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UGANDA STANDARD

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Dehydrated garlic (*Allium sativum* L.) - Specification

Reference number
US ISO 5560:1997

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National foreword

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This Uganda Standard, US ISO 5560, *Dehydrated garlic (Allium sativum L.) — Specification,* is identical with and has been reproduced from an International Standard, ISO 5560:1997, *Dehydrated garlic (Allium sativum L.) — Specification,* and adopted as a Uganda Standard.

This standard was developed by the Food and agriculture Standards Technical Committee (UNBS/TC 2).

Wherever the words, "International Standard" appear, they should be replaced by "Uganda Standard."

INTERNATIONAL STANDARD

ISO 5560

Third edition
1997-08-01

Dehydrated garlic (*Allium sativum* L.) — Specification

*Ail déshydraté (*Allium sativum *L.) — Spécifications*

Reference number
ISO 5560:1997(E)

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.

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.

International Standard ISO 5560 was prepared by Technical Committee ISO/TC 34, *Agricultural food products*, Subcommittee SC 7, *Spices and condiments*.

This third edition cancels and replaces the second edition (ISO 5560:1983), which has been technically revised.

Annex A forms an integral part of this International Standard.

Annexes B to E are for information only.

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Dehydrated garlic (*Allium sativum* L.) — Specification

1 Scope

This International Standard specifies requirements for dehydrated garlic (*Allium sativum* L.).

NOTE — The main commercial forms are given in annex B, for information only.

Recommendations relating to microbiological requirements are given in annex C, without prejudice to national legislation applicable in different countries.

Recommendations relating to storage and transport are given in annex D.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of the publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 927:1982, *Spices and condiments - Determination of extraneous matter content.*

ISO 928:—[1], *Spices and condiments - Determination of total ash.*

ISO 930:—[2], *Spices and condiments - Determination of acid-insoluble ash.*

ISO 939:1980, *Spices and condiments - Determination of moisture content - Entrainment method.*

ISO 941:1980, *Spices and condiments - Determination of cold water soluble extract.*

ISO 948:1980, *Spices and condiments - Sampling.*

ISO 1208:1982, *Spices and condiments - Determination of filth.*

ISO 5567:1982, *Dehydrated garlic - Determination of volatile organic sulphur compounds.*

3 Definitions

For the purposes of this International Standard, the following definitions apply.

3.1 dehydrated garlic: Finished product obtained on drying the cloves of garlic cultivars (*Allium sativum* L.) without any bleaching or precooking, the cloves being sound and practically free from moulds, diseases, soil, outer skins, stems, leaves and roots.

3.2 extraneous matter: Vegetable matter originating exclusively from plants, such as particles from skins and roots.

1) To be published. (Revision of ISO 928:1980)

2) To be published. (Revision of ISO 930:1980)

4 Requirements

4.1 Organoleptic specifications

4.1.1 General

Dehydrated garlic shall conform to the requirements of this International Standard and on rehydration shall regain characteristics similar to those of fresh garlic.

4.1.2 Colour

The colour of the dehydrated garlic shall be characteristic of the cultivar used, that is, between white and pale cream.

The product shall be practically free from scorched, toasted and baked particles.

4.1.3 Odour

Dehydrated garlic, after rehydration by the method described in annex A, shall have a characteristic, pungent odour, free from foreign odours and off odours, such as those coming from mouldy, rancid, fermented or burnt particles.

4.1.4 Flavour

The flavour of the dehydrated garlic is assessed after rehydration in accordance with the method described in annex A.

The flavour shall be characteristic of parboiled garlic, and free from foreign flavours and off flavours, such as those coming from mouldy, rancid, fermented or burnt particles.

4.2 Freedom from insects, moulds, etc.

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

In cases of dispute, the contamination of garlic in powder form shall be determined by using the method specified in ISO 1208.

4.3 Extraneous matter

The total percentage of extraneous matter, as defined in 3.2 and determined in accordance with ISO 927, shall not exceed 0,5 % (*m/m*).

4.4 Classification

Dehydrated garlic may be divided into the broad categories given in annex B:

a) dehydrated garlic slices;

b) dehydrated garlic flakes or pieces ;

c) dehydrated garlic grits;

d) powdered garlic.

4.5 Chemical requirements

Dehydrated garlic shall comply with the requirements specified in table 1, when tested by the specified method.

