

SRI LANKA STANDARD 113: 2019
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**SPECIFICATION FOR NUTMEG AND
MACE, WHOLE, PIECES OR GROUND**
(Second Revision)

SRI LANKA STANDARDS INSTITUTION

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SLS 113: 2019

Gr. 6

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Sri Lanka Standard
SPECIFICATION FOR NUTMEG AND MACE, WHOLE, PIECES OR GROUND
(Second Revision)

FOREWORD

This Sri Lanka Standard was approved by the Sectoral Committee on Food Products and was authorized for adoption and publication as a Sri Lanka Standard by the Council of the Sri Lanka Standards Institution on 2019-08-07.

Nutmeg and mace are the dried products of the same tree, *Myristica fragrans*, Houtt. Nutmeg is the mature dried seed and mace is the dried aril, a net like outgrowth from the base of the shell. Sri Lanka nutmeg is in both shelled and unshelled forms as well as in ground form.

Sri Lanka Standard on nutmeg and mace was originally issued in 1971 and revised in 1980. This second revision is issued to gather the two parts presented separately in previous standard into the same scope and to revise the definitions as well as physical and chemical parameters.

This Standard is subject to the provisions of the Food Act No. 26 of 1980 and the regulations framed thereunder.

For the purpose of deciding whether a particular requirement of this Standard is complied with the final value, observed or calculated, expressing the results of a test or an analysis shall be rounded off in accordance with **SLS 102**. The number of significant places retained in the rounded off value shall be the same as that of the specified value in this Standard.

In the preparation of this Standard, valuable assistance derived from the following publication is gratefully acknowledged.

ISO 6577: 2002 Nutmeg, whole or broken and mace, whole or in pieces (*Myristica fragrance* Houtt.) - Specification

1 SCOPE

This Standard specifies the requirements and methods of sampling and test for nutmeg, whole, broken or ground and mace, whole or in pieces or ground, obtained from the nutmeg tree (*Myristica fragrance* Houtt.).

2 REFERENCES

SLS	102	Rules for rounding off numerical values
SLS	143	Code of practice for general principles of food hygiene
SLS	124	Test sieves
SLS	186	Methods of test for spices and condiments
		Part 2: Determination of extraneous matter and foreign matter content
		Part 3: Determination of total ash
		Part 4: Determination of acid-insoluble ash

		Part 5: Determination of moisture content – entrainment method
		Part 8: Determination of filth
		Part 11: Determination of volatile oil content – hydrodistillation method
		Part 12: Determination of degree of fineness of grinding – Hand sieving method (Reference method)
SLS	310	Methods of sampling of spices and condiments
SLS	467	Code of practice for labeling of prepackaged foods
SLS	809	Recommended shipping marks for goods
SLS	910	Maximum residue limits for pesticides in food
SLS	962	Method for determination of aflatoxin in foods
SLS	1327	Code of practice for spices and other dried aromatic plants

3 DEFINITIONS

For the purpose of this Standard the following definitions shall apply:

3.1 nutmeg fruit: Fruit comprising a green to pale yellow pericarp (depending on its ripeness), aril (mace) net like outgrowth from the base of the shell, a woody shell and seed (Figure 1 in Appendix E)

3.2 aril: Fleshy or net like outgrowth surrounding seeds and attached to the base of the shell

3.3 mace, whole or in pieces: Irregular shaped, matured, dried aril of the ripe nutmeg fruit (Figure 2 in Appendix E)

3.4 nutmeg, whole or broken: Shelled or unshelled seed of the dried, ripe fruit of the nutmeg (Figure 3 in Appendix E)

3.5 ground nutmeg: Crushed or ground shelled nutmeg

3.6 mouldy nutmeg or mace: Nutmeg or mace, which has mould visible to the naked eye

3.7 ground mace: Crushed or ground dried mace

3.8 insect infested/ wormy nutmeg or mace: Nutmeg or mace, which has insects/ worms or has been attacked by insects/ worms causing damages visible to the naked eye

3.9 extraneous and foreign matter: Matter other than nutmeg and mace

4 TYPES AND GRADES

4.1 Nutmeg types

4.1.1 *Unshelled nutmeg* (nutmeg with shell)

Unshelled nutmeg shall be of three grades as follows:

- a) Grade 1
- b) Grade 2 (Fair Average Quality)
- c) BWP (Broken Wormy Punky)

4.1.2 *Shelled nutmeg* (nutmeg without shell)

Shelled nutmeg shall be of four grades as follows:

- a) Standard quality (large)
- b) Standard quality (medium)
- c) Standard quality (small)
- d) BWP (broken wormy punky)

4.1.3 *Ground nutmeg*

4.2 Mace

Mace shall be of three grades as follows:

- 4.2.1** *Special grade*
- 4.2.2** *Grade 1*
- 4.2.3** *Grade 2* (Fair Average Quality)
- 4.2.4** *Ground mace*

5 REQUIREMENTS

5.1 Hygiene

The product shall be processed, packaged, stored and distributed in accordance with the hygienic conditions prescribed in **SLS 143** and **SLS 1327**.

