5 % of all other defectives.

Fair Fermented beans shall not more be more than 10 % slaty and 10 % of all other defectives.

5.4.2 Sub-standard cocoa

Any lot of cocoa beans which exceeds one of the limits accepted for Grade 2 shall be regarded as sub-standard and marked "SS". Sub-standard cocoa shall only be marketed under special contract.

5.5 Bean size Standards

Bean size is defined by the bean count and is usually expressed by the number of beans per 100 g.

- a) big beans – bean count of less or equal to 100;
- b) small beans – bean count of 101 – 120;
- c) very small beans – bean count of > 120.

5.6 Sievings Standards

If the weight of the sievings carried out in accordance with the method specified in Annex D exceeds 1.5 % of the weight of the whole sample, the produce shall be subject to an allowance.

6 Sampling

Sampling shall be carried out in accordance with the requirements of ISO 2292.

7 Methods of test

Testing shall be carried out in accordance with the requirements of ISO 1114, ISO 2291 and the methods specified in the annexes.

8 Packing

Bags shall be clean, sound, sufficiently strong and properly sewn.

Cocoa shall be shipped only in new bags.

Bags and liners, if used, shall be made of materials harmless to human food.

Ink or paint used for marking shall not be allowed to come into contact with the produce.