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EAST AFRICAN STANDARD

Fresh ceps — Specification and grading

EAST AFRICAN COMMUNITY

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Foreword

Development of the East African Standards has been necessitated by the need for harmonizing requirements governing quality of products and services in East Africa. It is envisaged that through harmonized standardization, trade barriers which are encountered when goods and services are exchanged within the Community will be removed.

In order to meet the above objectives, the EAC Partner States have enacted an East African Standardization, Quality Assurance, Metrology and Test Act, 2006 (EAC SQMT Act, 2006) to make provisions for ensuring standardization, quality assurance, metrology and testing of products produced or originating in a third country and traded in the Community in order to facilitate industrial development and trade as well as helping to protect the health and safety of society and the environment in the Community.

East African Standards are formulated in accordance with the procedures established by the East African Standards Committee. The East African Standards Committee is established under the provisions of Article 4 of the EAC SQMT Act, 2006. The Committee is composed of representatives of the National Standards Bodies in Partner States, together with the representatives from the private sectors and consumer organizations. Draft East African Standards are circulated to stakeholders through the National Standards Bodies in the Partner States. The comments received are discussed and incorporated before finalization of standards, in accordance with the procedures of the Community.

Article 15(1) of the EAC SQMT Act, 2006 provides that "Within six months of the declaration of an East African Standard, the Partner States shall adopt, without deviation from the approved text of the standard, the East African Standard as a national standard and withdraw any existing national standard with similar scope and purpose".

East African Standards are subject to review, to keep pace with technological advances. Users of the East African Standards are therefore expected to ensure that they always have the latest versions of the standards they are implementing.

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Introduction

In the preparation of this East African Standard, the following sources were consulted extensively:

UNECE STANDARD FFV-54:2007, *Marketing and commercial quality control of ceps*

ISO 7561:1984, *Cultivated, mushrooms — Guide to cold storage and refregerated transport*

CODEX STAN 193:1995 (Rev.5:2009), *General Standard for Contaminants and Toxins in Foods*

CODEX STAN 228:2001 (Rev.1:2004), *General methods of analysis for contaminants*

Codex Alimentarius website: http://www.codexalimentarius.net/mrls/pestdes/jsp/pest_q-e.jsp

USDA Foreign Agricultural Service website: http://www.mrldatabase.com

USDA Agricultural Marketing Service website: http://www.ams.usda.gov/AMSv1.0/Standards

USDA Plant Inspectorate Service website: http://www.aphis.usda.gov/import_export/plants

European Union: http://ec.europa.eu/sanco_pesticides/public

Assistance derived from these sources and others inadvertently not mentioned is hereby acknowledged.

This standard has been developed to take into account:

— the needs of the market for the product;

— the need to facilitate fair domestic, regional and international trade and prevent technical barriers to trade by establishing a common trading language for buyers and sellers.

— the structure of the CODEX, UNECE, USA, ISO and other internationally significant standards;

— the needs of the producers in gaining knowledge of market standards, conformity assessment, commercial cultivars and crop production process;

— the need to transport the product in a manner that ensures keeping of quality until it reaches the consumer;

— the need for the plant protection authority to certify, through a simplified form, that the product is fit for crossborder and international trade without carrying plant disease vectors;

— the need to promote good agricultural practices that will enhance wider market access, involvement of small-scale traders and hence making fruit and vegetable production a viable means of wealth creation; and

— the need to keep unsatisfactory produce from the market by allowing the removal of unsatisfactory produce from the markets and to discourage unfair trade practices e.g. trying to sell immature produce at the beginning of the season when high profits can be made. Immature produce leads to dissatisfaction of customers and influences their choices negatively, which disadvantages those traders who have waited until the produce is mature.

Contents

Fresh ceps — Specification and grading

1 Scope

This standard applies to ceps of species *Boletus edulis* Bull., *Boletus pinophilus* Pil.& Dermek, *Boletus reticulatus* Schaeff. (syn. *Boletus aestivalis*) and *Boletus aereus* Bull. to be supplied fresh to the consumer, ceps for processing being excluded.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

CAC/GL 21, *Principles for the Establishment and Application of Microbiological Criteria for Foods*

CAC/RCP 1, *Recommended International Code of Practice — General Principles of Food Hygiene*

CAC/RCP 44, *Recommended International Code of Practice for the Packaging and Transport of Tropical Fresh Fruit and Vegetables*

CAC/RCP 53, *Code of Hygienic Practice for Fresh Fruits and Vegetables*

EAS 38, Labelling of prepackaged foods — Specification

CD/K/378:2010, *Horticultural industry — Code of practice*

3 Deescription

Boletus edulis is an edible basidiomycete mushroom. Most commonly known as porcini (from the plural of its Italian name porcino), it has a number of common names, including cep (from its Catalan name cep or its French name cèpe, although the latter is a generic term applying to several species), king bolete and penny bun.

