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Pepper (*Piper nigrum* Linnaeus), whole or ground — Specification —

Part 2 : White pepper

*Poivre (*Piper nigrum* Linnaeus), entier ou en poudre — Spécifications —
Partie 2 : Poivre blanc*

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Reference number
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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 approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 959-2 was prepared by Technical Committee ISO/TC 34, *Agricultural food products*.

This first edition of ISO 959-2, together with ISO 959-1 : 1989, cancels and replaces Recommendation ISO/R 959: 1969, of which the two parts constitute a technical revision.

ISO 959 consists of the following parts, under the general title *Pepper (Piper nigrum Linnaeus), whole or ground — Specification*:

- *Part 1: Black pepper*
- *Part 2: White pepper*

Annex A forms an integral part of this part of ISO 959. Annexes B and C are for information only.

Pepper (*Piper nigrum* Linnaeus), whole or ground — Specification —

Part 2 : White pepper

1 Scope

This part of ISO 959 specifies requirements for white pepper (*Piper nigrum* Linnaeus) (see ISO 676), whole or ground, at the following commercial stages:

- semi-processed (SP) pepper;
- processed (P) pepper.

When the term "white pepper" is used alone, it means that the specification applies to both types, without distinction.

This part of ISO 959 does not apply to white pepper categories called "light".

NOTE — Specifications of black pepper are given in ISO 959-1.

Recommendations relating to storage and transport are given in annex B. The main producing countries and current trademarks of categories of white pepper are listed in annex C.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 959. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 959 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 676 : 1982, *Spices and condiments — Nomenclature — First list*.

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 939 : 1980, *Spices and condiments — Determination of moisture content — Entrainment method*.

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

ISO 1108 : 1980, *Spices and condiments — Determination of non-volatile ether extract*.

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

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

ISO 5564 : 1982, *Black pepper and white pepper, whole or ground — Determination of piperine content — Spectrophotometric method*.

ISO 6571 : 1984, *Spices, condiments and herbs — Determination of volatile oil content*.

3 Definitions

For the purposes of this part of ISO 959, the following definitions apply.

3.1 black pepper: Berry of *Piper nigrum* Linnaeus, having an unbroken pericarp.

3.2 white pepper: Berry of *Piper nigrum* Linnaeus from which the outer pericarp has been removed (see 4.1.1).

3.3 white pepper, semi-processed: Pepper that has undergone a partial treatment by the producing country before being exported and which meets the requirements of this part of ISO 959.

3.4 white pepper, processed: Pepper that has undergone a treatment (cleaning, drying, preparation, grading, etc.) by the producing country before being exported and which meets the requirements of this part of ISO 959.

3.5 white pepper, ground: White pepper obtained by grinding whole white pepper berries without any added matter (for example whitening agents).

3.6 black berry: Berry of dark colour generally consisting of a black pepper berry the pericarp of which has not been fully removed.

3.7 broken berry: Berry that has been separated in two or more pieces.

3.8 extraneous matter: All materials other than white pepper berries, irrespective of whether they are of vegetable (e.g. stems and leaves) or mineral (e.g. sand) origin. Black and broken berries are not considered as extraneous matter.

4 Requirements

4.1 Description

4.1.1 Whole white pepper is obtained in two ways as follows:

- from black pepper of *Piper nigrum* Linnaeus, using the whole dry berry generally picked before complete ripening and removing the outer pericarp, with or without preliminary soaking in water. If necessary, drying is carried out afterwards;
- from the whole ripe berry of *Piper nigrum* Linnaeus, removing the outer pericarp by the same procedure described above.

Berries of white pepper are almost spherical grains of diameter 3 mm to 5 mm, showing a smooth surface slightly flattened at one pole and a small protuberance at the opposite.

Berries generally have vertical scores going from one pole to the other, of a slightly darkened colour. The colour of white pepper varies from matt grey-brownish to pale ivory white.

