



CD/K/057:2010  
ICS 67.080.20

## EAST AFRICAN STANDARD

---

Fresh horse-radish — Specification and grading



EAST AFRICAN COMMUNITY

---

HS 0706.90.0000 [0706.90.10]

## 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.

© East African Community 2010 — All rights reserved\*

East African Community

P O Box 1096

**Arusha**

Tanzania

Tel: 255 27 2504253/8

Fax: 255-27-2504481/2504255

E-Mail: [eac@eachq.org](mailto:eac@eachq.org)

Web: [www.each.int](http://www.each.int)

---

\* © 2010 EAC — All rights of exploitation in any form and by any means reserved worldwide for EAC Partner States' NSBs.

## Introduction

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

UNECE STANDARD FFV 20:1996, *Marketing and commercial quality control of horse-radish*

*United States Standards for Grades of Horseradish Roots*, Effective July 27, 1936 (Reprinted — January 1997)

ISO 4187:1980, *Horse-radish — Guide to storage*

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](http://www.codexalimentarius.net/mrls/pestdes/jsp/pest_q-e.jsp)

USDA Foreign Agricultural Service website: <http://www.mrlatabase.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](http://www.aphis.usda.gov/import_export/plants)

European Union: [http://ec.europa.eu/sanco\\_pesticides/public](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**

1	Scope .....	1
2	Normative references.....	1
3	Definitions .....	1
4	Provisions concerning quality .....	2
4.1	General .....	2
4.2	Minimum requirements .....	2
4.3	Classification .....	3
5	Provisions concerning sizing .....	4
6	Provisions concerning tolerances .....	4
6.1	Quality tolerances .....	4
6.2	Size tolerances .....	4
7	Provisions concerning presentation.....	4
7.1	Uniformity.....	4
7.2	Packaging .....	4
7.3	Presentation .....	5
8	Marking and labelling.....	5
8.1	Consumer packages.....	5
8.2	Non-retail containers.....	5
9	Contaminants.....	6
9.1	Pesticide residues.....	6
9.2	Heavy metals .....	6
10	Hygiene.....	6
	Annex A (informative) Guide to storage.....	8
	Annex C (informative) Model certificate of conformity with standards for fresh fruits and vegetables	10
	Annex D (informative) Horseradish ( <i>Armoracia rusticana</i> ) — Fact sheet.....	11
	Annex E (informative) Horseradish — Codex, EU and USA pesticide residue limits.....	12

## Fresh horseradish — Specification and grading

### 1 Scope

This standard applies to horseradish roots of varieties (cultivars) grown from *Armoracia rusticana* P. Gaertner, Meyer & Scherb. *syn. Armoracia lapatifolia* L. to be supplied fresh to the consumer, horseradish 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 Definitions

For the purpose of this standard the following definition shall apply:

#### 3.1

##### **firm**

the roots are not appreciably soft, flabby, wilted, or withered

#### 3.2

##### **well trimmed**

all secondary roots (plants) which are less than 16 mm in diameter at the point of attachment to the main root are trimmed to not more than 25 mm in length; and that tops (leaves) are trimmed to not more than 12.7 mm in length from the head

#### 3.3

##### **well shaped**

the root is not forked or branched. It may be slightly curved or crooked but shall not diverge in direction more than a total of 45 degrees from the course of a straight root.

#### 3.4

##### **fairly well shaped**

the root may be moderately curved or crooked but shall not diverge in direction more than a total of 90 degrees from the course of a straight root

#### 3.5

##### **fairly smooth**

the surface of the root is not bark-like or pitted to an extent appreciably detracting from its appearance. Remnants of secondary roots on the side of the main root shall not be considered as roughness

**3.6**

**excessively rough**

the surface of the root is pitted or furrowed to a depth of more than 3 mm over one-fourth or more of the surface in the aggregate, exclusive of the head. Remnants of secondary roots on the side of the main root shall not be considered as roughness.

**3.7**

**damage**

any defect or combination of defects which materially detracts from the appearance or the grinding quality of the root, or which cannot be removed without a loss of more than 10 percent, by weight, of the root including the peel covering the defective area

- (a) Dirt shall be considered as damage when it is more than lightly caked on the root.

**3.8**

**serious damage**

any defect or combination of defects which seriously detracts from the appearance or the grinding quality of the root or which cannot be removed without a loss of more than 25 percent, by weight, of the root including the peel covering the defective area

- (a) Dirt shall be considered as serious damage if it is more than moderately caked or encrusted on the root.