The fruiting body is a large imposing mushroom the cap of which may reach 25 cm (10 in) in diameter and 1 kg (2.2 lb) in weight. Symbiotic, it forms an ectomycorrhizal association with pine and is found in pine forests and plantations in autumn.

Highly prized, *Boletus edulis* is commercially sold fresh in autumn in central and southern Europe but is also dried and distributed worldwide.

4 Provisions concerning quality

4.1 General

The purpose of the standard is to define the quality requirements for ceps at the market control stage after preparation and packaging.

However, if applied at stages following export, products may show in relation to the requirements of the standard:

— a slight lack of freshness and turgidity

— for products graded in classes other than the “Extra” Class, a slight deterioration due to their development and their tendency to perish.

The holder/seller of products may not display such products or offer them for sale, or deliver or market them in any manner other than in conformity with this standard. The holder shall be responsible for observing such conformity.

4.2 Minimum requirements

4.2.1 In all classes, subject to the special provisions for each class and the tolerances allowed, the ceps must be:

(a) positively identifiable

(b) firm

(c) intact; the stalk must be attached to the cap; the earth-soiled foot can be cut; ceps cut in half along the longitudinal axis are regarded as intact

(d) sound; produce affected by rotting or deterioration such as to make it unfit for consumption is excluded

(e) free of mould

(f) practically free from pests

(g) practically free from damage caused by pests

(h) clean, practically free of any visible foreign matter, other than earth or soil on the foot

(i) free of abnormal external moisture

(j) free of any foreign smell and/or taste.

The pore layer must not be dark green or blackish.

4.2.2 The development and condition of the ceps must be such as to enable them:

(a) to withstand transportation and handling

(b) to arrive in satisfactory condition at the place of destination.

4.3 Classification

Ceps are classified in three classes, as defined below:

4.3.1 “Extra” Class

Ceps in this class must be of superior quality. In shape, size and colouring they must be characteristic of the species. The pore layer must be white.

They must be free from defects with the exception of very slight superficial defects provided these do not affect the general appearance of the produce, the quality, the keeping quality and presentation in the package.

The ceps must be practically free of residual soil.

4.3.2 Class I

Ceps in this class must be of good quality. They must be characteristic of the species.

The following slight defects, however, may be allowed, provided these do not affect the general appearance of the produce, the quality, the keeping quality and presentation in the package:

— slight damage caused by pests

— slight damage of the head

— slight traces of residual soil on the foot

— slightly yellowish pore layer.

4.3.3 Class II

This class includes ceps that do not qualify for inclusion in higher classes but satisfy the minimum requirements specified above. They must be characteristic of the species.

The following defects are allowed, provided the ceps retain their essential characteristics as regards the quality, the keeping quality and presentation:

— damage caused by pests

— damage of the head

— traces of residual soil on the foot

— brownish pore layer.

Damaged parts and soft pore layer can be removed, provided each cep retains its essential characteristics.

5 Provisions concerning sizing

Size is determined by the maximum diameter of the cap.

If sized, in each package the maximum difference of the diameter between the smallest cap and the largest cap must not exceed 5 cm.

6 Provisions concerning tolerances

Tolerances in respect of quality and size shall be allowed in each lot for produce not satisfying the requirements of the class indicated.

6.1 Quality tolerances

6.1.1 “Extra” Class

A total tolerance of 5 per cent, by weight or number, of ceps not satisfying the requirements of the class but meeting those of Class I is allowed. Within this tolerance not more than 0.5 per cent in total may consist of produce satisfying the requirements of Class II quality.

6.1.2 Class I

A total tolerance of 10 per cent, by weight or number, of ceps not satisfying the requirements of the class but meeting those of Class II is allowed. Within this tolerance not more than 1 per cent in total may consist of produce satisfying neither the requirements of Class II quality nor the minimum requirements. Produce affected by rotting or any other deterioration rendering it unfit for consumption is excluded.

