INTERNATIONAL STANDARD

ISO 6668

Second edition
2008-06-01

Green coffee — Preparation of samples for use in sensory analysis

Café vert — Préparation des échantillons en vue de l'analyse sensorielle

Reference number
ISO 6668:2008(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

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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 6668 was prepared by Technical Committee ISO/TC 34, *Food products*, Subcommittee SC 15, *Coffee*.

This second edition cancels and replaces the first edition (ISO 6668:1991), which has been technically revised. It also incorporates the Technical Corrigendum ISO 6668:1991/Cor.1:2000.

Green coffee — Preparation of samples for use in sensory analysis

1 Scope

This International Standard specifies a method for the roasting of green coffee, grinding the roasted coffee, and the preparation — from the ground coffee — of a beverage to be used in sensory analysis.

The sensory analysis carried out following this preparation may be used to determine the acceptance or rejection of a shipment of coffee, subject to agreement between the parties concerned. Generally, the sample will require a light roast for assessment of defects, and a medium roast for assessment of flavour and colour.

A beverage prepared in accordance with this International Standard can be used not only for purposes of quality control, but also for purposes of comparative assessment of different samples, in which case an identical procedure can be followed for each of the samples.

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 565, *Test sieves — Metal wire cloth, perforated metal plate and electroformed sheet — Nominal sizes of openings*

ISO 3696, *Water for analytical laboratory use — Specification and test methods*

ISO 4072, *Green coffee in bags — Sampling*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
beverage
solution prepared by the extraction of soluble substances from roast and ground coffee, using freshly boiled water, under the conditions specified in this International Standard

3.2
roasted ground coffee
roast and ground coffee
R&G coffee
green coffee after roasting and grinding

4 Principle

A sample of green coffee is roasted and ground. A test portion of the roast and ground coffee is then infused with freshly boiled water in a cup.

5 Reagents

5.1 Water, complying with the requirements of ISO 3696, grade 3, free from chlorine or other foreign flavours and with a medium hardness.

The water may contain up to 2,5 mmol/l calcium carbonate ($CaCO_3$).

If the specified limit is exceeded, dilute the water with a sufficient volume of demineralized water to bring the concentration into compliance.

The quality of the water for infusion is of outstanding importance to the sensory aspect of the beverage, for both visual and olfactory reasons.

6 Apparatus

Usual laboratory equipment and, in particular, the following.

6.1 Batch roaster, capable of roasting up to 500 g of green coffee in 12 min maximum to a medium brown colour, and equipped with a cooling system in which air is forced through a perforated plate.

6.2 Thermometer, suitable for use in the roaster (6.1) for measuring temperatures up to 240 °C in the coffee beans.

6.3 Balance, accurate to the nearest 0,1 g.

6.4 Laboratory grinder, set to grind, in not more than 1 min, approximately 100 g of a roasted coffee bean sample to a grind with a particle size distribution as shown in Table 1.

Table 1 — Particle size distribution

Sample proportion [a]	Mass fraction %		
	Target	Maximum	Minimum
Retained on sieve of nominal size of openings 600 µm	70	75	60
Retained on sieve of nominal size of openings 425 µm	20	not specified	not specified
Through sieve of nominal size of openings 425 µm	10	15	5
[a] Sieves shall comply with ISO 565, R 40/3 series.			

Perform a test sieving at the start of each working day.

Ground coffee that has been used for size analysis should not be used for preparing beverages.

NOTE For sample preparation starting with R&G coffee in consumer packages, the individual particle size distributions are applied.

6.5 Cup, made of porcelain or glass, of 150 ml to 350 ml capacity, chosen according to the quantity of water required for subsequent assessment.

The cups shall be clean, odour-free and undamaged (no cracks, no chipping, etc.).

6.6 Heating device, clean and odour-free, suitable for boiling water.

6.7 Graduated cylinder, made of glass, of suitable capacity, or **scoop** of suitable known volume.

7 Sampling

A representative sample should have been sent to the laboratory. It should not have been damaged or changed during transport or storage.

Sampling shall have been carried out in accordance with ISO 4072.

8 Procedure

8.1 Roasting

Place the thermometer (6.2) in the batch roaster (6.1) and preheat the roaster by roasting one or two samples of beans (not necessarily taken from the laboratory sample).

NOTE Preheating is not necessary if the roaster has been in continuous prior use.

Place 100 g to 300 g of the laboratory sample (Clause 7) into the batch roaster and carefully roast the beans until they attain a light- to medium-brown colour.

With a drum batch roaster, the roasting time should be between 5 min and 12 min.

Check the temperature of the coffee beans during roasting by using the thermometer (6.2).

A temperature between 200 °C and 240 °C is usually appropriate, but specified temperature levels (e.g. a smaller range) may be used subject to agreement between purchaser and supplier.

8.2 Cooling

On completion of roasting, empty the beans on to the perforated plate and force air through the bed of hot beans.

The beans should reach a temperature of approximately 30 °C within 5 min.

8.3 Grinding and preparation of the test sample

Grind approximately 50 g of the cooled roasted beans (8.2) in the laboratory grinder (6.4). Discard the grind.

Place the remainder of the roasted beans in the laboratory grinder and grind.

Proceed with the preparation of the beverage a maximum of 90 min after completion of the grinding operation.

8.4 Test portion

According to the required volume of water (5.1) to be used for the beverage preparation (see 6.5), use the balance (6.3) and weigh to the nearest 0,1 g an amount of the test sample (8.3) corresponding preferably to a

ratio of 7,0 g of coffee per 100 ml of water, with an individual notified coffee range of 5 g to 9 g. Other coffee to water amount ratios may be agreed between purchaser and supplier.

NOTE Consumer recipes often imply varying concentrations.

8.5 Preparation of the beverage

Place the test portion in the cup (6.5).

NOTE Warming the cup whilst boiling the water can be desirable or necessary to minimize cooling of the boiled water.

Heat the water (5.1) to the boiling point, using the heating device (6.6), and pour it into the cup containing the test portion, using the preheated graduated cylinder or scoop (6.7) to measure the volume required.

Allow the infusion to stand for preferably 3 min in order to facilitate the settling of most of the grounds after degassing. Stir the contents gently to aid the settling of the grounds to the bottom of the cup.

Skim the remaining grounds from the surface of the beverage and discard them.

Allow the beverage to cool to a temperature not greater than 55 °C.

The temperature of the first tasting is usually between 50 °C and 55 °C. Further tastings may be carried out as the temperature of the beverage decreases.

Two or three beverages may be prepared from the same test sample (8.3) in order to evaluate possible variation.

9 Test report

The test report shall contain at least the following information:

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

b) the method used, including reference to this International Standard;

c) the roasting temperature and roasting time applied;

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 beverage quality with respect to its sensory properties.