



CD/K/688:2010
ICS 67.120

EAST AFRICAN STANDARD

Canned luncheon beef — Specification

EAST AFRICAN COMMUNITY

Draft for comments only — Not to be cited as East African Standard

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 11746:1986(R2000), *Specification for Luncheon Beef, Canned*

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 is hereby acknowledged.

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Canned luncheon beef — Specification

1 Scope

This East African Standard specifies the requirements and the methods of sampling and test for luncheon beef, canned.

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-670:2010, *Bovine (beef) meat — Carcasses and cuts*

CD-K-671:2010, *Caprine (goat) meat — Carcasses and cuts*

CD-K-672:2010, *Ovine (sheep) meat — Carcasses and cuts*

CD-K-673:2010, *Porcine (pig) meat — Carcasses and cuts*

CD-K-692:2010, *Mutton and goat meat canned in brine — Specification*

CD-K-675:2010, *Edible meat co-products*

CD-K-676:2010, *Canned corned beef — Specification*

CD-K-692:2010, *Mutton and goat meat canned in brine — Specification*

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

CD-K-699:2010, *Veterinary drugs residues in foods — Maximum residue limits*

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 7251, *Microbiology of food and animal feeding stuffs — Horizontal method for the detection and enumeration of presumptive Escherichia coli — Most probable number technique*
- 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 Definitions and presentation

3.1 Definitions

For the purpose of this standard, the following definitions shall apply.

3.1.1

meat

the uncured, sound and wholesome flesh of cattle including buffaloes

3.1.2

Offal

This includes brain, fries (liver), gut, paunches, udders, sweetbreads (thymus, pancreas) tripe, spleen, lungs, salivary glands, lymphatic glands, testicles, uterus, ovaries, skin (rind), cartilage and bony tissue.

3.2 Description

Pork beef is a mixture of minced meat and cereal containing not less than 80 percent beef meat including fat (not exceeding 25 percent).

4 Requirements

4.1 Hygienic requirements

The material shall be prepared and handled under strict hygienic conditions 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 (see EAS 39) and duly approved and licensed by the public health authorities concerned. All workers shall use clean, washed, white clothings. Necessary precautions shall be taken to prevent incidental contamination of the product from soiled equipment or from personnel suffering from injuries.

4.1.1 All equipment coming in contact with raw materials or products in the course of manufacture shall be kept clean. An ample supply of steam and water, hose, brushes and other equipment, necessary for proper cleaning of machinery and equipment shall be available. The equipment may be sterilized by immersion in, or swabbing with hypochlorite or other suitable chlorine solution.

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

4.2 Ingredient requirements

4.2.1 Quality of meat

The meat used for the product shall be derived from healthy animals subjected to ante-mortem and post-mortem inspections in accordance with CD/K/700:2010, and slaughtered in licensed premises. The manufacturing units which have a licensed slaughter house in the manufacturing premises only may use the meat from hot carcass, otherwise the meat to be used for manufacture of luncheon beef should have been chilled to 5 °C for not more than 72 hours. The meat shall be of good and uniform colour. It shall be properly trimmed so as to be free of excess fat, blood clots, bruises, bones, fibrous tissues, glands and serous membranes. Skin, gristle, tendons and coarse connective tissue in amounts naturally associated with the flesh may be used. Five percent of heart may be added after proper cleaning and processing. In case frozen trimmings and frozen meat are used, they shall not exceed 50 percent of the total quantity and should have been stored at -18 °C in the freezer for not more than 180 days and should not show freezer burn and rancidity, and be sound, and of good colour. Soft and oily meat shall not be used. It shall be free from foreign odour or flavour, discolouration, and deterioration. Inedible meats and inedible offals shall not be used.

4.2.2 Filler

Only cereal rusk, cracker meal (broken biscuits), potato flour or other wholesome edible material of farinaceous origin shall be used as filler (see 4.4.4.1).

4.2.3 Salt

Salt used shall conform to EAS 35. Its content shall not exceed by 3 percent of total lot.

4.2.4 Nitrate and nitrite

The nitrate content shall not exceed 0.05 percent by weight (expressed as potassium or sodium nitrate) and the nitrite content 0.015 percent by weight (expressed as potassium or sodium nitrite) in the finished product.

4.2.5 Other ingredients

All other ingredients and seasonings, such as sugar and spices, shall be clean, sound and fully wholesome and fit for human consumption in all respects. Sugar, if used, shall be properly sterilized.

