

PROPOSED DRAFT STANDARD FOR NUTMEG

1. SCOPE

This standard applies to dried seed of nutmeg of *Myristica sp.* of the *Myristicaceae* family offered for industrial food production and direct human consumption or for repackaging if required.

2. DESCRIPTION

2.1. Product definitions

- (i) Nutmeg is the product prepared from “seeds” of *Myristica sp.* of the *Myristicaceae* family having reached appropriate degree of development, harvested and post-harvest treated properly, by undergoing operations such as stripping, drying, sorting, cracking, grading, and/or grinding before the final packaging and storage.
- (ii) Nutmeg has variety of shapes from ovoid to broadly ovoid, with variety of sizes about 2 – 3 cm long and 1.5 – 2 cm broad.

2.2. Styles

Nutmeg may be offered in one of the following styles:

- a) Whole with shell
- b) Whole without shell
- c) Broken
- d) Powder

2.3. Varietal Types

Varietal type is *Myristica fragrans* Houtt., and not applicable other species of nutmeg.

3. ESSENTIAL COMPOSITIONS AND QUALITY FACTORS

3.1. Compositions

Product as defined in Section 2.

3.2. Quality Factors

3.2.1. Flavour and Colour

Nutmeg shall have a characteristic flavour which can vary, depending on geo-climatic factors/conditions. Nutmeg shall be free from any foreign flavour and especially from mustiness. The flavour is bitter, acrid and hot. Nutmeg shall have a characteristic colour varying from light grey to dark brown.

3.2.2. Physical Characteristics

Nutmeg shall comply with the physical requirements specified in Table 1.

Table 1. General Physical Requirements for Nutmeg

Parameters	Requirement
Extraneous matter ¹ content, % mass fraction, max.	0.5
Foreign matter ² content, % mass, max.	0.5
Mould visible ³ , % mass fraction, max.	Nil
Dead insect, insect fragments, rodent contamination, % mass fraction, max.	Nil
Live insect, max.	Nil
Mammalian and or other excreta (mg/kg)	Nil
¹ Vegetative matter associated with the plant from which the product originates - but is not accepted as part of the final product” ² 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. ³ Seen by naked eyes	

3.2.3. Chemical Characteristics

Whole, broken and powder nutmeg shall comply with the chemical requirements specified in Table 2.

4. **Table 2. Chemical Requirements for Whole, Broken and Powder Nutmeg**

Description	Specification		
	Whole	Broken	Powder
Moisture content, % mass fraction, max.	10.0	8.0	8.0
Total ash, % mass fraction (dry basis), max.	3.0	3.0	3.0
Acid-insoluble ash, % mass fraction (dry basis), max.	0.5	0.5	0.5
Water-insoluble ash, % mass fraction (dry basis), max.	1.5	1.5	1.5
Volatile oils content, % mass fraction (dry basis), min.	6.5	6.0	6.0
Calcium content expressed as CaO, % mass fraction (dry basis), max.	0.35	0.35	0.35
Non-volatile ether extract, % mass fraction (dry basis), min.	NA	25.0	25.0

3.2.4. Classification

Nutmeg may be classified in four styles; each has 2 classes/grades according to the Specific Requirements specified in Table 3, 4, 5, and 6.

Table 3. Quality criteria of nutmeg seed with shell

Physical Characteristics	Quality Criteria	
	I ¹	II ²
Qualitative		
Colour	Light to dark brown, glossy	Pale brown
Seed condition	Dense, sounds when shaken	Dense, sounds when shaken
Kernel weight	Kernel weight \geq 63% of whole seed with shell	Kernel weight \leq 63% of whole seed with shell
Shell condition	Whole intact	Cracked/broken/shrivel
I ¹ = Quality class A II ² = Quality class B		

