



CD/K/683:2010  
ICS 67.120

## **EAST AFRICAN STANDARD**

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**Smoked bacon — Specification**

**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:

IS 2475:1979(R2000), *Specification for Smoked Bacon*

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.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](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 is hereby acknowledged.

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## Smoked bacon — Specification

### 1 Scope

This standard specifies the requirements and the methods of sampling and test for smoked bacon, prepared from pork bellies (streaky bacon) and loins (back bacon).

### 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.

AOAC Official Method 931.06:1931, *Phosphorus (Total) ( $P_2O_5$ ) in Eggs*

CAC/RCP 1, *Recommended international code of practice — General principles of food hygiene*

CD-K-683:2010, *Smoked bacon — Specification*

CD-K-697:2010, *Code of hygienic practice for meat*

CD/K/700:2010, *Ante-mortem and post-mortem inspection of meat animals — Code of practice*

EAS 5, *Refined white sugar — Specification*

EAS 12, *Drinking (potable water) — Specification*

EAS 35, *Edible salt — Specification*

EAS 38, *Labelling of prepackaged foods — Specification*

EAS 39, *Hygiene in the food and drink manufacturing industry — Code of practice*

EAS 41, *Fruits, vegetables and derived products — Sampling and methods of test*

EAS 103, *Schedule for permitted food additives*

EAS 123, *Distilled water — Specification*

ISO 936, *Meat and meat products — Determination of total ash*

ISO 937, *Meat and meat products — Determination of nitrogen content (Reference method)*

ISO 1442, *Meat and meat products — Determination of moisture content (Reference method)*

ISO 1443, *Meat and meat products — Determination of total fat content*

ISO 1444, *Meat and meat products — Determination of free fat content*

ISO 1736, *Dried milk and dried milk products — Determination of fat content — Gravimetric method (Reference method)*

ISO 1737, *Evaporated milk and sweetened condensed milk — Determination of fat content — Gravimetric method (Reference method)*

ISO 1841-1, *Meat and meat products — Determination of chloride content — Part 1: Volhard method*

- ISO 1841-2, *Meat and meat products — Determination of chloride content — Part 2: Potentiometric method*
- ISO 2294, *Meat and meat products — Determination of total phosphorus content (Reference method)*
- ISO 2917, *Meat and meat products — Measurement of pH — Reference method*
- ISO 2918, *Meat and meat products — Determination of nitrite content (Reference method)*
- ISO 3091, *Meat and meat products — Determination of nitrate content (Reference method)*
- ISO 3496, *Meat and meat products — Determination of hydroxyproline content*
- ISO 4134, *Meat and meat products — Determination of L-(+)- glutamic acid content — Reference method*
- ISO 4831, *Microbiology of food and animal feeding stuffs — Horizontal method for the detection and enumeration of coliforms — Most probable number technique*
- ISO 4832, *Microbiology of food and animal feeding stuffs — Horizontal method for the enumeration of coliforms — Colony-count technique*
- ISO 4833, *Microbiology of food and animal feeding stuffs — Horizontal method for the enumeration of microorganisms — Colony-count technique at 30 degrees C*
- ISO 5537, *Dried milk — Determination of moisture content (Reference method)*
- ISO 5553, *Meat and meat products — Detection of polyphosphates*
- ISO 5554, *Meat products — Determination of starch content (Reference method)*
- ISO 5985, *Animal feeding stuffs — Determination of ash insoluble in hydrochloric acid*
- ISO 6491, *Animal feeding stuffs — Determination of phosphorus content — Spectrometric method*
- ISO 6579, *Microbiology of food and animal feeding stuffs — Horizontal method for the detection of Salmonella spp.*
- ISO 8156, *Dried milk and dried milk products — Determination of insolubility index*
- ISO 9390, *Water quality — Determination of borate — Spectrometric method using azomethine-H*
- ISO 13493, *Meat and meat products — Determination of chloramphenicol content — Method using liquid chromatography*
- ISO 13496, *Meat and meat products — Detection of colouring agents — Method using thin-layer chromatography*
- ISO 13730, *Meat and meat products — Determination of total phosphorus content — Spectrometric method*
- ISO 13965, *Meat and meat products — Determination of starch and glucose contents — Enzymatic method*
- ISO 21527-1, *Microbiology of food and animal feeding stuffs — Horizontal method for the enumeration of yeasts and moulds — Part 1: Colony count technique in products with water activity greater than 0.95*