5.2 Odour and flavour

The odour of nutmeg and mace shall be characteristic and aromatic, that of mace being more pronounced. Nutmeg and mace shall have a bitter and acrid flavour.

5.3 Colour

5.3.1 *Nutmeg*

The colour shall range from dark brown (unshelled) to light brown (shelled).

5.3.2 *Mace*

The colour shall range from pale yellow to brownish red.

5.4 Moulds, insect infestation and animal excreta

Nutmeg and mace shall be free from mould growth, living and dead insects/ worms, insect/ worm fragments and animal excreta, visible to the naked eye, or using the required magnifying instrument. If the magnification exceeds $\times 10$, this fact shall be mentioned in the test report. The proportion of insect/ worm damaged matter shall not exceed 1 per cent (*m/m*). In case of disputes, the method given in **Part 8** of **SLS 186** shall be applied.

5.5 Extraneous and foreign matter

5.5.1 Whole nutmeg and mace

Extraneous and foreign matter in nutmeg and mace shall not be more than 1.0 per cent by mass when determined in accordance with **Part 2** of **SLS 186**.

5.5.2 Ground nutmeg and mace

The product shall be examined by microscope and shall not contain any morphological extraneous and foreign matter.

5.6 Particle size

Dried nutmeg or mace shall be sufficiently ground such that the 90 per cent of the material shall pass through a sieve of 500 μm aperture size and none shall retain on a sieve of 600 μm aperture size conforming to **SLS 124** when determined by the method specified in **Part 12** of **SLS 186**.

5.7 Additives

The product shall be free from preservatives, colouring and flavouring substances.

5.8 Other requirements

5.8.1 Whole or broken nutmeg

Nutmeg, whole or broken shall comply with the requirements specified in Table 1, when tested according to the method given in Column 10 of the table.

TABLE 1- Requirements for nutmeg, whole or broken

Sl No	Characteristic	Requirement							Method of test
		Unshelled			Shelled				
		Grade 1	Grade 2	BWP	Standard quality			BWP	
(1)	(2)	(3)	(4)	(5)	Large	Medium	Small	(9)	(10)
i)	Number of nuts per kg	160 max	161 to 260	NS*	220 max	220 to 275	276 min	NS*	Appendix A

ii)	Nuts with rattling sound, per cent by count, min.	80	70	30	NA	NA	NA	NA	Appendix B
iii)	Shells and pieces of nutmeg, per cent by mass, max.	0.5	0.5	NS	NP	NP	NP	NP	Appendix C
iv)	Moisture, per cent by mass, max.	10.0	10.0	10.0	10.0	10.0	10.0	10.0	SLS 186: Part 5
v)	Volatile oil, on dry basis, ml/ 100 g, min.	6.5	6.5	6.5	6.5	6.5	6.5	6.5	SLS 186: Part 11

* BWP shall consist predominantly of broken and/ or wormy and/ or rattling nutmegs

NOTES

1. NS: Not specified
2. NA: Not applicable
3. NP: Not permitted

5.8.2 Mace, whole or pieces

Mace, whole or in pieces shall comply with the requirements specified in Table 2, when tested according to the method given in Column 6 of the table.

TABLE 2 - Requirements for mace, whole or pieces

SI No (1)	Characteristic (2)	Requirement			Method of test (6)
		Special (3)	Grade 1 (4)	Grade 2 (5)	
i)	Moisture, per cent by mass, max.	8.0	8.0	8.0	SLS 186: Part 5
ii)	Total ash on dry basis, per cent by mass, max.	4.0	4.0	4.0	SLS 186: Part 3
iii)	Acid insoluble ash on dry basis, per cent by mass, max.	0.5	0.5	0.5	SLS 186: Part 4
iv)	Volatile oil, on dry basis ml/ 100 g, min.	7.5	7.5	5.0	SLS 186: Part 11
v)	Broken pieces which are less than 1/4 th of the whole mace, per cent by mass, max.	5.0	NS	NS	Appendix D

NOTE

NS: Not specified

5.8.3 Ground nutmeg and mace

Ground nutmeg shall comply with the requirements specified in the Table 3, when tested according to the method given in Column 4 of the table.

TABLE 3 – Requirements for ground nutmeg and mace

Sl No (1)	Characteristic (2)	Requirement (3)	Method of test (4)
i)	Moisture, per cent by mass, max.	8.0	SLS 186: Part 5
ii)	Total ash on dry basis, per cent by mass, max.	3.0	SLS 186: Part 3
iii)	Acid insoluble ash on dry basis, per cent by mass, max.	0.5	SLS 186: Part 4
iv)	Volatile oil, on dry basis ml/ 100 g, min.	5.0	SLS 186: Part 11

6 CONTAMINANTS**6.1 Aflatoxin**

The product shall not exceed the level 5.0 µg/ kg for aflatoxin B₁ and 10.0 µg/ kg for total aflatoxin, when determined according to the method given in **SLS 962**.