4.2.6 Fat

The meat fat shall be pure, wholesome, edible and may be added raw, minced or rendered.

4.3 Preparation and processing

Luncheon beef (canned) shall contain no preservative other than salt, potassium (or sodium) nitrate or nitrite, sugar and seasonings. The meat, chilled at 4.5 °C, shall be properly chopped and seasoned in accordance with the best commercial practice and under satisfactory hygienic conditions in respect of operation, material and equipment in use. The product shall be solid packed under hygienic conditions into sound and thoroughly clean containers and then sealed hermetically. If the cans are lacquered, the lacquer used shall be of such quality that it does not impart any foreign unpleasant taste and smell to the contents of the can and does not peel off during processing and storage of the product. The lacquer shall not be soluble in fat or brine to any extent. The cans shall show no evidence of rusting. The can shall be thoroughly cleaned by means of hot water jet or other approved satisfactory methods before filling. Processing shall be at such temperature and for such length of time as will ensure thorough cooking and adequate sterilization of the product without burning, scorching or overcooking.

4.4 Requirements of the finished product

4.4.1 Flavour and appearance

Luncheon beef (canned) shall have characteristic flavour and taste of meat. The colour shall be uniform. No artificial colouring matter shall be used.

4.4.2 Fill of container

The product after chilling to $18 \pm 1^{\circ}\text{C}$, in the container shall be a solid block and shall slide easily out of the open container, the product being capable of being sliced into 5 mm thick slices, without these breaking and without the edges of these becoming ragged. The exuding fluid shall not exceed 2 percent by mass of the net contents of can. Any gelatin produced in-situ is acceptable.

4.4.3 Freedom from defects

The product shall be free from foreign matter, such as hair, bristle and skin. The product shall also be free from objectionable odour or flavour. The final product shall not show evidence of burning, scorching or overcooking. The product shall also be free from can staining.

4.4.4 Composition

4.4.4.1 The total fillers (see 4.2.2) used shall not exceed 12 percent of the finished product, as determined by method given in Annex A.

4.4.4.2 When tested according to the method prescribed in Annex B, the finished product shall have good lean meat content and shall have not less than 80 percent by mass of total meat of which fat shall not exceed 25 percent. The total percentage of binder, seasoning, edible offal, salt, sugar and added moisture shall not exceed 20 percent. The meat in the cans shall have been processed according to the best commercial practices,

4.4.4.3 Nitrate and nitrite

The nitrate content shall not exceed 0.05 percent by mass (expressed as potassium or sodium nitrate). When tested according to ISO 3091 and the nitrite content 0.015 percent by mass (expressed as potassium or sodium nitrite) in the finished product when tested according to ISO 2918.

4.4.5 Vacuum

The can shall give a negative pressure of not less than 15 cm of vacuum at ambient temperature.

4.4.6 The material shall also conform to the limits for metallic impurities and microbiological activity as prescribed in Table 1.

Table 1 — Microbiological and heavy metal limits for canned luncheon pork meat

Type of contaminant		Requirement	Method of test
(i)	Microbiological requirements	Shall be commercially sterile	E.5 of CD/K/520-1:2010
(ii)	Arsenic, mg/kg, max	1.0	EAS 41
(iii)	Copper, mg/kg, max	20.0	EAS 41
(iv)	Tin, mg/kg, max	250.0	EAS 41
(v)	Mercury, mg/kg, max	0.5	EAS 41
(vi)	Lead, mg/kg, max	5.0	EAS 41
(vii)	Cadmium, mg/kg, max	0.3	EAS 41
(viii)	Zinc, mg/kg, max	50.0	EAS 41

5 Packing and marking

5.1 Packing in cans

Subject to the agreement between the purchaser and the vendor, each can (if not lacquered for meat packing) shall be coated on the inner side with edible gelatin, lard or lined with vegetable parchment paper before filling the product.

5.1.1 Packing in cases

Unless otherwise specified, cans, shall be packed in cases sufficiently strong to withstand rough handling during transit.

5.2 Marking

5.2.1 The cans may be labelled either by printing or lithographing on the cans themselves or by pasting printed labels as agreed to between the purchaser and the vendor. The label shall bear the following information in addition to any other information required under EAS 38.

- a) Name of the product along with brand name, if any;
- b) Name and address of the manufacturer;
- c) Net, mass content, of the can;
- d) Batch or code number — embossed indelibly on the can;
- e) Warranty period;
- f) Name of ingredients in descending order; and
- g) Licence number given by the health authorities.