6.1.3 Class II

A total tolerance of 10 per cent, by weight or number, of ceps satisfying neither the requirements of the class nor the minimum requirements is allowed. Produce affected by rotting or any other deterioration rendering it unfit for consumption is excluded.

In addition to the above, 5 per cent, by weight or number, of ceps with the stalk detached from the cap is allowed.

6.2 Size tolerances

For all classes (if sized): a total tolerance of 10 per cent, by weight or number, of ceps not satisfying the requirements as regards sizing is allowed.

7 Provisions concerning presentation

7.1 Uniformity

The contents of each package must be uniform and contain only ceps of the same origin, quality and size (if sized).

The visible part of the contents of the package must be representative of the entire contents.

7.2 Packaging

The ceps must be packed in such a way as to protect the produce properly.

The materials used inside the package must be clean and of a quality such as to avoid causing any external or internal damage to the produce. The use of materials, particularly of paper or stamps bearing trade specifications, is allowed, provided the printing or labelling has been done with non-toxic ink and glue.

Packages must be free of all foreign matter.

8 Labelling or marking

8.1 Consumer packages

In addition to the requirements of EAS 38, the following specific provisions apply:

8.1.1 Nature of produce

— “Ceps” if the contents are not visible from the outside

— Name of the species (optional).

8.2 Non-retail containers

Each package1 must bear the following particulars, in letters grouped on the same side, legibly and indelibly marked, and visible from the outside:

8.2.1 Identification

The exporter, packer and/or dispatcher shall be identified by name and physical address (e.g. street/city/region/postal code and, if different from the country of origin, the country) or a code mark officially recognized by the national authority.[2]

8.2.2 Nature of produce

1 Package units of produce prepacked for direct sale to the consumer shall not be subject to these marking provisions but shall conform to the national requirements. However, the markings referred to shall in any event be shown on the transport packaging containing such package units.

2 The national legislation of a number of countries requires the explicit declaration of the name and address. However, in the case where a code mark is used, the reference "packer and/or dispatcher (or equivalent abbreviations)" has to be indicated in close connection with the code mark, and the code mark should be preceded by the ISO 3166 (alpha) country/area code of the recognizing country, if not the country of origin.

— “Ceps” if the contents are not visible from the outside

— Name of the species (optional).

8.2.3 Origin of produce

Country of origin and, optionally, district where picked, or national, regional or local place name.

8.2.4 Commercial specifications

— Class

— Size (if sized) expressed as minimum and maximum diameter of the cap in cm

— Net weight (optional).

8.2.5 Official control mark (optional)

9 Contaminants

9.1 Heavy metals

Ceps shall comply with those maximum levels for heavy metals established by the Codex Alimentarius Commission for this commodity. The current levels are as indicated below:

Metal	Unit of measurement	Maximum limit	Test method
Lead (Pb)	mg/kg wet weight	0.30	ISO 6633 (AAS)
Cadmium (Cd)	mg/kg wet weight	0.20	ISO 6561-1 or 6561-2

9.2 Pesticide residues

Ceps shall comply with those maximum pesticide residue limits established by the Codex Alimentarius Commission for this commodity.

Maximum pesticide residue limits and extraneous maximum residue limits in ceps (current as at 2009-06-09)

Type	Unit symbol	Limit	Method of test	Notes
CHLORPYRIFOS-METHYL	MRL (mg/kg)	0.01 (*)		
CYPERMETHRIN	MRL (mg/kg)	0.05		
CYROMAZINE	MRL (mg/kg)	7		
DELTAMETHRIN	MRL (mg/kg)	0.05		Used also as veterinary drug
DICHLORVOS	MRL (mg/kg)	0.5		
DIFLUBENZURON	MRL (mg/kg)	0.3		
PERMETHRIN	MRL (mg/kg)	0.1		
PROCHLORAZ	MRL (undef)	2		Used also as veterinary drug
THIABENDAZOLE	MRL (mg/kg)	60		

10 Hygiene

10.1 It is recommended that the produce covered by the provisions of this Standard be prepared and handled in accordance with the appropriate sections of CAC/RCP 1, CAC/RCP 53, and other relevant Codex texts such as Codes of Hygienic Practice and Codes of Practice.