ISO 21527-2, *Microbiology of food and animal feeding stuffs — Horizontal method for the enumeration of yeasts and moulds — Part 2: Colony count technique in products with water activity less than or equal to 0.95*

### 3 Terminology

For the purpose of this standard, the grouping of the various characteristics of the carcass from which the pork cuts for bacon are derived under conformation, finish and quality shall be as follows:

#### 3.1 Conformation

The head should be small in relation to the carcass. The shoulder and jowl should be light and the loin full and deep. The back should appear to be excessively long. The ham should be broad, well-fleshed to the hock, showing a fine bone and U-shaped in the space between the legs. Bone formation should be light, flat, and pinkish in colour.

#### 3.2 Finish

This refers to the quality of fat laid down. The quantity of internal and external fat should be such as to require no trimming. The thickness of the fat layer shall be as agreed to between the supplier and the buyer. The cut sternum should show the predominance of lean over fat. When cut through, the amount of fat at the last rib should not be excessive. The fat should be white, dry and firm to the touch.

#### 3.3 Quality

The rind should be free from wrinkles, scores, stabs and fighting scars. It should have an attractive colour and should not be unduly dry. The colour of the flesh should be bright, sappy and attractive pink.

#### 3.4 Presentation

The material shall be of the following types and sub-types:

- a) Dry-cured bacon:
  - 1) Back bacon or prime bacon,
  - 2) Streaky bacon,
  - 3) Middle bacon (includes both prime and streaky bacon), and
  - 4) Shoulder bacon.
- b) Pickle-cured bacon:
  - 1) Back bacon or prime bacon,
  - 2) Streaky bacon,
  - 3) Middle bacon (includes both prime and streaky bacon), and
  - 4) Shoulder bacon.

### 4 Requirements

#### 4.1 General

The bacon shall be prepared from pork bellies and loins. The pigs from which the bacon is derived shall be slaughtered in a hygienically managed slaughter-house and subjected to ante-mortem and post-mortem examination according to the procedure prescribed in CD/K/700:2010.

## **4.2 Hygienic requirements**

**4.2.1** The material shall be prepared under strict hygienic conditions (see CD-K-697:2010) by persons free from contagious and infectious diseases and only in premises maintained in a thoroughly clean and hygienic condition and having adequate and safe water supply and duly approved and licensed by the public health authorities concerned. All workers shall use clean, white, washed clothings. Necessary precautions shall be taken to prevent incidental contamination of the product from soiled equipment or from personnel suffering from injuries.

**4.2.2** Quality of water used for processing shall conform to EAS 12.

## **4.3 Material**

**4.3.1** The pork bellies and loins shall be of good colour, boneless, and free from hair, bruises and discolouration. Bellies from stags, sows and soft and oily bellies, or bellies that have thick, rough skin and coarse dark flesh and those that have scribe marks in excess of 0.5 cm depth, or heavy bellies which have been excessively trimmed shall not be used. Leaf fat and excessive cartilages shall be removed.

**4.3.2** Unless specified otherwise, bellies and loins which have been maintained in cold storage may also be used in the preparation of smoked bacon provided:

- a) the temperature at which they are held is not higher than  $-25^{\circ}\text{C}$  at any time;
- b) the period does not exceed 3 months;
- c) the meat is in excellent condition; and
- d) there is not the slightest sign of deterioration.

