INTERNATIONAL STANDARD

**ISO 4149**

Second edition
2005-03-01

# Green coffee — Olfactory and visual examination and determination of foreign matter and defects

*Café vert — Examens olfactif et visuel, et détermination des matières étrangères et des défauts*

Reference number
ISO 4149:2005(E)

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

# Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 4149 was prepared by Technical Committee ISO/TC 34, *Food products*, Subcommittee SC 15, *Coffee*.

This second edition cancels and replaces the first edition (ISO 4149:1980), which has been technically revised.

# Green coffee — Olfactory and visual examination and determination of foreign matter and defects

## 1 Scope

This International Standard specifies methods for the olfactory and visual examination and for the determination of foreign matter and defects in green coffee from all origins, in order to assess conformity with a specification or a contract. These methods can also be used for determining one or more of the characteristics of green coffee with an impact on coffee quality for technical, commercial, administrative and arbitration purposes, and for quality control or quality inspection.

This International Standard is applicable to green coffee as defined in ISO 3509.

## 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.

ISO 3509, *Coffee and coffee products — Vocabulary*

ISO 4072, *Green coffee in bags — Sampling*

ISO 10470:2004, *Green coffee — Defect reference chart*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 3509 apply.

## 4 Sampling

Take a laboratory sample of 300 g, prepared in accordance with ISO 4072. The same laboratory sample may later be used for size analysis (see ISO 4150) provided that it is fully reconstituted for this further test.

## 5 Olfactory examination

### 5.1 Procedure

**5.1.1** The olfactory examination shall be carried out on the laboratory sample before any other examination is made.

**5.1.2** After having recorded the label information on a record form, open the package, bring the nose as close to the whole sample as possible and sniff sharply.

### 5.2 Evaluation

**5.2.1** Evaluate the odour and record as follows:

a) “normal odour”, if no disagreeable odour nor any odour foreign to coffee is detected;

b) “abnormal odour”, if any disagreeable odour or any odour foreign to coffee is detected.

If recognisable, any foreign odour should be described, indicating the matter to which it belongs or which it suggests.

**5.2.2** In doubtful cases, if there is a suspicion of an abnormal odour, a clean, odourless container shall be half-filled with coffee from the laboratory sample, closed hermetically, and held for a minimum of 1 h at room temperature. The container shall be opened and the evaluation of the odour repeated.

## 6 Visual examination

### 6.1 Procedure

After the olfactory examination, spread the laboratory sample over a plain orange or black surface under diffuse daylight (not direct sunlight) or artificial light reproducing daylight as closely as possible.

### 6.2 Evaluation

**6.2.1** Examine the general appearance of the laboratory sample to assess the following:

a) the botanical origin of the coffee (e.g. arabica, canephora);

b) the overall colour and its uniformity.

**6.2.2** Record observations describing the overall colour as

— bluish,

— greenish,

— greyish green,

— whitish,

— yellowish, or

— brownish.

## 7 Determination of foreign matter and defects

### 7.1 Principle

The foreign matter and the defective beans are separated into categories and then weighed. The final expression of results gives the impact on quality of the defects found, as defined in ISO 10470 and is quantified in Quality Impact Units.

The definitions in ISO 3509 relating to foreign matter and defects apply.

### 7.2 Apparatus

**7.2.1** **Analytical balance**, capable of weighing to the nearest 0,1 g.

### 7.3 Procedure

**7.3.1** Defects are not counted and weighed, as used to be the case, but are determined solely by weighing.

**7.3.2** Weigh the green coffee laboratory sample (see Clause 4) to the nearest 0,1 g and take it as the test portion.

**7.3.3** Spread the test portion over a plain orange or black surface and examine it under diffuse daylight (not direct sunlight) or artificial light reproducing daylight as closely as possible. For a better and more accurate identification, refer to ISO 10470:2004, Annex C, which shows colour photographs of defects and foreign matter.

**7.3.4** Pick out all foreign matter and defective beans and group them by categories in accordance to ISO 10470. Put them in separated piles or different containers.

**7.3.5** Weigh, to the nearest 0,1 g, each category of the foreign matter and defects.

### 7.4 Expression of results

Record the mass, in grams, of the foreign matter and defects found in the test portion.

Determine the mass fraction of the foreign matter and defects, $w$, in percent, using the following formula:

$$w = \frac{m_0}{m} \times 100\,\%$$

where

$m_0$ is the total mass, in grams, of the foreign matter or defects in question;

$m$ is the mass, in grams, of the test portion.

Multiply the mass fraction of each defect and foreign matter by the factor “0”, “0,5” or “1” associated with the specific defect and representing its influence on the loss in mass and/or the sensorial concern, as specified in ISO 10470.

An example of a typical determination is given in Annex A.

## 8 Test report

The test report shall specify:

a) all information necessary for the complete identification of the sample;

b) the sampling method used, if known;

c) the test method used, with reference to this International Standard;

d) all operating details not specified in this International Standard, or regarded as optional, together with details of any incidents which may have influenced the test result(s);

e) the test result(s) obtained or, if a repeatability check has been made, the final result obtained.

# Annex A
(informative)

# Example of a typical determination

Take a representative sample of 300 g, after having performed adequate sampling following the procedure given in ISO 4072.

Spread the test portion over a plain orange or black surface and examine it under diffuse daylight (not direct sunlight) or artificial light reproducing daylight as closely as possible. For a better identification, refer to ISO 10470:2004, Annex C, which shows colour photographs of the defects.

Pick out all foreign matter and defective beans and group them by categories as defined in ISO 10470. Put them in separated piles or different containers. Weigh, to the nearest 0,1 g, each category of foreign matter and defects and calculate their mass fractions in percent.

The impact of foreign matter and defects on the quality of the coffee is calculated for both the loss in mass and the sensorial concern by multiplying each percentage by the coefficient found in the defect reference chart of ISO 10470. The final values obtained are equivalent to so-called “Quality Impact Units”.

A hypothetical example is shown in Table A.1.

**Table A.1 — Example of results**

| Defect | Mass g | Percentage of total | Loss in mass | | Sensorial concern | |
|---|---|---|---|---|---|---|
| | | | Coefficient | Actual | Coefficient | Actual |
| Stones | 1,2 | 0,4 | × 1,0 | 0,4 | × 0 | 0 |
| Beans in parchment | 3,0 | 1,0 | × 0,5 | 0,5 | × 0 | 0 |
| Black beans | 3,0 | 1,0 | × 0 | 0 | × 1,0 | 3,00 |
| Immature beans | 10,5 | 3,5 | × 0 | 0 | × 0,5 | 1,75 |
| Spongy beans | 9,0 | 3,0 | × 0,5 | 1,5 | × 0,5 | 1,50 |
| Brown beans | 7,5 | 2,5 | × 0 | 0 | × 1,0 | 2,50 |
| Sound beans | 265,8 | 88,6 | | | | |
| TOTAL | 300,0 | 100,0 | | 2,4 | | 8,75 |

This procedure may be applied to any contract for the purchase of green coffee which may be negotiated between a provider and client. For a certain defect(s), the contract may impose either a maximum mass fraction in percent or a maximum value of “Quality Impact Units”. Such limits may be defined in advance between the two parties.

# Bibliography

[1] ISO 1446, *Green coffee — Determination of water content — Basic reference method*

[2] ISO 4150, *Green coffee — Size analysis — Manual sieving*

[3] ISO 6673, *Green coffee — Determination of loss in mass at 105 °C*

**ICS 67.140.20**

Price based on 5 pages