
International Standard



1003

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Spices and condiments — Ginger, whole, in pieces, or ground — Specification

Épices — Gingembre entier, en morceaux ou en poudre — Spécifications

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been set up 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.

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 1003 was developed by Technical Committee ISO/TC 34, *Agricultural food products*.

It 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 ISO Recommendation R 1003-1969, which had been approved by the member bodies of the following countries :

Australia	France	Poland
Brazil	Germany, F. R.	Portugal
Bulgaria	Greece	Romania
Canada	Hungary	South Africa, Rep. of
Chile	India	Thailand
Colombia	Iran	Turkey
Czechoslovakia	Israel	USSR
Egypt, Arab Rep. of	Korea, Rep. of	Yugoslavia

The member bodies of the following countries had expressed disapproval of the document on technical grounds :

Netherlands
United Kingdom

Spices and condiments — Ginger, whole, in pieces, or ground — Specification

1 Scope and field of application

This International Standard specifies requirements for ginger (*Zingiber officinale* Roscoe), whole, in pieces, or ground.

Recommendations relating to storage and transport conditions are given in annex B.

2 References

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

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

ISO 929, *Spices and condiments — Determination of water-insoluble ash.*

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

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

ISO 940, *Spices and condiments — Determination of alcohol-soluble extract.*

ISO 941, *Spices and condiments — Determination of cold water-soluble extract.*

ISO 948, *Spices and condiments — Sampling.*

ISO 1208, *Ground spices — Determination of filth (Reference method).*¹⁾

3 Requirements

3.1 Description

Ginger, whole and in pieces, is the dried peeled or unpeeled rhizome of *Zingiber officinale* Roscoe, in pieces irregular in shape and not less than 20 mm in length or in small cut pieces,

very pale buff to pale brown in colour, fibrous, either clean peeled, scraped or coated, washed and dried in the sun. The ginger may be garbled by removing pieces that are too light, and it may also be lime-bleached. Ginger, whole and in pieces, may be graded on the basis of its size, place of production, fibre and fibrous content and the method of treatment of the rhizomes. The dried rhizomes may also be ground into powder.

3.2 Odour and taste

The odour and taste of ginger, whole, in pieces or ground, shall be characteristic and wholesome. The material shall not have a musty odour or a rancid or bitter taste.

3.3 Freedom from moulds, insects, etc.

Ginger, whole, in pieces or ground, 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 X, this fact shall be stated in the test report. In the case of ground ginger, the contamination shall be determined by the method specified in ISO 1208.

3.4 Extraneous matter

The proportion of extraneous matter in ginger, whole or in pieces, shall be not more than 2,0 % (*m/m*) when determined by the method specified in ISO 927.

NOTE — A definition of extraneous matter will be added later.

3.5 Freedom from coarse particles

Ground ginger shall be free from coarse particles. The fineness shall be agreed between the buyer and seller.

1) At present at the stage of draft.

3.6 Chemical requirements¹⁾

3.6.1 Ginger, whole and in pieces

Ginger, whole and in pieces, shall comply with the requirements given in table 1.

Table 1 – Requirements for ginger, whole and in pieces

Characteristic	Requirement	Method of test
Moisture content % (m/m), max.	12,0	ISO 939
Total ash, % (m/m) on dry basis, max.		ISO 928
a) unbleached	8,0	
b) bleached	12,0	
Calcium (as calcium oxide), % (m/m) on dry basis, max.		
a) unbleached	1,1	See annex A
b) bleached	2,5	
Volatile oil, ml/100 g on dry basis, min.	1,5*	A suitable method of test will form the subject of a future International Standard.

* Tentative value, pending preparation of a suitable method.

NOTE — It is not necessary to carry out these determinations as a routine for all samples. Any of these determinations shall be made in case of dispute and when required either by the buyer or seller, if already provided for in the agreement.

3.6.2 Ginger, ground

Ground ginger shall comply with the requirements given in table 1 and also with the requirements given in table 2.

Table 2 – Additional requirements for ground ginger

Characteristic	Requirement	Method of test
Water-soluble ash, % (m/m), on dry basis, min.*	1,9	ISO 928 and ISO 929
Water-insoluble ash, % (m/m) on dry basis, max.	Under study	ISO 929
Acid-insoluble ash, % (m/m) on dry basis, max.	2,3	ISO 930
Alcohol-soluble extract, % (m/m) on dry basis, min.	5,1	ISO 940
Cold water-soluble extract, % (m/m) on dry basis, min.	11,4	ISO 941

* Total ash minus water-insoluble ash.

4 Sampling

4.1 Sample the ginger by the method specified in ISO 948.

4.2 Samples of ginger, whole and in pieces, shall be ground so that the whole of the material passes through a sieve of aperture size 1 mm. The material thus ground shall be used for determining the characteristics specified in table 1.

5 Methods of test

The samples of ginger, whole, in pieces or ground, shall be tested for conformity with the requirements of this International Standard, using the methods of test indicated in tables 1 and 2.

For the determination of total ash, incineration shall be carried out at 600 ± 25 °C (instead of 550 ± 25 °C as specified in ISO 928).