Table 1 - Chemical requirements of dehydrated garlic

Characteristic	Requirement	Test method
Moisture content, % (*m/m*), max.	8	ISO 939
Total ash, % (*m/m*), on dry basis, max.	5,5	ISO 928
Acid-insoluble ash, % (*m/m*) on dry basis, max.	0,5	ISO 930
Volatile organic sulfur compounds content, % (*m/m*) on dry basis, min.	0,3	ISO 5567
Cold-water-soluble extract, % (*m/m*) on dry basis, min. max.	 70 90	ISO 941

5 Sampling

5.1 Dehydrated garlic powder or grits

Sample the product in accordance with ISO 948, using a conical sampler or other suitable implement to remove aseptically a representative sample.

5.2 Dehydrated garlic slices, flakes or pieces

Certain problems arise as a result of the friability of the product and the danger of settling within the container. It may therefore be necessary to take the entire contents of a single container because, during transport, the garlic may settle with the larger pieces towards to the top and smaller pieces towards the bottom.

The principles of the method described in ISO 948 shall apply with the modifications given in 5.2.1 and 5.2.2.

5.2.1 Number of containers to be taken

Take from the lot between 0,5 % and 1,0 % of the containers using a table of random numbers agreed between the interested parties. If no table of random numbers is available, take every n^{th} container. However, at least one full container shall be taken.

5.2.2 Preparation of bulk sample

Sieve the contents of each container according to the commercial form considered (see annex B). Prepare the bulk sample by mixing portions of the different sieved fractions in the proportions determined by sieving. The size of the bulk sample shall be at least three times the quantity of product necessary to carry out all the tests required by this International Standard.

6 Test methods

Samples of dehydrated garlic shall be tested for conformity with the requirements of this International Standard by following the methods of physical, organoleptic and chemical analysis specified in 4.1 to 4.5 and table 1.

7 Packing and marking

7.1 Packing

Dehydrated garlic shall be packed in clean, sound and dry containers made of a material which does not affect the product but which protects it from light and from the ingress of moisture.

The packaging shall also comply with any national legislation relating to environmental protection.

7.2 Marking

The following particulars shall be marked directly on each package or shall be marked on a label attached to the package:

a) name of the product and botanical name and tradenames, if any;

b) name and address of the producer or packer, or trademark, if any;

c) code or batch number;

d) net mass;

e) producing country;

f) any other information requested by the purchaser, such as year of production and date of packing, if known;

g) reference to this International Standard; and

h) whether the product contains additives, and which ones, in the case of countries where they are permitted.

Annex A
(normative)

Method of rehydration and sensory evaluation of dehydrated garlic

A.1 Garlic slices

A.1.1 Apparatus

A.1.1.1 Vessel, of about 500 ml capacity, made of a material which will not impart a foreign taste or affect the colour of the preparation.

A.1.1.2 Dish, made of porcelain or white earthenware.

A.1.1.3 Stainless steel spoon.

A.1.2 Reagent

Use natural, potable water, as neutral as possible.

A.1.3 Preparation

Weigh 10 g ± 0,1 g of the sample and transfer it to the vessel (A.1.1.1) containing 500 ml of cold water (A.1.2). Bring to the boil and maintain at 99 °C, keeping the vessel covered, for 10 min ± 1 min.

Make up the volume to 500 ml with cold water (A.1.2) and pour into the dish (A.1.1.2).

A.1.4 Sensory evaluation

Immediately carry out sensory evaluation of the following characteristics, in the order given:

- appearance of the cooking water (colour and clarity);
- colour of the preparation;
- odour;
- tenderness;
- flavour.

A.2 Garlic powder, grits, flakes or pieces

A.2.1 Apparatus

A.2.1.1 Vessel, about of 1 000 ml capacity, made of a material which will not impart a foreign taste or affect the colour of the preparation.

A.2.1.2 Dish, made of porcelain or white earthenware.

A.2.1.3 Stainless steel spoon.

A.2.2 Reagents

A.2.2.1 Flour, made from durum wheat from the most recent harvest and known to be of good quality.

A.2.2.2 Water

Use natural, potable water, as neutral as possible.

A.2.3 Preparation of the medium

Transfer 1 000 ml of cold water (A.2.2.2) to the vessel (A.2.1.1) and add, stirring continuously, 30 g of the flour (A.2.2.1). Heat and continue to stir until the mixture reaches boiling point, then simmer for 2 min.