4.1.2 Ground white pepper is obtained by grinding whole white pepper, without any added matter.

See figure 1 for an identification of the anatomical constitution of white pepper berries.

4.2 Odour and flavour

The flavour of white pepper when it is ground shall be characteristic, slightly sharp and very aromatic. The product shall be free from extraneous odours and flavours, including mouldy and rancid odours.

NOTE — The appearance of berries has no direct relation to their flavour. Small berries can be more aromatic than berries of better appearance or larger size.

4.3 Absence of mould, insects, etc.

White pepper shall be free from mould and living insects and practically free from dead insects, insect fragments and rodent contamination visible to the naked eye (corrected, if necessary, for abnormal vision) or with magnification if necessary in certain specific cases. If the magnification used is greater than $\times 10$, this fact shall be mentioned in the test report. Furthermore, in the case of ground white pepper, impurities shall be determined according to the method described in ISO 1208.

4.4 Physical characteristics

Whole white pepper shall meet the requirements given in table 1.

Table 1 — Requirements for physical characteristics of whole white pepper

Characteristic	Requirements		Reference test method
	Pepper SP	Pepper P	
Extraneous matter, % (m/m) max.	1,0	0,8	ISO 927
Broken berries, % (m/m) max.	4,0	3,0	Physical separation and weighing
Black berries, % (m/m) max.	15 ¹⁾	10 ¹⁾	Physical separation and weighing
Bulk density, g/l, min.	600	600	Annex A

1) These values do not apply to "Samarinda" pepper, which always contains 20 % black berries.

4.5 Chemical characteristics

The white pepper shall meet the requirements given in table 2.

5 Sampling

White pepper shall be sampled using the method specified in ISO 948.

Samples of whole white pepper shall be ground so that all material passes through a sieve with apertures of size 1 mm. The material thus ground shall be used for determining the characteristics given in table 2.

Table 2 — Requirements concerning chemical characteristics of white pepper, whole or ground

Characteristic	Requirements		Reference test method
	Pepper P and SP	Ground pepper	
Moisture content, % (m/m) max.	15,0	15,0	ISO 939
Total ash, % (m/m) max., on dry basis	3,5	3,5	ISO 928
Non-volatile ether extract, % (m/m) min., on dry basis	6,5	6,5	ISO 1108
Volatile oils, % (ml/100 g) min., on dry basis	1,0	0,7 ¹⁾	ISO 6571
Piperine content, % (m/m) min.	4,0	4,0	ISO 5564
Acid-insoluble ash, % (m/m) max., on dry basis	—	0,3	ISO 930
Crude fibre, insoluble index, % (m/m) max., on dry basis	—	6,5	ISO 5498

1) The volatile oil content should be determined immediately after grinding.

6 Test methods

The white pepper samples shall be analysed to ensure conformity with the requirements of this part of ISO 959, following the methods described in International Standards referred to in tables 1 and 2, and in annex A of this part of ISO 959.

7 Packing and marking

7.1 Packing

Whole white pepper and ground white pepper shall be packed in clean, sound, dry packages, made of a material which does not affect the product.

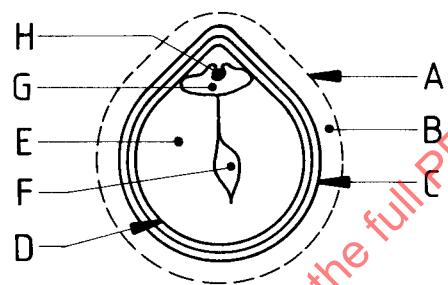
7.2 Marking

The following particulars shall be marked on each package or on a label attached to the package:

- a) name of the product and the trade-name, if any;
- b) name and address of the manufacturer or packer, or trade-mark;
- c) code or batch number;
- d) net mass;
- e) grade of the product (if classified) according to national standards;
- f) producing country;
- g) destination by the name of port or town;
- and, if necessary,
- h) any other information requested by the buyer, such as year of harvest and date of packaging;
- i) reference to this part of ISO 959.