1) The limits of toxic substances will be added later, according to the recommendations of the FAO/WHO Codex Alimentarius Commission.

6 Packing and marking

6.1 Packing

6.1.1 Ginger, whole and in pieces

Ginger, whole and in pieces, shall be packed in sealed, clean and sound containers made of a material which does not affect the ginger.

6.1.2 Ground ginger

Ground ginger shall be packed in sealed, clean and sound tinplate or glass containers, or paper cartons properly lined with waterproof paper, or in moisture-proof bags made of material which does not impart any odour to the ground ginger.

The quantities packed in each container may be 0,5 — 1,0 or 2,0 kg or, if required, more or less.

A suitable number of such containers shall be packed in wooden or cardboard cases.

The size of the containers and the number of containers packed in a case shall be agreed between the buyer and seller.

6.2 Marking

6.2.1 Ginger, whole and in pieces

The following particulars shall be marked or labelled on each bag :

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

6.2.2 Ground ginger

The particulars a) to d) above shall be marked on each container and on each case. If glass containers are used, the words *Glass, with care* shall be marked on each case.

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Annex A

Determination of calcium

A.1 Definition

calcium content : The content of substances, expressed as a percentage by mass as calcium oxide, determined under the conditions specified in this International Standard.

A.2 Principle

Preparation of the total ash, treatment of the ash with hydrochloric acid, precipitation of the calcium as calcium oxalate, and titration with potassium permanganate.

A.3 Reagents

Use only reagents of recognized analytical grade. The water used shall be distilled water or water of at least equivalent purity.

A.3.1 Acetic acid.

A.3.2 Hydrochloric acid, concentrated, $\rho_{20} = 1,16$ g/ml.

A.3.3 Hydrochloric acid solution.

Dilute 2 volumes of the concentrated hydrochloric acid (A.3.2) with 5 volumes of water.

A.3.4 Ammonium hydroxide solution, $\rho_{20} = 0,90$ g/ml.

A.3.5 Ammonium oxalate, saturated solution.

A.3.6 Sulphuric acid, 20 % (V/V) solution.

Dilute 1 volume of concentrated sulphuric acid, $\rho_{20} = 1,84$ g/ml, with 4 volumes of water.

A.3.7 Potassium permanganate, 0,1 N standard volumetric solution.

A.3.8 Bromocresol green indicator, 0,4 g/l solution.

Weigh accurately 0,1 g of bromocresol green and grind it with 14,3 ml of 0,01 N sodium hydroxide solution in an agate mortar. Transfer the contents of the mortar quantitatively to a 250 ml volumetric flask and dilute to the mark with water. This solution has a pH range of 3,8 to 5,4. It turns yellow in an acid medium and blue in an alkaline medium.

A.4 Apparatus

A.4.1 Incineration dish.

A.4.2 Filter paper, ashless.

A.4.3 Beaker, of capacity 250 ml.

A.4.4 Steam bath.

A.4.5 Water bath.

A.4.6 Analytical balance.

A.5 Procedure

A.5.1 Test portion

Weigh, to the nearest 0,001 g, 2 to 4 g of the product.

A.5.2 Determination

Incinerate the test portion by the method specified in ISO 928. Digest the ash in the dish (A.4.1) with the hydrochloric acid solution (A.3.3). Evaporate to dryness on the steam bath (A.4.4). Digest the dry residue again with the hydrochloric acid solution and again evaporate to dryness. Treat the residue with 5 to 10 ml of the hydrochloric acid (A.3.2), add about 50 ml of water, allow to stand on the water bath (A.4.5) for a few minutes, and filter into the 250 ml beaker (A.4.3). Wash the insoluble residue with hot water, collecting the washings in the same beaker. Add to the beaker 8 to 10 drops of the bromocresol green indicator solution (A.3.8) and the ammonium hydroxide solution (A.3.4) until the colour of the solution is distinctly blue (pH 4,8 to 5,0). Add acetic acid (A.3.1) drop by drop to change the colour to distinct green, that is until the pH is changed to 4,4 to 4,6. Filter the solution quantitatively, collecting the filtrate and washings in the 250 ml beaker. Boil the solution and add the saturated ammonium oxalate solution (A.3.5) dropwise while any precipitate forms and then add an excess. Heat to boiling. Allow to stand for at least 3 h. Decant the clear solution through the filter paper (A.4.2). Pour 13 to 20 ml of hot water onto the precipitate and again decant the clear solution. Dissolve any precipitate remaining on the filter paper by washing with hot hydrochloric acid solution (A.3.3) into the original beaker. Wash the filter paper thoroughly with hot water. Then reprecipitate while boiling hot, by adding the ammonium hydroxide solution (A.3.4) and a little saturated ammonium oxalate solution (A.3.5). Allow to stand for at least 3 h, as before, then filter through the same filter and wash with hot water until the filtrate is chloride-free.

Perforate the apex of the filter cone. Wash the precipitate into the beaker used for precipitation. Then wash the filter paper with hot sulphuric acid solution (A.3.6) and titrate at a temperature not lower than 70 °C with the standard volumetric potassium permanganate solution (A.3.7) until the appearance of a persistent pink colouration.