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**Dehydrated onion (*Allium cepa*
Linnaeus) — Specification**

*Oignon déshydraté (*Allium cepa* Linnaeus) — Spécifications*



Reference number
ISO 5559:1995(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 5559 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 5559:1983), which has been technically revised.

Annex A forms an integral part of this International Standard. Annexes B, C, D and E are for information only.

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Dehydrated onion (*Allium cepa* Linnaeus) — Specification

1 Scope

1.1 This International Standard specifies requirements for dehydrated onion (*Allium cepa* Linnaeus) in its various commercial forms.

NOTE 1 The main commercial forms are given in annex B, for information only.

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

1.3 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 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 928:1980, *Spices and condiments — Determination of total ash.*

ISO 930:1980, *Spices and condiments — Determination of acid-insoluble ash.*

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

ISO 1026:1982, *Fruit and vegetable products — Determination of dry matter content by drying under reduced pressure and of water content by azeotropic distillation.*

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

ISO 5498:1981, *Agricultural food products — Determination of crude fibre content — General method.*

3 Definitions

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

3.1 dehydrated onion: Finished product obtained on drying the bulbs of any onion cultivars (*Allium cepa* Linnaeus) without any bleaching or precooking, the bulbs 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.

4 Requirements

4.1 Organoleptic specifications

4.1.1 General

The dehydrated onion shall conform to the requirements of this International Standard and on rehydration shall regain characteristics similar to those of fresh onion.

4.1.2 Colour

The colour of the dehydrated onion shall be characteristic of the cultivar used, that is, between white

and cream when the product has been prepared from white and yellow onions, and between pink and red when red onions have been used.

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

4.1.3 Odour

The odour of the dehydrated onion shall be characteristic, and free from foreign odours and off odours.

4.1.4 Flavour

Since the flavour of the dehydrated onion can be assessed only after rehydration, apply the method described in annex A, and then proceed with the sensory evaluation.

The flavour shall be characteristic of parboiled onions and free from foreign flavours and off flavours.

4.2 Freedom from insects, moulds, etc.

Dehydrated onion shall be free from living 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 $\times 10$, this fact shall be mentioned in the test report.

In cases of dispute, the contamination of onion 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 the value given in table 1.

4.4 Classification

Dehydrated onion is classified according to its colour, presentation and extraneous matter content in accordance with the requirements given in table 1.

4.5 Chemical requirements

Dehydrated onion shall comply with the requirements specified in table 2.

Table 1 — Classification of dehydrated onion

Characteristic	Type of onion						
	White	Yellow			Red		
	Extra	Extra	1	2	Extra	1	2
Extraneous matter, % (m/m), max.	0,5	1	2	5	1	2	5

Table 2 — Chemical requirements

Characteristic	Requirement	Test method
Moisture content, % (m/m), max.	6	ISO 1026 ¹⁾
Total ash, % (m/m), on dry basis, max.	5	ISO 928
Acid-insoluble ash, % (m/m), dry basis, max.	0,5	ISO 930
Crude fibre content, % (m/m) max.	30	ISO 5498

1) This method to determine the moisture content is used because of the high sugar content of onions; a magnetic stirrer should be used to keep the test portion suspended in the liquid and thus avoid the danger of frothing and caramelization.

5 Sampling

5.1 Dehydrated onion powder, grits, flakes or granules

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 onion slices

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 onion may settle with larger pieces towards the top and smaller pieces towards the bottom.

The principles of the method described in ISO 948 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.

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 onion shall be tested for conformity with the requirements of this International standard using the test methods specified in 4.2, 4.3, 5.1, 5.2 and table 2.

7 Packing and marking

7.1 Packing

Dehydrated onion 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.

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

Annex A

(normative)

Method of rehydration for sensory evaluation of dehydrated onion

A.1 Apparatus

A.1.1 Vessel, of about 500 ml capacity, which will not impart a foreign taste or affect the colour of the preparation.

A.1.2 Dish, made of porcelain or white earthenware.

A.1.3 Stainless steel spoon

A.2 Water

Use natural potable water, as neutral as possible.

A.3 Preparation

Weigh $5 \text{ g} \pm 0,1 \text{ g}$ of the sample and transfer it to the

vessel (A.1.1) containing 250 ml of cold water (A.2). Bring to the boil and immediately turn off the heat source. Leave to simmer in this way for $10 \text{ min} \pm 1 \text{ min}$. Re-adjust the volume to about 250 ml with water (A.2) and pour into the dish (A.1.2).

Immediately carry out sensory evaluation by evaluating the different characteristics in the following order:

- appearance of the cooking water (colour, clarity);
- colour of the preparation;
- odour;
- tenderness (in the case of onion in pieces);
- overall flavour.

Annex B

(informative)

Commercial forms of dehydrated onion

B.1 General information

The various commercial forms of dehydrated onion are all produced by slicing peeled sound onions 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 onion slices or rings

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

B.2.2 Dehydrated grits, flakes or granules

Dehydrated onion passing through a sieve of aperture size¹⁾ from 400 µm to 4 mm according to the case. The particles do not have any definite shape.

B.2.3 Dehydrated onion powder

Dehydrated onion of which 99 % passes through a sieve of aperture size¹⁾ 400 µm.

1) For determining particle size, see ISO 565.

Annex C (informative)

Recommendations related to microbiological characteristics

C.1 Microbiological characteristics

Tests conducted in the laboratories representing the producers and the users of this product have shown that the microbiological characteristics given in tables C.1 and C.2 can be considered as acceptable. They are given for information only.

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 $3m$.
- b) The lot shall be considered as acceptable if:
 - two results at most are between $3m$ 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 others being $< m$), or
 - if values above M are observed.

Table C.1 — Microbiological characteristics of white, yellow and red dehydrated onions, categories Extra and 1

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

Table C.2 — Microbiological characteristics of yellow and red dehydrated onions, category 2

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

Annex D

(informative)

Recommendations relating to storage and transport conditions

D.1 Storage

Packages of dehydrated onion 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 a warning against careless handling which might lead to perforation of the containers. They should be kept dry and cool and stored well away from ships' boilers or 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 6579:1993, *Microbiology — General guidance on methods for the detection of Salmonella.*
- [4] ISO 6888:1983, *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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