
**Cloves, whole and ground (powdered) —
Specification**

Clous de girofle entiers et clous de girofle en poudre — Spécifications



Reference number
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Foreword

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ISO 2254 was prepared by Technical Committee ISO/TC 34, *Food products*, Subcommittee SC 7, *Spices and condiments*.

This second edition cancels and replaces the first edition (ISO 2254:1980), of which it constitutes a minor revision.

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Cloves, whole and ground (powdered) — Specification

1 Scope

This International Standard specifies requirements for whole and ground (powdered) cloves [*Syzygium aromaticum* (L.) Merr. et L.M. Perry].

Recommendations relating to storage and transport are given in Annex A for information only.

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 927, *Spices and condiments — Determination of extraneous matter content*

ISO 928, *Spices and condiments — Determination of total ash*

ISO 930, *Spices and condiments — Determination of acid-insoluble ash*

ISO 939, *Spices and condiments — Determination of moisture content — Entrainment method*

ISO 948, *Spices and condiments — Sampling*

ISO 1208, *Spices and condiments — Determination of filth*

ISO 2825, *Spices and condiments — Preparation of a ground sample for analysis*

ISO 5498, *Agricultural food products — Determination of crude fibre content — General method*

ISO 6571, *Spices, condiments and herbs — Determination of volatile oil content*

3 Terms and definitions

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

3.1

whole clove

floral bud, harvested before blooming, and dried, of [*Syzygium aromaticum* (L.) Merr. et L.M. Perry].

NOTE It comprises a receptacle containing, in its upper part, two loculi containing numerous ovules, and crowned by four acute divergent sepals surrounding a dome-shaped head consisting of four paler unexpanded membranous imbricate petals enclosing numerous incurved stamens and a single stiff erect style.

cf. Figure 1.

3.2
headless clove
clove consisting of only the receptacle and sepals and which has lost the dome-shaped head

cf. Figure 2.

3.3
khoker clove
clove which has undergone fermentation as a result of incomplete drying, as evidenced by its pale brown colour, whitish mealy appearance and, often, wrinkled surface

3.4
mother clove
fruit of the clove tree (*Syzygium aromaticum*), which is in the form of an ovoid brown berry surmounted by four incurved sepals

cf. Figure 3.

3.5
clove stem
dry fragment of the stalk of the clove

cf. Figure 4.

3.6
ground (powdered) clove
powder obtained by grinding cloves without any addition



Figure 1 — Whole clove

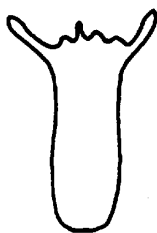


Figure 2 — Headless clove



Figure 3 — Mother clove



Figure 4 — Clove stem

4 Requirements

4.1 Odour and flavour

Whole or ground (powdered) cloves shall have a strong aromatic, spicy odour and characteristic flavour. They shall be free from off-flavours, including mustiness.

4.2 Colour

4.2.1 Whole cloves shall be of a reddish-brown to blackish-brown colour.

4.2.2 Ground (powdered) cloves shall be of a brown colour with a violet tinge.

4.3 Absence of moulds, insects, etc.

The cloves, whole or ground (powdered), shall be free from living insects and moulds, and shall be practically free from dead insects, insect fragments and rodent contamination visible to the naked eye (corrected if necessary, for abnormal vision), with such magnification as may be necessary in any particular case. If the magnification exceeds 10×, this fact shall be stated in the test report.

In case of dispute, contamination in ground (powdered) cloves shall be determined by the method described in ISO 1208.

4.4 Extraneous matter

Extraneous matter includes the following:

- dirt, dust, mud, stones, pieces of wood, etc.;
- all the particles originating from the plant other than the cloves, tendrils and peduncles;
- exhausted cloves.

The proportion of extraneous matter in cloves, when determined by the method described in ISO 927, shall not exceed the value given in Table 1 for the relevant grade.

4.5 Classification of whole cloves

Whole cloves shall be classified according to Table 1.

Table 1 — Classification of whole cloves

Grade	Headless cloves	Tendrils, mother cloves	Khoker cloves	Extraneous matter
	% max.	% max.	% max.	% max.
1 Special (hand-picked)	2	0,5	0,5	0,5
2	5	4	3	1
3	Not specified	6	5	1

4.6 Chemical requirements

4.6.1 Whole cloves

Whole cloves shall comply with the requirements given in Table 2.

Table 2 — Chemical requirements for whole cloves

Characteristic	Requirement	Test method
Moisture, % (mass fraction), max.	12	ISO 939
Volatile oil, ml/100 g on dry basis, min.		ISO 6571
— Grades 1 and 2	17	
— Grade 3	15	

4.6.2 Ground (powdered) cloves

Ground (powdered) cloves shall comply with the requirements given in Table 3.

Table 3 — Chemical requirements for ground (powdered) cloves

Characteristic	Requirement			Test method
	Grade			
	1	2	3	
Moisture, % (mass fraction), max.	10	10	10	ISO 939
Total ash,% (mass fraction) on dry basis, max.	7	7	7	ISO 928
Acid-insoluble ash, % (mass fraction) on dry basis, max.	0,5	0,5	0,5	ISO 930
Volatile oil, % (mass fraction) on dry basis, min.	16	16	14	ISO 6571
Crude fibre, % (mass fraction), max.	13	13	13	ISO 5498

5 Sampling

The cloves, whole or ground (powdered), shall be sampled using the method described in ISO 948.

Minimum mass of laboratory sample: 200 g.

6 Test methods

The samples of cloves, whole or ground (powdered), shall be tested for conformity with the requirements of this International Standard by the test methods indicated.

The ground sample for analysis shall be prepared in accordance with ISO 2825.

For determination of the total ash, use the method specified in ISO 928, but carry out the incineration at $600\text{ }^{\circ}\text{C} \pm 25\text{ }^{\circ}\text{C}$.

7 Packing and marking

7.1 Packing

Whole or ground (powdered) cloves shall be packed in clean and sound containers, made of a material which does not affect the product and protects it from moisture and from the loss of volatile matter.

7.2 Marking

7.2.1 Whole cloves

The following particulars shall be marked on each container, or on a label firmly attached to each container:

- a) name of the product, and the trade name or brand name, if any;
- b) name and address of the manufacturer or packer;
- c) batch or code number;
- d) net mass;
- e) grade of the material;
- f) producing country;
- g) any other marking required by the purchaser, such as year of harvest and date of packing (if known).

7.2.2 Ground (powdered) cloves

The following particulars shall be marked on each container, or on a label firmly attached to each container:

- a) name of the product, and the trade name or brand name, if any;
- b) name and address of the manufacturer or packer;
- c) batch or code number;
- d) net mass;
- e) any other marking required by the purchaser, such as year of harvest and date of packing (if known).

Annex A
(informative)

Recommendations relating to storage and transport

The containers of cloves should be stored in covered premises, well protected from the sun, rain and excessive heat.

The store room should be dry, free from objectionable odours, and proofed against entry of insects and vermin. The ventilation should be controlled so as to give good ventilation under dry conditions and to be fully closed under damp conditions. In a storage warehouse, suitable facilities should be available for fumigation.

The containers should be so handled and transported that they are protected from the rain, from the sun or other source of excessive heat, from objectionable odours and from cross-infestation, especially in the holds of ships.

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