A.2.4 Mixing the dehydrated garlic with the medium

Weigh, to the nearest 0,001 g, 0,4 g of the garlic, and place it in the dish (A.2.1.2). Add 250 ml of the medium prepared in accordance with A.2.3 and allow to stand for 5 min, stirring from time to time.

A.2.5 Sensory evaluation

Carry out sensory evaluation of the following characteristics, in the order given:

- odour;
- flavour.

Annex B
(informative)

Commercial forms of dehydrated garlic

B.1 General information

The various commercial forms of dehydrated garlic are all produced by slicing peeled sound garlic cloves into flat slices (of a thickness agreed between the interested parties), which are dehydrated, graded and further processed as necessary.

B.2 Commercial forms

The following broad categories are recognized in the trade, although commercial contracts may include requirements for particle size.

B.2.1 Dehydrated garlic slices

Product obtained by cutting garlic cloves into slices and removing broken pieces smaller than 4 mm by sieving.

B.2.2 Dehydrated garlic, flakes or pieces

Dehydrated garlic passing through a sieve of aperture size from 1,25 mm to 4 mm according to the case. The particles do not have any definite shape.

B.2.3 Dehydrated garlic grits

Dehydrated garlic passing through a sieve of aperture size from 250 µm to 1,25 mm.

B.2.4 Powdered garlic

Homogeneous product, 95 % of which passes through a sieve of aperture size 250 µm.

Annex C
(informative)

Recommendations related to microbiological characteristics of dehydrated garlic

C.1 Microbiological characteristics

Tests conducted in laboratories representing the producers and the users of this product have shown that the microbiological characteristics given in table C.1 can be considered as acceptable. They are given for information only.

Table C.1 - Microbiological characteristics of dehydrated garlic

Characteristic	Recommended specification		Test method
	m	*M*	
Microorganisms at 30 °C, per gram, max.	10^5	10^6	ISO 4833
Presumptive *Escherichia coli*, per gram, max.	10	10^2	ISO 7251
Yeasts and moulds at 25 °C, per gram, max.	10^3	10^4	ISO 7954
Clostridium perfringens, per gram, max.	10	10^2	ISO 7937
Staphylococcus aureus, in 1 g	Absent		ISO 6888
Salmonella, in 25 g	Absent		ISO 6579

C.2 Interpretation

Take five samples.

a) The lot shall be considered as satisfactory if

- all the results are < *m*, or
- if two results at most are between *m* and 3 *m*.

b) The lot shall be considered as acceptable if

- two results at most are between 3 *m* and *M* (the others being < *m*).

c) The lot shall be considered as not acceptable if

- more than two results out of five are between *m* and *M* (the other being < *m*), or
- if values above *M* are observed.

Annex D
(informative)

Recommendations relating to storage and transport conditions for dehydrated garlic

D.1 Storage

Packages of dehydrated garlic should be stored in covered premises, well protected from the sun, rain and excessive heat. The storeroom should be dry, free from unpleasant odours and protected against the entry of insects and other vermin.

D.2 Transport

The containers should be clearly marked with warning against careless handling which might lead to perforation of the containers. They should be dry and cool and stored well away from ships' boilers and bilges.

Annex E
(informative)

Bibliography

[1] ISO 565:1990, *Test sieves - Metal wire cloth, perforated metal plate and electroformed sheet - Nominal sizes of openings.*

[2] ISO 4833:1991, *Microbiology - General guidance for the enumeration of micro-organisms - Colony count technique at 30 °C.*

[3] ISO 6579:1991, *Microbiology - General guidance on methods for the detection of Salmonella.*

[4] ISO 6888:1993, *Microbiology - General guidance for enumeration of Staphylococcus aureus - Colony count technique*

[5] ISO 7251:1993, *Microbiology - General guidance for enumeration of presumptive Escherichia coli - Most probable number technique*

[6] ISO 7937:1985, *Microbiology - General guidance for enumeration of Clostridium perfringens - Colony-count technique*

[7] ISO 7954:1987, *Microbiology - General guidance for enumeration of yeasts and moulds - Colony-count technique at 25 °C*

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ICS 67.220.10

Descriptors: agricultural products, food products, plant products, dehydrated products, seasonings, spices, vegetables, garlic, classification, specifications, organoleptic properties, chemical properties, marking.

Price based on 10 pages