## **4.4 Description of types**

### **4.4.1 Dry-cured bacon, slab**

The bacon shall have excellent conformation and quality and adequate finish and shall be firm. It shall be closely trimmed (square on all edges). It shall be well proportioned as to length, width and thickness, with width to length in the approximate proportion of 1: 2. It shall be well streaked with lean, smooth and free from blemishes. The skin shall be free from hair. It shall be cured as prescribed in 4.5.1. It shall have bright attractive appearance and the uniform natural colour produced by smoking and shall possess the aroma and flavour of freshly processed bacon. It shall be sound, cool (temperature not exceeding  $21^{\circ}\text{C}$ ), dry, and otherwise in excellent condition at the time of packaging, transport and final delivery.

### **4.4.2 Dry-cured bacon, sliced**

The bacon shall have excellent conformation and quality and adequate finish and shall be firm. It shall be cured as prescribed in 4.5.1. The bacon shall be properly formed by suitable means and thoroughly chilled to facilitate slicing. The slices shall be well cut at right angles to the long axis of the slab, three to four slices per centimetre unless specified otherwise. The slices shall range from 20 to 25 cm in length and from 2.5 to 5.0 cm in width. This shall include all appropriate centre slices and may include brisket and flank and slices in normal proportions to the slab from which these were sliced. The slices shall be well streaked with lean and those showing heavy shoulders and flank muscles, comb marks, hair roots or other defects shall be excluded. Slices shall be intact except that part slices from the same bacon may be used on the basis of one piece to each 250 g package as necessary to make exact mass. Slices shall be sound, cool (temperature not exceeding  $21^{\circ}\text{C}$ ), dry and otherwise in excellent condition at the time of packaging, transport and final delivery.

## **4.5 Curing**

### **4.5.1 Dry curing**

The bacon shall be thoroughly, but not excessively, cured with a well-blended mixture of common salt (see EAS 35) and sodium nitrate or sodium nitrite or both, with or without the addition of water in

accordance with good commercial practice. The cured bacon shall be washed but shall not be soaked before smoking.

#### **4.5.2 Pickle**

The bacon shall be thoroughly, but not excessively, cured with or without injecting the curing mixture consisting of common salt, and sodium nitrate or sodium nitrite or both and shall be immersed in a curing solution of salt and sodium nitrate or sodium nitrite or both in accordance with good commercial practice. The bacon shall be washed but not soaked prior to smoking.

#### **4.6 Smoking**

The bacon shall be dried and smoked in accordance with good commercial practice and, unless specified otherwise, it shall be smoked in dry smoke from hardwood or hardwood sawdust at such a temperature and for such a length of time as will result in the material attaining bright attractive appearance, uniform colour and the characteristic aroma and flavour.

#### **4.7 Mass of the bacon slabs**

The mass of each bacon slab shall be not less than 2.5 kg.

#### **4.8 Sodium chloride content**

The final processed material shall contain not more than 7.5 percent by mass of sodium chloride, when determined according to the method prescribed in Annex B.

#### **4.9 Nitrite content**

The final processed material shall not contain more than 0.02 percent by mass of nitrite, calculated as sodium nitrite, when determined according to the method prescribed in ISO 2918.

### **5 Packing and marking**

#### **5.1 Packing**

Unless otherwise agreed to between the purchaser and the vendor, the bacon slabs shall be wrapped first in hosiery cloth, then in kraft paper and finally in hessian cloth; while sliced bacon shall be wrapped first in grease-proof paper or cellophane, then in kraft paper and delivered in clean and closed pre-cooled insulated boxes strapped with metal straps.

#### **5.2 Marking**

**5.2.1** Each container (or the outer hessian cloth if no container is used) shall be marked to give the following information:

- a) Name and type of the material,
- b) Name and address of the manufacturer,
- c) Batch or code number,
- d) Number of pieces,
- e) Minimum net mass and gross mass, and
- f) Date of packing.

**5.2.2** Each container may also be marked with a Certification Mark.

## 6 Sampling

Representative samples of the material for tests shall be drawn according to the method prescribed in Annex A.