**3.9**

**head**

that part of the root to which the leaves are attached. It is usually a rounded knob at or near the top of the root

**3.10**

**good head formation**

a head formation consisting of any number of heads, provided they are at the top of the root and not more than two are separated by a deep crotch

**3.11**

**fairly good head formation**

a head formation consisting of any number of heads, provided they are at the top of the root and not more than four are separated by deep crotches

**3.12**

**length**

the total over all length of the root from the top of the uppermost head to the tip of the main, usable root

**3.13**

**diameter**

the greatest thickness of the root at a point halfway of its length

**4 Provisions concerning quality**

**4.1 General**

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

**4.2 Minimum requirements**

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

- (a) sound; produce affected by rotting or deterioration such as to make it unfit for consumption is excluded
- (b) clean, practically free of any visible foreign matter, but not washed
- (c) practically free from pests
- (d) practically free from damage caused by pests
- (e) firm, non-ligneous, not withered
- (f) free of abnormal external moisture
- (g) free of any foreign smell and/or taste.

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

- (a) to withstand transport and handling, and
- (b) to arrive in satisfactory condition at the place of destination.

### **4.3 Classification**

Horse-radish is classified in two classes defined below:

#### **4.3.1 Class I**

Horse-radish in this class must be of good quality. They must be characteristic of the variety and/or commercial type.

The roots must be:

- of regular shape with not more than two crowns
- not split
- free of lateral roots
- smooth
- free of bruises and cracks
- fresh in appearance
- of white flesh without grey streaks.

#### **4.3.2 Class II**

This class includes horse-radish which do not qualify for inclusion in Class I, but satisfy the minimum requirements specified above.

The following defects may be allowed provided the roots retain their essential characteristics as regards the quality, the keeping quality and presentation:

- slight defects of shape
- up to three crowns
- slight bruising

- slight healed cracks
- not entirely smooth.

## **5 Provisions concerning sizing**

Size is determined by the diameter of the upper third of the root, and by the length of the root.

### **5.2 Class I**

Roots must be not less than 25 mm in diameter and not less than 20 cm in length, excluding crowns.

### **5.2 Class II**

Roots must be not less than 15 mm in diameter and not less than 10 cm in length, excluding crowns.

## **6 Provisions concerning tolerances**

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

### **6.1 Quality tolerances**

#### **6.1.1 Class I**

10 per cent by weight of roots not satisfying the requirements of the class, but meeting those of Class II or, exceptionally, coming within the tolerances of that class.

#### **6.1.2 Class II**

10 per cent by weight of roots satisfying neither the requirements of the class nor the minimum requirements, with the exception of produce affected by rotting, bruising, unhealed cracks or any other deterioration rendering it unfit for consumption.

### **6.2 Size tolerances**

For all classes: 10 per cent by weight of roots not satisfying the requirements as regards sizing.

## **7 Provisions concerning presentation**

### **7.1 Uniformity**

The contents of each package must be uniform and contain only horse-radish of the same origin, variety or commercial type, quality and size.

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

### **7.2 Packaging**

Horse-radish must be packed in such a way as to protect the produce properly.

Horseradish must be packed in such a way as to protect the produce properly. The materials used inside the package must be new<sup>1</sup>, 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 or glue.

---

<sup>1</sup> For the purposes of this Standard, this includes recycled material of food-grade quality.

Horseradish shall be packed in each container in compliance with CAC/RCP 44.

### 7.2.1 Description of containers

The containers shall meet the quality, hygiene, ventilation and resistance characteristics to ensure suitable handling, shipping and preserving of the horseradish. Packages must be free of all foreign matter and smell.

### 7.3 Presentation

The horse-radish may be presented:

- in bunches in a package. The roots in any given bunch must be of approximately the same size and length. The bunches in each package should be practically uniform in weight.
- arranged unbunched in the package.

## 8 Marking and labelling

### 8.1 Consumer packages

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

#### 8.1.1 Nature of produce

If the produce is not visible from the outside, each package shall be labelled as to the name of the produce and may be labelled as to name of the variety and/or commercial type.

### 8.2 Non-retail containers

Each package<sup>2</sup> 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.<sup>3</sup>

#### 8.2.2 Nature of produce

- "Horse-radish" if the contents are not visible from the outside.

#### 8.2.3 Origin of produce

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

#### 8.2.4 Commercial specifications

- Class

<sup>2</sup> 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.

<sup>3</sup> 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.

— Net weight; if the produce is presented in bunches the number of bunches may be given instead of the weight.

**8.2.5 Official control mark (optional)**

**9 Contaminants**

**9.1 Pesticide residues**

Horseradish shall comply with those maximum pesticide residue limits established by the Codex Alimentarius Commission for this commodity. The limits listed below were current as of the dates indicated. The table below provides current MRLs while Annex E provides current MRLs for the USA, EU and Codex markets.

**Maximum pesticide residue limits and extraneous maximum residue limits in horseradish (current as at 2009-06-07)**

Type	Unit symbol	Limit	Method of test	Notes
PERMETHRIN	MRL (mg/kg)	0.5		

**9.2 Heavy metals**

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

Metal	Unit of measurement	Maximum limit	Test method
Lead (Pb)	mg/kg wet weight	0.10	ISO 6633 (AAS)
Cadmium (Cd)	mg/kg wet weight	0.050	ISO 6561-1 or 6561-2

**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.



**Horseradish in field**





