6.2 Pesticide residues

The product shall be cultivated and processed with special care under good agricultural practices and good manufacturing practices (**SLS 143** and **SLS 1327**), so that residues of those pesticides which may be required in the production do not remain or if practically unavoidable are reduced to the minimum level to comply with the maximum tolerable limits specified in **SLS 910**.

NOTE

It is not necessary to carry out this determination as a routine for all the samples. This should be tested in case of dispute and when required by the purchaser or vendor or when there is any suspicion of pesticide contamination

6.3 Other contaminants

The product shall not contain contaminants or undesirable substances (residues of fumigants, mineral oils) in amounts which may represent hazards to the health of the consumer.

7 PACKAGING

7.1 Nutmeg and mace shall be packaged in suitable, clean and sound containers/ bags made of food grade materials which shall be strong enough to withstand pressure in handling and also which shall not affect the product and protect the product from sunlight, and shall not allow the ingress of moisture and/ or egress of volatile matter.

8 MARKING AND/ OR LABELLING

8.1 The following shall be marked or labeled legibly and indelibly on each package or container:

- a) The common name of the product as “WHOLE NUTMEG” or “GROUND NUTMEG” or “MACE”;
- b) Grade and type;
- c) Brand name or trademark if any;
- d) Net mass in “g” or “kg”;
- e) Name and address of the packer;
- f) Name and address of the importer or trader;
- g) Batch or code number or decipherable code marking;
- h) Date of packaging;
- j) Year of harvest (in case of bulk packages);
- k) Date of expiry;
- m) Country of origin, in case of imported products; and
- n) Instructions for storage and handling, if any.

8.2 Marking and labelling shall be in accordance with the requirements given in **SLS 467**.

8.3 Marking on packages intended for export shall be in accordance with **SLS 809**.

9 SAMPLING

Sampling shall be carried out in accordance with **SLS 310**.

10 METHODS OF TESTS

Nutmeg and mace shall be tested for ascertaining conformity of the material to the requirements of this Standard by the methods of test given in **Part 2, Part 3, Part 4, Part 5, Part 8, Part 11** and **Part 12** of **SLS 186** and **Appendices A, B, C and D** of this Standard.

11 CRITERIA FOR CONFORMITY

A lot shall be declared as conforming to this standard if the final lot sample satisfies all the requirements given in **Clauses 5, 6, 7 and 8**.

**APPENDIX A
DETERMINATION OF NUMBER OF NUTS**

A.1 Count the number of nutmegs in a lot of 500 g drawn from the final sample, multiply this number by two. Express the results as the number of nuts per kilogram.

**APPENDIX B
DETERMINATION OF NUTS WITH RATTLING SOUND**

B.1 Draw 50 nutmegs from the final sample, examine them individually for rattling by shaking. Note the number that rattle when shaken and report the result as a percentage.

**APPENDIX C
DETERMINATION OF SHELLS AND PIECES OF NUTMEG**

C.1 Weigh 500 g of nutmeg from the final sample and separate shells and pieces in the sample. Weigh the collected shells and pieces of nutmeg and express the results as a percentage.

**APPENDIX D
DETERMINATION OF BROKEN PIECES OF MACE**

D.1 Weigh 200 g of mace from the final sample and separate broken pieces which are less than 1/4th of the whole mace. Weigh the collected broken mace pieces and express the result as a percentage.

APPENDIX E
DIAGRAMATIC REPRESENTATION OF NUTMEG AND MACE



Figure 1: Nutmeg fruit



Figure 2: Mace



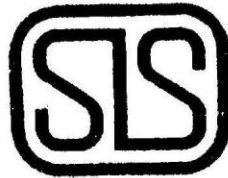
Figure 3: Nutmeg, whole or broken



SLS CERTIFICATION MARK

The Sri Lanka Standards Institution is the owner of the registered certification mark shown below. Beneath the mark, the number of the Sri Lanka Standard relevant to the product is indicated. This mark may be used only by those who have obtained permits under the SLS certification marks scheme. The presence of this mark on or in relation to a product conveys the assurance that they have been produced to comply with the requirements of the relevant Sri Lanka Standard under a well designed system of quality control inspection and testing operated by the manufacturer and supervised by the SLSI which includes surveillance inspection of the factory, testing of both factory and market samples.

Further particulars of the terms and conditions of the permit may be obtained from the Sri Lanka Standards Institution, 17, Victoria Place, Elvitigala Mawatha, Colombo 08.



SRI LANKA STANDARDS INSTITUTION

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In the International field the Institution represents Sri Lanka in the International Organization for Standardization (ISO), and participates in such fields of standardization as are of special interest to Sri Lanka.