7.3 Labelling

In the case of small packages intended for retail sale, labelling shall be signed and dated according to regulations in force concerning labelling of food commodities.



Pericarp (external covering removed)	{	B — internal mesocarp	A — liber-ligneous bundle (removed)
		C — endocarp	
Seed	{	D — seminal teguments	
		E — perisperm	
		F — seed cavity, more or less developed	
		G — proper albumen	
		H — embryo of two cotyledons	

Figure 1 — Anatomical constitution of white pepper berry

Annex A (normative)

Whole white pepper: Determination of apparent bulk density

A.1 Scope

This annex specifies a method of determination of the apparent bulk density of whole white pepper.

A.2 Principle

Weighing a volume, exactly measured, of 1 l of pepper.

A.3 Apparatus¹⁾

A.3.1 Apparatus for measuring bulk density, consisting of

- **cylinder**, of capacity 1 l or a cylinder of greater capacity, but equipped with apparatus allowing levelling of the product to the 1 l level;
- **hopper**, of capacity greater than 1 l and equipped with a gate;
- **device**, for fixing the hopper above the cylinder at a certain distance, to allow free fall of the product into the cylinder from a constant height.

Figure A.1 shows an example of such apparatus.

A.3.2 Balance

A special balance allowing the cylinder to be hooked to one side of the beam and equipped on the other side with a suitable plate serving as tare.

A.4 Procedure

A.4.1 Determination

Weigh the empty cylinder, if necessary.

Place the cylinder on a horizontal plane and set the hopper on it with a fixing device.

Pour the pepper into the hopper until it is filled. Open the gate and allow the pepper berries to flow freely into the cylinder until

the level slightly exceeds the upper level or the 1 l level, according to the apparatus used.

Level the pepper, according to the case, to the upper level of the cylinder with a ruler, or to the 1 l level with a suitable device with which the cylinder is equipped. (In the latter case remove the excess berries.)

Remove the hopper and its support, then weigh the cylinder filled with the pepper.

A.4.2 Number of determinations

Carry out three determinations.

A.5 Expression of results

A.5.1 Method of calculation

The apparent bulk density of pepper, expressed in grams per litre, is given by the mass of pepper contained in the cylinder.

Take as the result, the arithmetic mean of the three determinations if the repeatability conditions (see A.5.2) are satisfied. Otherwise, carry out three further determinations. If the former conditions are still not satisfied, take the arithmetic mean of the six determinations as the result.

A.5.2 Repeatability

The difference between the results of two determinations carried out in rapid succession by the same analyst using the same apparatus shall not exceed 5 g per litre.

