



Food and Agriculture
Organization of the
United Nations



World Health
Organization

CODEX
ALIMENTARIUS
INTERNATIONAL FOOD STANDARDS

CODEX ALIMENTARIUS
STANDARD

**STANDARD FOR
DRIED SEEDS –
NUTMEG**
CXS 352-2022



ADOPTED 2022
AMENDED 2025

CXS 352-2022

History of the standard

2025 Amendments

Following decisions taken at the Forty-eighth Session of the Codex Alimentarius Commission in November 2025, amendments were made in Section 4: “Food additives” to align with the *General standard for food additives* (CXS 192-1995).

This publication was redesigned and published in 2025.

Adopted in 2022.

1 Scope

This standard applies to dried seeds, in their dried or dehydrated form as spices, as defined in Section 2.1: “Product definition”, offered for direct consumption, as an ingredient in food processing, or for repackaging if required. It excludes dried seeds and powder for industrial processing.

2 Description

2.1 Product definition

Dried nutmeg is the “seed” of *Myristica fragrans* Houtt. of the Myristicaceae family (Table 1), having reached appropriate degree of development,ⁱ harvested and treated properly post-harvest, by undergoing operations such as stripping, drying, sorting, cracking, grading, and/or grinding before final packaging, and sold in styles as described in Section 2.2: “Styles”.

Table 1: Dried seeds covered by this standard

Common name	Scientific name
Nutmeg	<i>Myristica fragrans</i> Houtt.

Nutmeg has a variety of shapes from ovoid to broadly ovoid, with a variety of sizes. Nutmeg kernels have a slightly wrinkled-like surface. Inshell nutmeg seeds may rattle due to the seed’s shrinkage within the shell in the drying process.

2.2 Styles

Dried nutmeg may be offered in one of the following styles:

- a) whole inshell;
- b) whole shelled;
- c) broken seed (obtained from the seed only); or
- d) ground/powdered seed (obtained from the seed only).

The particle size of ground/powdered styles is determined by contractual agreement between buyer and seller.

2.3 Sizing (optional)

Whole nutmegs (inshell and shelled) may be sized by count per weight, weight, diameter, or in accordance with pre-existing trade practice. When sized, the methods used should be labelled on the package.

ⁱ Having the mature pericarp opened naturally (not opened manually or mechanically) and the red aril known as mace is clearly visible and formed.

3 Essential composition and quality factors

3.1 Compositions

Product as described in Section 2: “Description”.

3.2 Quality factors

3.2.1 Odour, flavour and colour

The products shall have a characteristic odour, flavour and colour, which may vary depending on geoclimatic factors/conditions, and shall be free from any foreign odour, flavour and colour, especially from rancidity and mustiness.

3.2.2 Chemical and physical characteristics

Dried nutmeg shall comply with the requirements specified in Annex I (Table A1: “Chemical characteristics for whole, broken and ground/powdered nutmeg”, and Table A2: “Physical characteristics for whole, broken and ground/powdered nutmeg”). The defects allowed must not affect the general requirements of the product regarding its quality, keeping quality and presentation in the package.

3.2.3 Classification (optional)

When dried nutmeg is traded as classified, the chemical and physical characteristics in Annex I apply as the minimum requirements.

4 Food additives

Anticaking agents listed in Table 3 of the *General standard for food additives* (CXS 192-1995)¹ are acceptable for use in the ground/powdered form of the foods conforming to this standard.

5 Contaminants

The products covered by this standard shall comply with the maximum levels of the *General standard for contaminants and toxins in food and feed* (CXS 193-1995),² the *Code of practice for the prevention and reduction of mycotoxins in spices* (CXC 78-2017)³ and other relevant Codex texts.

The products covered by this standard shall comply with the maximum residue limits for pesticides established by the Codex Alimentarius Commission.

6 Hygiene

It is recommended that the products covered by the provisions of this standard be prepared and handled in accordance with the appropriate sections of the *General principles of food hygiene* (CXC 1-1969),⁴ Annex III: “Spices and dried culinary herbs” in the *Code of hygienic practice for low-moisture foods* (CXC 75-2015),⁵ and other relevant Codex texts.

The products should comply with any microbiological criteria established in accordance with the *Principles and guidelines for the establishment and application of microbiological criteria related to foods* (CXG 21-1997).⁶

7 Weights and measures

Containers shall be as full as practicable without impairment of quality and shall be consistent with a proper declaration of contents for the product.

