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मानक



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IS 4404 (2010): Spices and Condiments - Cloves, Whole and Ground [FAD 9: Spices and Condiments]



“ज्ञान से एक नये भारत का निर्माण”

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Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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भारतीय मानक

मिर्च एवं मसाले — लौंग, साबुत और पिंसी — विशिष्टि
(तीसरा पुनरीक्षण)

Indian Standard

**SPICES AND CONDIMENTS — CLOVES, WHOLE
AND GROUND — SPECIFICATION**
(*Third Revision*)

ICS 67.220.10

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

FOREWORD

This Indian Standard (Third Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Spices and Condiments Sectional Committee had been approved by the Food and Agriculture Division Council.

Originally two separate Indian Standards, IS 4404 and IS 4405 were issued on specification for cloves whole and cloves powder respectively in 1967. In the first revision of IS 4404 in 1975, the requirements of cloves powder in IS 4405 were incorporated in IS 4404. Consequently, IS 4405 was withdrawn. In the second revision in 1992, the requirements for cloves, whole and ground were updated to align with ISO Standard on the subject, ISO 2254 : 1980 'Cloves, whole and ground (powdered) — Specification'. In this third revision, the requirements have been updated to align with the standards for cloves, whole and ground, laid down under the *Prevention of Food Adulteration Rules, 1955* and also with the revised ISO Standard published in 2004. The categorization of cloves, whole, into three grades has been removed and only a single specification has been prescribed for cloves, whole, in this revision.

Cloves (*LAUNG*) is one of the important minor spices. It is widely used for medicinal purposes as it contains an essential oil which possesses antiseptic value. The culinary value of cloves as a seasoning agent is also well established.

Due consideration has also been given to the *Prevention of Food Adulteration Rules, 1955* and the *Standards of Weights & Measures (Packaged Commodities) Rules, 1977*. However, this standard is subject to restrictions imposed under these rules, wherever applicable.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

**SPICES AND CONDIMENTS — CLOVES, WHOLE
AND GROUND — SPECIFICATION**

(Third Revision)

1 SCOPE

1.1 This standard prescribes the requirements and methods of test for whole and ground cloves [*Syzygium aromaticum* (L.) Merril et L. M. Perry].

1.2 This standard also covers the recommendation relating to the storage and transport conditions for cloves (*see* Annex A).

2 REFERENCES

The following standards contain provisions which through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below:

<i>IS No.</i>	<i>Title</i>
1070 : 1992	Reagent grade water (<i>third revision</i>)
1797 : 1985	Methods of test for spices and condiments (<i>second revision</i>)
5887 (Part 3) : 1999/ISO 6579 : 1993	Methods for detection of bacteria responsible for food poisoning: Part 3 General guidance on methods for the detection of <i>Salmonella</i> (<i>second revision</i>)
13145 : 1993	Spices and condiments — Methods of sampling (<i>first revision</i>)
14216 : 1994	Code for hygienic conditions for spices and condiments processing units

3 TERMINOLOGY

3.1 Whole Clove — Clove, whole, is the floral bud, harvested before blooming, and dried, of *Syzygium aromaticum* (L.) Merr. et L. M. Perry (*see* Fig. 1). The lower portion of the clove consists of a slightly flattened four sided hypanthium and exudes oil when indented with a finger nail. The hypanthium contains in its upper part two loculi containing numerous ovules and is crowned by four acute divergent sepals surrounding a dome-shaped head consisting of four paler unexpanded

membranous imbricate petals enclosing numerous incurved stamens and a single stiff erect style.

3.2 Headless Clove — Clove consisting of only the receptacle and sepals and which has lost the dome-shaped head (*see* Fig. 2).

3.3 Khoker Clove — Clove which has undergone fermentation as a result of incomplete drying, as evidenced by its pale brown colour, whitish mealy appearance and, often, wrinkled surface (*see* Fig. 3).

3.4 Mother Clove — Fruit of the clove tree (*Syzygium aromaticum*), which is in the form of an ovoid brown berry surmounted by four incurved sepals (*see* Fig. 3).

3.5 Clove Stem — Dry fragment of the stalk of the clove (*see* Fig. 4).

3.6 Ground (Powdered) Clove

Powder obtained by grinding cloves without any addition.

4 REQUIREMENTS**4.1 Odour and Flavour**

Whole or ground (powdered) cloves shall have a strong aromatic, spicy odour and characteristic flavour. They shall be free from off-flavours, including mustiness.

4.2 Colour

4.2.1 Whole cloves shall be of a reddish-brown to blackish-brown colour.

4.2.2 Ground (powdered) cloves shall be of a brown colour with a violet tinge.

4.3 Absence of Moulds, Insects, etc

The cloves, whole or ground (powdered), shall be free from living insects and moulds, and shall be practically free from dead insects, insect fragments and rodent contamination visible to the naked eye (corrected if necessary, for abnormal vision), with such magnification as may be necessary in any particular case. If the magnification exceeds $\times 10$, this fact shall

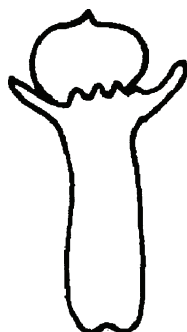


FIG. 1 WHOLE CLOVE

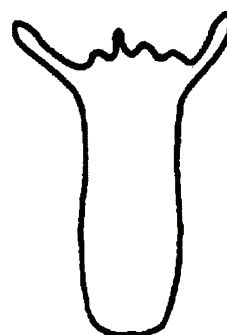


FIG. 2 HEADLESS CLOVE



FIG. 3 MOTHER CLOVE

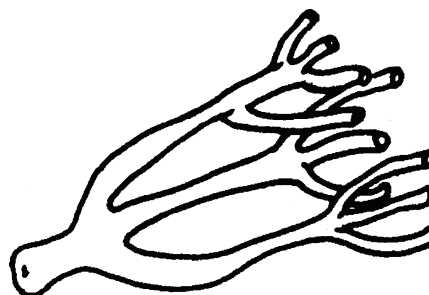


FIG. 4 CLOVE STEM

be stated in the test report. The proportion of insect damaged cloves shall not exceed 2 percent (*m/m*).