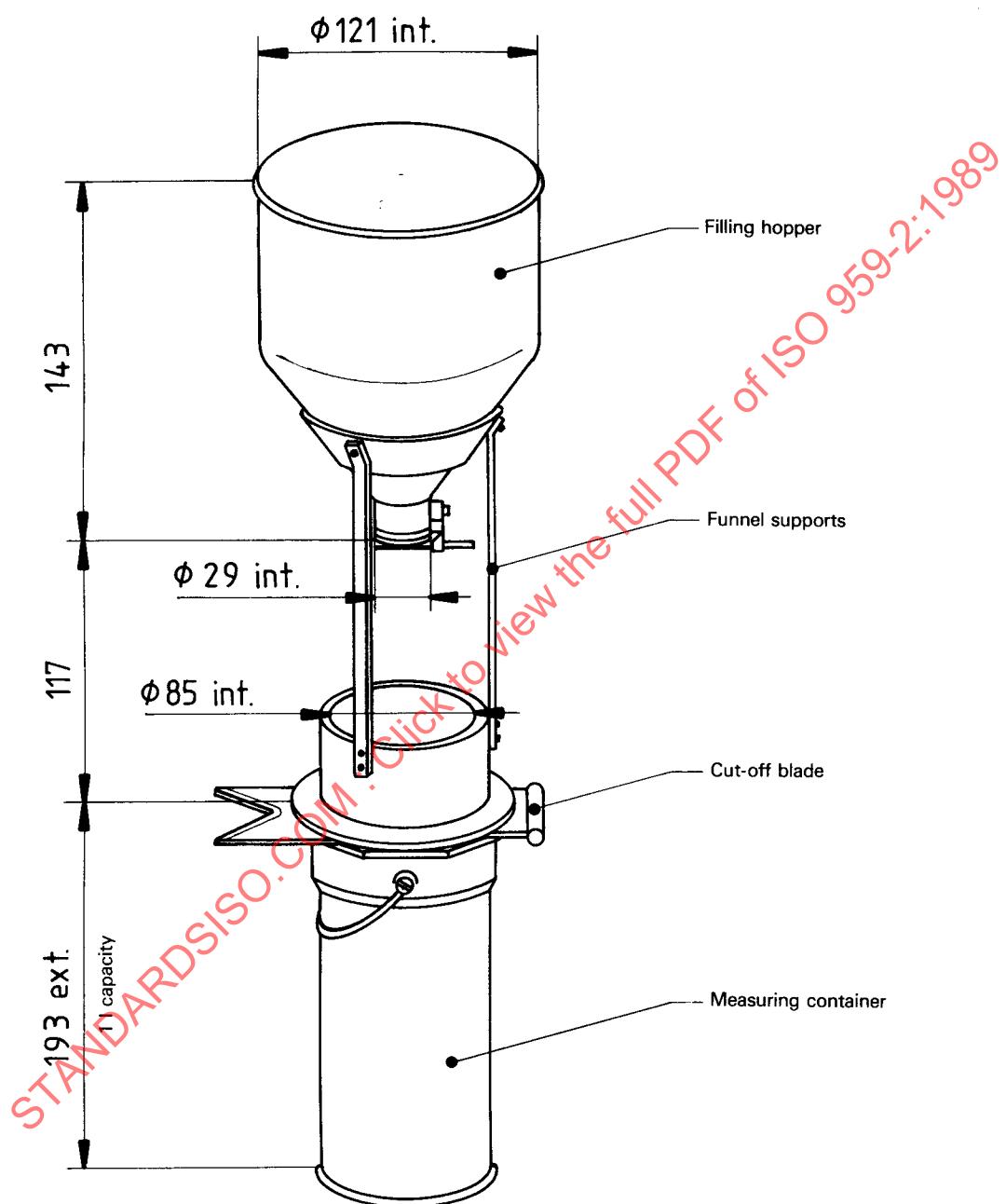
A.6 Test report

The test report shall specify the method used and the result obtained. It shall also mention all operating details not specified in this annex, or regarded as optional, together with details of any incidents which may have influenced the results.

The test report shall include all information necessary for the complete identification of the sample.

1) This is the apparatus applicable to the reference method. However, for routine control and when the apparatus described is not available, it is possible to use a cylinder of 1 l capacity and a funnel.

Dimensions in millimetres



NOTE — Figure A.1 gives the dimensions of the apparatus of 1 l capacity. If it is required to carry out the determination with a sample reduced to half, an apparatus the dimensions of which are also reduced in the same proportion can be used, but this is **solely under the responsibility of the operator**. **Only the 1 l method is the reference method**.

Figure A.1 — Nilema-litre apparatus

Annex B (informative)

Recommendations for storage and transport

B.1 The packages of pepper shall be stored in covered rooms well protected from sun, rain and excessive heat.

during the damp period. Suitable provisions shall be taken to allow fumigation of the store.

B.2 The store shall be dry, free from unpleasant smells and protected against penetration of insects and vermin. The ventilation shall be regulated so that good ventilation is ensured during the dry period and ventilation can be fully stopped

B.3 The packages shall be handled and transported in such a manner that they are protected from rain, sun, or other excessive heat sources, from unpleasant smells and all contamination, particularly in the holds of ships.

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