8 Labelling

The products covered by this standard shall be labelled in accordance with the *General standard for the labelling of pre-packaged foods* (CXS 1-1985).⁷ In particular, the following specific provisions apply:

8.1 Name of the product

The name of the product shall be as described in Section 2.1: “Product definition”.

The name of the product shall include an indication of the style, as described in Section 2.2: “Styles”.

8.2 Country of origin and country of harvest

- a) Country of origin shall be declared.
- b) Country of harvest (optional).
- c) Region of harvest and year of harvest (optional).

8.3 Commercial identification

Size (optional) only for whole inshell and shelled styles.

8.4 Labelling of non-retail containers

The labelling of non-retail containers should be in accordance with the *General standard for the labelling of non-retail containers of foods* (CXS 346-2021).⁸

9 Methods of analysis and sampling

For checking compliance with this standard, the methods of analysis and sampling contained in the *Recommended methods of analysis and sampling* (CXS 234-1999)⁹ relevant to the provisions in this standard shall be used.

Table A1: Chemical characteristics for whole, broken and ground/powdered nutmeg**ANNEX I**

Description	Specification (without shell)		
	Whole	Broken	Ground/ Powdered
Moisture content, % w/w (max)	10.0	10.0	8.0
Total ash on dry basis, % w/w, (max)	3.0	3.0	3.0
Acid insoluble ash, on dry basis, % w/w, (max)	0.5	0.5	0.5
Water-insoluble ash on dry basis, % w/w, (max)	1.5	1.5	1.5
Volatile oil content on dry basis, (ml/100 g) (min)	6.5	6.0	5.0

Table A2: Physical characteristics for whole, broken and ground/powdered nutmeg

Parameters	INSHELL (with shell)		SHELLED SEED (without shell)	
	Whole	Whole	Broken	Ground/ Powdered
Extraneous matter, % w/w (max) ^a	0.5	0.5	0.5	N/A
Foreign matter, % w/w (max) ^b	0.5	0.5	0.5	N/A
Mould visible, % w/w (max) ^c	5	5	N/A	N/A
Insect defiled/infested % w/w (max)	5	5	N/A	N/A
Dead whole insects, count/100 g (max)	4	4	4	N/A
Insect fragments, count/10 g (max)	N/A	N/A	100	N/A
Rodent contamination (hair), count/10 g (max)	N/A	N/A	N/A	1
Live insect, by count/100 g (max)	0	0	0	0
Mammalian and/or other excreta, mg/kg (max)	0	0	11	N/A
Piece of mace, % w/w (max)	0.1	N/A	N/A	N/A
Off size, when sized, % w/w (max)	10	10	N/A	N/A
Broken/damaged (for whole only) % w/w (max)	2	3	N/A	N/A

Notes:

^a Vegetative matter associated with the plant from which the product originates - but is not accepted as part of the final product.

^b Any visible objectionable foreign detectable matter or material not usually associated with the natural components of the spice plant, such as sticks, stones, burlap bagging, metal, etc.

^c Seen by naked eyes (corrected, if necessary, for abnormal vision).

N/A: Not applicable, means that this form of the above product has not been evaluated for this provision, and currently we do not have values. N/A does not mean zero.

Referenced texts

- 1 *General standard for food additives* (CXS 192-1995).
- 2 *General standard for contaminants and toxins in food and feed* (CXS 193-1995).
- 3 *Code of practice for the prevention and reduction of mycotoxins in spices* (CXC 78-2017).
- 4 *General principles of food hygiene* (CXC 1-1969).
- 5 *Code of hygienic practice for low-moisture foods* (CXC 75-2015).
- 6 *Principles and Guidelines for the Establishment and Application of Microbiological Criteria Related to Foods* (CXG 21 1997).
- 7 *General standard for the labelling of pre-packaged foods* (CXS 1-1985).
- 8 *General standard for the labelling of non-retail containers of foods* (CXS 346-2021).
- 9 *Recommended methods of analysis and sampling* (CXS 234-1999).

Codex Alimentarius

A collection of international food standards developed to protect consumer health and ensure fair practices in the food trade. Codex standards are adopted by the Codex Alimentarius Commission, an intergovernmental body with 189 Members, established by FAO and WHO. The standards are recognized by the World Trade Organization as the benchmark for the safety of internationally traded food.

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<https://openknowledge.fao.org/handle/20.500.14283/cd9053en>

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