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

6 Sampling

Sampling of luncheon beef (canned) shall be done according to the method prescribed in Annex H of CD-K-692:2010.

7 Tests

7.1 Tests shall be conducted as specified in 4.4.4.1, 4.4.4.2, 4.4.4.3, 4.4.5 and col4 of Table 1.

7.2 Quality of reagents — Unless specified otherwise, pure chemicals and distilled water (see EAS 12) shall be employed in the tests.

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

Annex A
(normative)

Method for determination of filler

Principle

After the sugars present, in the sample are leached out, starch is hydrolyzed and estimated as invert sugars.

A.1 Procedure

A.1.1 To the weighed sample add a little water and heat to 60 °C. Allow to stand for some time to obtain a solution of the starch. Add about 100 ml of 95 percent alcohol and centrifuge till the precipitate settles at the bottom. Filter and wash the residue with about 50 percent alcohol until the filtrate gives no test for sugars, when tested as per details given below.

A.1.1.1 To a few ml of the filtrate in a small narrow test tube, add 2 drops of 10 percent alcoholic solution of alpha-naphthol. Allow 1 ml of pure concentrated sulphuric acid to flow slowly down the side of the test tube so as to form a layer beneath the aqueous solution. If sugars are present, a red ring will appear within a few seconds at the junction of the two layers.

A.1.2 Transfer the residue to a 500 ml Erlenmeyer flask with about 100 ml of water. Add 20 ml of concentrated hydrochloric acid, place a funnel in the neck of the flask to prevent evaporation, and heat in a boiling water bath for 2 hours and 30 minutes. Cool, nearly neutralize with sodium hydroxide using phenolphthalein as indicator and make up to a definite volume with water. Determine the reducing sugars as described in CD-K-676:2010.

Filler, percent by mass = Percentage of reducing sugars found × 0.90

Annex B
(normative)**Determination of the total meat content****B.1 Apparatus**

B.1.1 Kjeldahl flask — 500 ml capacity.

B.1.2 Distillation assembly — The assembly consists of a round-bottomed flask of 1000 ml capacity fitted with a rubber stopper through which passes one end of the connecting bulb tube. The other end of the bulb tube is connected to the condenser which is attached by means of a rubber tube to a dip tube which dips into a known quantity of standard sulfuric acid contained in a beaker of 250 ml capacity.

B.2 Reagents

B.2.1 Potassium sulfate or anhydrous sodium sulfate

B.2.2 Concentrated sulfuric acid — sp gr 1.84.

B.2.3 Yellow mercuric oxide

B.2.4 Potassium hydrogen phthalate

B.2.5 Methyl red-methylene blue indicator solution — prepared by mixing one part of 0.2 percent solution of methyl red in rectified spirit with one part of 0.1 percent solution of methylene blue in rectified spirit.

B.2.6 Phenolphthalein indicator solution — prepared by dissolving 0.1 g of phenolphthalein in 100 ml of rectified spirit.

B.2.7 Standard sodium hydroxide solution — 0.5 N.

B.2.8 Standard sulfuric acid — 0.5 N.

B.2.9 Sodium hydroxide solution — Dissolve approximately 450 g of sodium hydroxide in 550 ml of distilled water. Cool and filter through glass wool if necessary.

B.3 Procedure**B.3.1 Determination of lean meat content**

B.3.1.1 Accurately weigh 2 g of the test sample and transfer it to the Kjeldahl digestion flask. Add 10 to 15 g of potassium sulfate (or anhydrous sodium sulfate), 0.1 to 0.3 g of mercuric oxide and 15 to 25 ml of concentrated sulfuric acid. Heat gently until frothing ceases and then heat strongly until the solution becomes clear and continue the digestion for at least 30 minutes longer (about 32 hours are required for complete digestion). Cool and dilute with about 250 ml of distilled water. Cool to room temperature, add a few glass beads and run 50 ml of the sodium hydroxide solution down the side of the flask so that it forms a separate layer and does not mix with the acid solution at once.

Connect to the distillation assembly, mix the contents of the flask by gently swirling, and then distil off the ammonia in about 250 ml of distillate into an Erlenmeyer flask containing a known volume of excess of standard sulfuric acid. Titrate the excess acid in the Erlenmeyer flask with the standard sodium hydroxide solution using three to four drops of the methyl red-methylene blue indicator solution.

B.3.1.2 Carry out a blank determination using all the reagents in the same quantities but without the material to be tested.