10.2 The produce should comply with any microbiological criteria established in accordance with CAC/GL 21.

Fresh ceps

Fresh ceps/porcini

Annex A
(informative)

Guide to cold storage and refrigerated transport

A.1 Scope and field of application

This annex describes methods for obtaining conditions for the successful cold storage and long distance refrigerated transport of cultivated mushrooms intended either for direct consumption or for industrial processing.

A.2 Conditions for harvesting and packing

A.2.1 Harvesting

Cultivated mushrooms should be harvested at a stage of development corresponding to the quality requirements (see A.2.2), because the veil under the cap soon opens, thus reducing the quality. Mushrooms should be harvested daily during the main period of cultivation and if grown in rooms with high temperatures (16 to 20 ℃). Towards the end of the cultivation period and in rooms with lower temperatures (10 to 20 ℃), they can be harvested e very second day.

Cultivated mushrooms easily discolour, even at low temperature, as a result of pressing or rubbing. They should, therefore, be carefully handled between harvesting and consumption. The fruit body should be removed from the bed by twisting so that the stem is not broken and the least amount of covering soil and mycelium is removed. Residues of broken stones should be rubbed off the stem. If soil is used as the covering material, the end of the stem should be cut off with a sharp knife at right angles to the length of the stem. To maintain the quality of cultivated mushrooms, it is recommended that they be placed, after harvest, in a package where they can remain until consumption or processing.

The mushrooms may be washed, if necessary, but they should be dried within a few minutes with spongy absorbents, as persistent surface moisture causes brown discoloration or mucosity. Forced ventilation is not suitable for drying mushrooms because it favours wilting.

A.2.2 Quality requirements

The mushrooms should be carefully handled, and should be fresh, of good quality, and of uniform white, cream or light buff colour, according to the variety. The cap should be spherical or hemispherical. The veil under the cap should be closed or open, according to market requirements. The stem should be plump, and the end may be cut or whole. The body should be elastic, free from abnormal surface moisture and should be free from mechanical damage, spoilage and holes caused by insect attack.

A.2.3 Grading and packing

The mushrooms should be graded according to the quality standards of the country concerned or, in the case of international trade in accordance with accepted international standards. The best results are obtained by using packages that have rigid sides. The mushrooms should be tightly packed without being compressed. A loose pack leads to abrasion from movement, and excessively tight packing results in pressure bruises. Both types of damage lead to discoloration and loss of quality.

Mushrooms may be packed in wooden boxes or fibreboard containers lined with silk-paper, and on trays of fibreboard or plastics placed in wooden boxes. The packages should be covered with perforated film or plastic stretch film in order to avoid loss of moisture. Packages and other materials used for this purpose should be new, clean and made of a material which will not affect the product, either internally or externally.

A.3 Optimum conditions for storage and transport

A.3.1 General

Cultivated mushrooms are the most sensitive to storage of all horticultural products. They should be consumed as soon after harvesting as possible and only stored in special cases. If storing or transporting cultivated mushrooms, however, precooling of the product, immediately after harvesting and before packaging, to a temperature which should not drop below 2 ℃, is recommended.

A.3.2 Temperature

The temperature depends on the duration of storage and transport. Mushrooms can be stored for 4 to 5 days at +2 ℃ and for 2 to 3 days at +5 ℃.

A.3.3 Relative humidity

The relative humidity is 90 %. A higher relative humidity may result in condensation, causing discoloration and mucosity. At a lower relative humidity, the mushrooms wilt, losing their elastic character.

The relative humidity can be obtained by covering the containers of mushrooms intended for storage or transportation with perforated film or plastic stretch film of suitable porosity for the given conditions, thus delaying wilting, and avoiding the formation of condensation.

A.4 Storage

The package should be placed on pallets and put into the cold store. Piles should be formed according to the nature of the packages. Air circulation at too high a rate is unfavourable to quality, as it increases the loss of humidity. When transported over long distances, mushrooms should be kept in cold stores only until they have cooled to the required temperature; they should then be placed in the refrigerated transport vehicle.

A.5 Requirements for transport vehicles and loading

During the transport of mushrooms, refrigeration should be continuous. For this purpose, ice- or mechanically refrigerated railway trucks or refrigerated lorries may be used. Equipment should be in good technical condition, for example fans should be in working condition, drains should be free in ice-refrigerated railway trucks, and floor racks assuring the circulation of air should be in position. Before loading, the temperature of the loading space in the vehicles should be adjusted to that required, either by icing the bunkers or by mechanical refrigeration.