4.4 Extraneous Matter

Extraneous matter in cloves, whole, includes the following:

- a) Dirt, dust, mud, stones, pieces of wood, etc;
- b) All the particles originating from the plant other than the cloves, tendrils and peduncles; and
- c) Exhausted cloves.

The proportion of extraneous matter in cloves, when determined by the method specified in 4 of IS 1797, shall not exceed 1.0 percent (*m/m*).

4.5 Cloves, whole and ground, shall also comply with the requirements given in Table 1.

4.6 Cloves, whole and ground, shall be manufactured and packed under hygienic conditions (*see* IS 14216).

4.7 Pesticide residues and metallic contaminants in the product shall not exceed the limits as prescribed in the *Prevention of Food Adulteration Act, 1954* and the Rules made thereunder.

5 PACKING AND MARKING

5.1 Packing

Cloves, whole and ground, shall be packed in clean,

sound and dry container made of metal, glass, food-grade polymers, wood or jute bags. The wooden boxes or jute bags shall be suitably lined with moisture-proof lining which does not impart any foreign smell to the product. The packing material shall be free from any fungal or insect infestation and should not impart any foreign smell. Each container shall be securely closed and sealed.

5.2 Marking

The following particulars shall be legibly and indelibly marked or labelled on each container of cloves, whole and ground:

- a) Name of the material, trade-name or brand name, if any;
- b) Name and address of the manufacturer/packer;
- c) Batch or Code number;
- d) Net mass;
- e) Date of packing;
- f) Year of harvest;
- g) Best before (month/year); and
- h) Any other marking as required under the *Standards of Weights and Measures (Packaged Commodities) Rules, 1977* and the *Prevention of Food Adulteration Rules, 1955*.

6 SAMPLING

Representative samples of the material shall be drawn and tested for conformity to this standard as prescribed in IS 13145.

7 METHODS OF TEST

The samples of cloves, whole and ground, shall be tested for ascertaining conformity of the material to

the requirements in accordance with the relevant clauses given in col 5 of Table 1.

8 QUALITY OF REAGENTS

Unless specified otherwise, pure chemicals and distilled water (*see* IS 1070) shall be employed in tests.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities which effect the results of analysis.

Table 1 Requirements for Whole/Ground Cloves
(Clauses 4.5 and 7)

Sl No.	Requirement	Whole	Ground	Method of Test, Ref to
(1)	(2)	(3)	(4)	(5)
i)	Headless cloves, percent by mass, <i>Max</i>	2.0	—	Physical separation and weighing
ii)	Tendrils, mother cloves, percent by mass, <i>Max</i>	2.0	—	Physical separation and weighing
iii)	Khoker cloves, percent by mass, <i>Max</i>	2.0	—	Physical separation and weighing
iv)	Moisture content, percent by mass, <i>Max</i>	10.0	10.0	9 of IS 1797
v)	Volatile oil on dry basis (ml/100 g), <i>Min</i>	17.0	16.0	15 of IS 1797
vi)	Total ash content on dry basis, percent by mass, <i>Max</i>	—	7.0	6 of IS 1797
vii)	Acid insoluble ash on dry basis, percent by mass, <i>Max</i>	—	0.5	8 of IS 1797
viii)	Crude fibre, percent by mass, <i>Max</i>	—	13.0	13 of IS 1797
ix)	<i>Salmonella</i> (in 25 g)	Absent	Absent	IS 5887 (Part 3)

ANNEX A

(Clause 1.2)

RECOMMENDATIONS FOR STORAGE AND TRANSPORTATION OF CLOVES

A-1 The containers of cloves should be stored in covered premises, well protected from the sun, rain and excessive heat.

A-2 The store room should be dry, free from objectionable odours, and proofed against entry of insects and vermin. The ventilation should be controlled so as to give good ventilation under dry conditions and to be fully closed under damp

conditions. In a storage warehouse, suitable facilities should be available for fumigation.

A-3 The containers should be so handled and transported that they are protected from the rain, from the sun or other source of excessive heat, from objectionable odours and from cross-infestation, especially in the holds of ships.

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Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110 002
Telephones : 2323 0131, 2323 3375, 2323 9402 Website: www.bis.org.in

Regional Offices:

	Telephones
Central : Manak Bhavan, 9 Bahadur Shah Zafar Marg NEW DELHI 110002	{ 2323 7617 2323 3841
Eastern : 1/14 C.I.T. Scheme VII M, V. I. P. Road, Kankurgachi KOLKATA 700054	{ 2337 8499, 2337 8561 2337 8626, 2337 9120
Northern : SCO 335-336, Sector 34-A, CHANDIGARH 160022	{ 60 3843 60 9285
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