B.3.1.3 Calculation

i) Nitrogen, percent by mass = $\frac{(x-y)N \times 1.4}{M}$

where

x = volume, in ml, of sulfuric acid neutralized by the ammonia distilled from the sample;

y = volume, in ml, of sulfuric acid neutralized by the ammonia distilled from the blank;

N = normality of the sulfuric acid; and

M = mass, in g, of sample taken.

ii) Lean meat content percent = nitrogen percent by mass \times 30.

B.3.2 Determination of fat content

B.3.2.1 Accurately weigh 5 g of the sample into a suitable evaporating basin containing a short glass rod with a flattened end. Heat on a water bath until most of the moisture is expelled. Cool the basin and add 25 ml of ether and disintegrate the residue in ether by means of the glass rod. Decant the ether extract through a filter paper. Repeat the maceration and extraction until all the fat has been removed (about five extractions are necessary). Remove the ether from the combined extracts by distillation from a previously weighed 50-ml distillation flask. Dry the flask and contents to constant mass under vacuum in a boiling water-bath.

B.3.2.2 Calculation

Fat, percent by mass (x) = $\frac{\text{Mass of ether extract} \times 100}{\text{Mass of sample taken}}$

B.3.3 Calculation of total meat content

Calculate the total meat content as follows:

Total meat content % by mass (y) = (Lean meat, percent by mass) + (Fat, percent by mass).

B.3.4 Fat percentage on meat basis (see 4.4.4.2) = $\frac{x \times 100}{y}$

Annex C (normative)

Sampling of canned luncheon beef

C.1 General requirements for sampling

C.1.1 Sampling shall be done by a person agreed to between the purchaser and the vendor and in the presence of the purchaser (or his representative) and the vendor (or his representative).

C.1.2 Samples shall be stored in such a manner that the temperature of the material does not vary unduly from the normal temperature.

C.2 Scale of sampling

C.2.1 Lot — In any consignment, all the cases containing cans of the same size and from the same batch of manufacture shall be grouped together to constitute a lot.

C.2.1.1 Samples shall be tested for each lot for ascertaining conformity of the material to the requirements of this specification.

C.2.2 The number of cans to be selected from the lot for testing the physical and chemical requirements shall depend upon the size of the lot and shall be in accordance with col 1 and 2 of Table 2. In addition to this, 8 cans shall be selected for testing for microbiological requirements.

Table 2 — Selection of cans for testing

No. of cans in the lot (1)	No. of cans to be selected (2)
Up to 200	4
201 to 500	5
501 to 800	6
801 to 1300	7
1301 to 3 200	8
3 201 to 8 000	9
8 001 and above	10

C.2.3 These cans shall be selected at random from a number of packing cases as agreed to between the purchaser and the vendor (or manufacturer). Subject to such an agreement, the minimum number of packing cases to be opened may be in accordance with Table 3. The cans required as in C.2.2 shall then be drawn at random, equally from these packing cases.

Table 3 — Opening of packing cases

No. of packing cases in the lot (1)	No. of packing cases to be selected (2)
Up to 10	2
11 to 25	4
26 to 64	5
65 to 100	6
101 to 150	7
151 to 225	8
226 to 300	9
301 to 500	10

C.2.4 In order to ensure the randomness, random number tables shall be used. In case such tables are not available, the following procedure may be adopted.

C.2.4.1 Arrange all the cans in a systematic manner and starting from any can, every r th can shall be withdrawn, being the integral part of $= \frac{N}{n}$,

where

N = total number of cans in the lot, and

n = number of cans to be selected.

C.3 Number of tests

C.3.1 A representative sample drawn from the cans, selected for physical and chemical requirements, shall be tested for sodium chloride, nitrate, nitrite, fill of container, total meat content, total fat, vacuum and heavy metals (see 4.2.3, 4.2.4, 4.4.2, 4.4.4, 4.4.5 and 4.4.6).

C.3.2 Tests for microbiological requirements

C.3.2.1 Incubation at 37 °C — 50 percent of the cans selected as in C.2.2 shall be incubated at 37 °C for not less than 14 days and subjected to microbiological examination as given in Annex P of CD-K-692:2010.

C.3.2.2 Incubation at 55 °C — The remaining 50 percent of the cans shall be incubated at 55 °C for not less than 14 days and subjected to microbiological examination as given in Annex P of CD-K-692:2010.

C.4 Criterion for conformity

C.4.1 A lot shall be considered as conforming to the requirements of this standard if all the samples tested satisfy the corresponding requirements for the characteristics.

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