Table 4. Quality criteria of nutmeg seed without shell

Parameter	Quality Criteria	
	I ¹	II ²
Quantitative		
Well-formed seed (%), min.	98	0
Shriveled seed (%), max.	2	100
Number of seed per kg, max.	120	150
Damaged seed ³ (%), max.	5	10
Broken seed ⁴ (%), max.	2	5
Qualitative		
Condition of seed surface	Smooth	Shrivel
Seed Condition	Intact, dense	Intact, dense
I ¹ = Quality class ABCD II ² = Quality class SS		
³ Damaged seed : nutmeg seeds that are broken, discoloured or showing signs of bores as a result of infestation of insects so as to affect the quality of the materials \leq 5% of the whole seed surface		
⁴ Broken seed : cracked or broken seed > 5% whole seed surface		

Table 5. Quality criteria of broken nutmeg seed

Parameter	Quality Class	
	I ¹	II ²
Quantitative		
Half cut (%)	Min.100	Max.5
Broken into 3 – 4 pieces (%), max.	0	90
Broken into 6 – 8 (%), max.	0	5
Damaged particle	5	10
I ¹ = half cut; II ² = premium broken		

Table 6. Quality criteria of nutmeg seed powder

Parameter	Quality Class	
	I	II
Quantitative		
Purity, (%), max.	98	95
Impurities ¹ , max.	2	5
Particle size (mesh), min.	20	20
¹ Impurities are derived from nutmeg seed shell, not applicable to other impurities, seen with naked eyes		

3.3. Classification of “Defectives”

A lot sample that fails to meet one or more of the applicable quality requirements, as set out in Section 3.2 (except those based on sample averages), should be considered as a “defective”.

3.4. Lot Acceptance

A lot should be considered as meeting the applicable quality requirements referred to in Section 3.2 when the number of “defectives”, as defined in Section 3.3, does not exceed the acceptance number of the appropriate sampling plan. For factors evaluated on a sample average, a lot will be considered acceptable if the average meets the specified tolerance, and no individual sample is excessively out of tolerance.

4. FOOD ADDITIVES

No food additive is permitted in the products covered by this standard

5. CONTAMINANTS

- 5.1. The products covered by this Standard shall comply with the maximum levels of the General Standard for Contaminants and Toxins in Food and Feed (CODEX STAN 193-1995).
- 5.2. The products covered by this Standard shall comply with the maximum residue limits for pesticides established by the Codex Alimentarius Commission.

6. FOOD HYGIENE

- 6.1. 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 (CAC/RCP 1-1969), the Code of Hygienic Practice for Spices and Dried Aromatic Herbs (CAC/RCP 42-1995) and other relevant Codex texts such as codes of hygienic practice and codes of practice.
- 6.2. The products should comply with any microbiological criteria established in accordance with the Principles for the Establishment and Application of Microbiological Criteria for Foods (CAC/GL 21-1997).

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

- 8.1. The products covered by the provisions of this Standard shall be labelled in accordance with the *General Standard for the Labelling of Pre-packaged Foods* (CODEX STAN 1-1985). In addition, the following specific provisions apply:

8.2. Name of The Products

- 8.2.1. The name of the product shall be Nutmeg, in dried or dehydrated forms.
- 8.2.2. The nature of the product may include an indication of the style as described in Section 2.2.
- 8.2.3. Origin of produce: country of origin and optionally name of regional, local place of production/trade.
- 8.2.4. Commercial Identification
 - Class/ Grade
 - Net weight
- 8.2.5. Inspection mark (optional)
- 8.2.6. Expired date (optional)

9. LABELING OF NON-RETAIL CONTAINERS

Information for non-retail containers shall be given either on the container or in accompanying documents, except that the name of the product, lot identification, and the name and address of the manufacturer, packer, distributor or importer, as well as storage instructions, shall appear on the container. However, lot identification, and the name and address of the manufacturer, packer, distributor or importer may be replaced by an identification mark, provided that such a mark is clearly identifiable with the accompanying documents.