Wooden or fibreboard boxes containing mushrooms should be stacked lengthwise (facing forward), and only boxes necessary for filling spaces between the stacks, to prevent them from moving during transport, should be placed crosswise. Similarly, remaining gaps should be filled with empty boxes or crates for the same purpose.

The ice bunker of ice-refrigerated railway trucks should be re-iced to capacity after loading.

If, as a consequence of warm weather or a long transit period, the ice could melt in ice-refrigerated railway trucks during transport, re-icing should be carried out at an interim station to ensure that, at the destination, the trucks arrive with their bunkers not less than one-third full.

A.6 Operations on arrival

After unloading, either continuous refrigeration should be maintained or the mushrooms should be consumed or processed as soon as possible.

Annex C
(informative)

Model certificate of conformity with standards for fresh fruits and vegetables

1. Trader:	Certificate of conformity with the Community marketing standards applicable to fresh fruits and vegetables No. …….. (This certificate is exclusively for the use of inspection bodies)	
2. Packer identified on packaging (if other than trader)	3. Inspection body	
	4. Place of inspection/country of origin ([1])	5. Region or country of destination
6. Identifier of means of transport	7. ☐ Internal ☐ Import ☐ Export	
8. Packages (number and type)	9. Type of product (variety if the standards specifies)	10. Quality Class / 11. Total net weight in kg

12. The consignment referred to above conforms, at the time of issue, with the Community standards in force, vide:

CD/K/023:2010, *Fresh ceps — Specification and grading*

Customs office foreseen …… Place and date of issue ……

Valid until (date): ……

Signatory (name in block letters): ……..

Signature — Seal of competent authority

13. Observations:

([1]) Where the goods are being re-exported, indicate the origin in box 9.

Annex D
(informative)

Ceps — Fact sheets

Annex E
(informative)

Ceps — Codex, EU and USA pesticide residue limits

Users are advised that international regulations and permissible Maximum Residue Levels (MRL) frequently change. Although this International MRL Database is updated frequently, the information in it may not be completely up-to-date or error free. Additionally, commodity nomenclature and residue definitions vary between countries, and country policies regarding deferral to international standards are not always transparent. This database is intended to be an initial reference source only, and users must verify any information obtained from it with knowledgeable parties in the market of interest prior to the sale or shipment of any products. The developers of this database are not liable for any damages, in whole or in part, caused by or arising in any way from user's use of the database.

Results Key

MRL values in *{Italics}* are more restrictive than US
--- indicates no MRL value is established.
Cod, EU, etc. indicates the source of the MRL and EXP means the market defers to the exporting market.
All numeric values listed are in parts per million (ppm), unless otherwise noted

	US	Cod	EU
Chlorothalonil	1	---	2
	US	**Cod**	**EU**
Cyromazine	1	7	5
	US	**Cod**	**EU *1***
Dichlorvos	0.5	0.5	*{0.01}*
	1. European Union does not maintain a specific MRL for the Dichlorvos/Mushroom combination, but does maintain an MRL of 0.01 PPM for its "Vegetables Fresh or Frozen" group.		
	US	**Cod**	**EU *2***
Diflubenzuron	0.2	0.3	2
	2. European Union does not maintain a specific MRL for the Diflubenzuron/Mushroom combination, but does maintain an MRL of 2 PPM for its "Fungi" group.		
	US	**Cod**	**EU *3***
Malathion	8	---	*{0.02}*
	3. European Union does not maintain a specific MRL for the Malathion/Mushroom combination, but does maintain an MRL of 0.02 PPM for its "Fungi" group.		
	US	**Cod**	**EU *4***
Permethrin	5	*{0.1}*	*{0.05}*
	4. European Union does not maintain a specific MRL for the Permethrin/Mushroom combination, but does maintain an MRL of 0.05 PPM for its "Vegetables Fresh or Frozen" group.		
	US	**Cod**	**EU *5***
Phosphine	0.01	---	0.05
	5. European Union does not maintain a specific MRL for the Phosphine/Mushroom combination, but does maintain an MRL of 0.05 PPM for its "Fungi" group.		
	US	**Cod**	**EU *6***
Propiconazole	0.1	---	*{0.05}*
	6. European Union does not maintain a specific MRL for the Propiconazole/Mushroom combination, but does maintain an MRL of 0.05 PPM for its "Fungi" group.		
	US	**Cod**	**EU**
Thiabendazole	40	60	*{10}*