## 7 Tests

7.1 The tests shall be carried out as prescribed in 4.8 and 4.9.

7.2 **Quality of reagents** — Unless specified otherwise, pure chemicals and distilled water (see EAS 123) shall be employed in tests.

NOTE Pure chemicals shall mean chemicals that do not contain impurities which affect the experimental results.

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## Annex A (normative)

### Sampling of smoked bacon

#### A.1 General requirements of sampling

**A.1.1** Sampling shall be done by a person agreed to between the purchaser and the vendor and, if desired by any one of them, in the presence of the purchaser (or his representative) and the vendor (or his representative).

**A.1.2** Samples shall be stored at a temperature ranging between  $-1\text{ }^{\circ}\text{C}$  to  $+2\text{ }^{\circ}\text{C}$ .

#### A-2 Scale of sampling

**A.2.1 Lot** — In any consignment, all the packages of the same size and from the same batch of manufacture shall be grouped together to constitute a lot.

**A.2.2** The number of packages to be selected from the lot shall depend on the size of the lot and shall be in accordance with Table A.1.

**Table A.1 — Selection of packages for sampling**

| No. of packages in the lot | No. of packages to be selected |
|----------------------------|--------------------------------|
| (1)                        | (2)                            |
| Up to 65                   | 3                              |
| 66 to 110                  | 4                              |
| 111 to 180                 | 5                              |
| 181 to 300                 | 6                              |
| 301 to 500                 | 7                              |

**A.2.3** The packages shall be selected at random. In order to ensure the randomness of selection, a random number table shall be used. If such tables are not available, the following procedure may be adopted:

"Starting from any package, count them as 1, 2, 3, . . . . .  $r$ , and so on in a systematic manner. Every  $r$ th package shall be withdrawn,  $r$  being the integral part of  $N/n$ ,

where

$N$  = total number of packages in the lot, and

$n$  = number of packages to be selected.

#### A.3 Testing of samples

**A.3.1** Samples shall be tested for each lot for ascertaining the conformity of the lot to the requirements of this specification.

**A.3.2** A composite sample shall be prepared by mixing equal quantities of the material removed from each of the packages selected from a lot and tested as prescribed in 4.8 and 4.9.

#### A.4 Criterion for conformity

The lot shall be deemed to have satisfied the requirements of this specification, if the composite sample satisfies the requirements prescribed in 4.8 and 4.9.

**Annex B**  
(normative)

**Determination of sodium chloride**

**B.1 Reagents**

**B.1.1 Standard Silver Solution** — 0.1 N, standardized against 0.1 N sodium chloride solution.

**B.1.2 Dilute Nitric Acid** — 1:4.

**B.1.3 Ferric Ammonium Indicator Solution** — A saturated solution of ferric alum  $\text{Fe}(\text{NH}_4)(\text{SO}_4)_2 \cdot 12\text{H}_2\text{O}$ .

**B.1.4 Standard potassium thiocyanate solution** — 0.1N

**B.2 Procedure**

**B.2.1** Take 0.3 g to 0.5 g of the products in a 250-ml Erlenmeyer flask. Add a known volume of the standard silver nitrate solution in quantity more than sufficient to precipitate all the chloride as silver chloride and then add 20 ml of dilute nitric acid. Boil on a hot plate or sand bath until the solids, except silver chloride, dissolve. Cool and add 50 ml of water and 5 ml of the ferric ammonium indicator solution and titrate against the standard potassium thiocyanate solution until a permanent light brown colour appears.

**B.3 Calculation**

**B.3.1** Sodium chloride, per cent by weight

$$= 5.85 \frac{(V_1 N_1 - V_2 N_2)}{W}$$

where,

$V_1$  = volume of the standard silver nitrate solution;

$V_2$  = volume of the standard potassium thiocyanate;

$N_1$  = normality of the standard silver nitrate solution;

$N_2$  = normality of the standard potassium thiocyanate; and

$W$  = weight, in g, of the dried product taken for the test.

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