10. METHODS OF ANALYSIS AND SAMPLING

10.1. Methods of Analysis

Table 7. Methods of Analysis

Provision	Method	Principle	Type
Moisture content	ISO 939:1980	Distillation	I
Total ash	ISO 928:1997	Gravimetry	I
Acid-insoluble ash	ISO 930:1997	Gravimetry	I
Water-insoluble ash	ISO 929:1980	Gravimetry	I
Volatile oils content	ISO 6571:2008	Distillation	I
Calcium content expressed as CaO	ISO 1003:2008	Titration	I
Non-volatile ether extract	ISO 1108:1992	Gravimetry	I
Extraneous matter	ISO 927:2009	Visual examination/ Gravimetry	I
Foreign matter	ISO 927:2009	Visual examination/ Gravimetry	I
Mould visible	ISO 927:2009	Visual examination	IV
Dead insect, insect fragments, rodent contamination	ISO 927:2009	Visual examination	IV
Live insect	ISO 927:2009	Visual examination	IV
Mammalian and or other excreta	Macroanalytical Procedure Manual (MPM) USFDA technical bulletin V.41	Visual examination	IV

10.2. Sampling Plan

10.2.1. Sampling plans are developed depending on the appropriate inspection level

10.2.2. Separate sampling plan for different levels of inspection (1 and 2) are given under Table 8 and 9

Sampling Plans	
The appropriate inspection level is selected as follows:	
Inspection level I	- Normal Sampling
Inspection level II	- Disputes, (Codex referee purposes sample size), enforcement or need for better lot estimate

SAMPLING PLAN 1 (Inspection Level I, AQL = 6.5)

NET WEIGHT IS EQUAL TO OR LESS THAN 1KG (2.2LB)		
Lot Size (N)	Sample Size (n)	Acceptance Number (c)
4.800 or less	6	1
4.801 – 24.000	13	2
24.001 – 48.000	21	3
48.001 – 84.000	29	4
84.001 – 144.000	38	5
144.001 – 240.000	48	6
More than 240.000	60	7
NET WEIGHT IS GREATER THAN 1KG (2.2LB) BUT NOT MORE THAN 4.5 KG (10LB)		
Lot Size (N)	Sample Size (n)	Acceptance Number (c)
2.400 or less	6	1
2.401 – 15.000	13	2
15.001 – 24.000	21	3
24.001 – 42.000	29	4
42.001 – 72.000	38	5
72.001 – 120.000	48	6
More than 120.000	60	7
NET WEIGHT GREATER THAN 4.5 KG (10LB)		
Lot Size (N)	Sample Size (n)	Acceptance Number (c)
600 or less	6	1
601 – 2.000	13	2
2.001 – 7.200	21	3
7.201 – 15.000	29	4
15.001 – 24.000	38	5
24.001 – 42.000	48	6
More than 42.000	60	7

SAMPLING PLAN 2
(Inspection Level II, AQL = 2.5)

NET WEIGHT IS EQUAL TO OR LESS THAN 1KG (2.2LB)		
Lot Size (N)	Sample Size (n)	Acceptance Number (c)
4.800 or less	6	1
4.801 – 24.000	13	2
24.001 – 48.000	21	3
48.001 – 84.000	29	4
84.001 – 144.000	38	5
144.001 – 240.000	48	6
More than 240.000	60	7
NET WEIGHT IS GREATER THAN 1KG (2.2LB) BUT NOT MORE THAN 4.5 KG (10LB)		
Lot Size (N)	Sample Size (n)	Acceptance Number (c)
2.400 or less	6	1
2.401 – 15.000	13	2
15.001 – 24.000	21	3
24.001 – 42.000	29	4
42.001 – 72.000	38	5
72.001 – 120.000	48	6
More than 120.000	60	7
NET WEIGHT GREATER THAN 4.5 KG (10LB)		
Lot Size (N)	Sample Size (n)	Acceptance Number (c)
600 or less	6	1
601 – 2.000	13	2
2.001 – 7.200	21	3
7.201 – 15.000	29	4
15.001 – 24.000	38	5
24.001 – 42.000	48	6
More than 42.000	60	7