

KENYA STANDARD

KS 2922-2:2020

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ICS 67.120

First Edition

Edible insects — Specification

Part 2:

Products containing edible insects

TECHNICAL COMMITTEE REPRESENTATION

The following organizations were represented on the Technical Committee:

Jaramongi Oginga Odinga University of Science and Technology

Jomo Kenyatta University of Agriculture and Technology

Egerton University — Department of Human Nutrition

Ministry of Health — Division of Nutrition and Dietetics

Ministry of Health — Division of Food Safety and Quality

National Public Health Laboratory

Kenya Medical Research Institute

Government Chemist Department

Kenyatta National Hospital

International Centre of Insect Physiology and Ecology

Aga Khan University Hospital, Nairobi

Nestle Kenya Ltd.

Total Lifestyle Change Ltd.

Veekay Ltd.

Kensalt Ltd.

Kenya Bureau of Standards — Secretariat

REVISION OF KENYA STANDARDS

In order to keep abreast of progress in industry, Kenya Standards shall be regularly reviewed. Suggestions for improvements to published standards, addressed to the Managing Director, Kenya Bureau of Standards, are welcome.

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Foreword

This Kenya Standard was prepared by the Nutrition and Foods for Special Dietary Uses Technical Committee under the guidance of the Standards Projects Committee, and it is in accordance with the procedures of the Kenya Bureau of Standards

Use of edible insects to enhance nutritional contents of products especially snacks is viewed as a potential option to enhance the nutritional status of the population especially children and vulnerable populations. Traditionally most communities were consuming insects as part of their normal diet a trend that had been reversed by urbanization and modern agriculture. The demand for insects as food is slowly increasing globally and touted as a viable intervention to manage micronutrient deficiencies.

This standard provides for the use of edible insects as ingoing ingredients to products and snack. It lays emphasis on the safety of the products and in particular microbiological safety and heavy metal contaminants. In ensuring the consumer has the right information to make informed decision, appropriate labelling declaring the true nature of the product was included in this edition.

During the preparation of this standard, reference was made to the following documents:

FAO 2013: Edible insects future prospects for food and feed security, FAO, Rome

IPIFF Guide on Good Hygiene Practices for European Union of insects as food and feed

US 2146: 2019 Edible insects — Specification

Adedayo, Adeboye, Tomilola, Bolaji² and Omotayo, Fatola (2016). Nutritional composition and sensory evaluation of cookies made from wheat and palm weevil larvae flour blends, Annals, Food Science and Technology.

Acknowledgement is hereby made for the assistance derived from these sources.

Edible insects — Specification — Part 2: Products containing edible insects

1 Scope

This Kenya Standard specifies the requirements, sampling and test methods for products containing edible insects as an ingredient intended for human consumption.

2 Normative references

The following referenced documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

KS 2922-1 *Edible Insects, Part 1: Edible insects' products — Specification*

KS CODEX STAN 192, *Codex General standard for food additives*

KS EAS 38, *Labelling of prepackaged foods — General requirements*

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

KS EAS 804, *Claims on food — General requirements*

KS EAS 805, *Use of nutrition and health claims — Requirements*

KS ISO 4833-1, *Microbiology of the food chain — Horizontal method for the enumeration of microorganisms — Part 1: Colony count at 30 °C by the pour plate technique*

KS ISO 5983-1, *Animal feeding stuffs — Determination of nitrogen content and calculation of crude protein content — Part 1: Kjeldahl method*

KS ISO 5985, *Animal feeding stuffs — Determination of ash insoluble in hydrochloric acid*

KS ISO 6633, *Fruits, vegetables and derived products — Determination of lead content — Flameless atomic absorption spectrometric method*

KS ISO 6496, *Animal feeding stuffs — Determination of moisture and other volatile matter content*

KS ISO 6579-1 *Microbiology of the food chain — Horizontal method for the detection, enumeration and serotyping of Salmonella — Part 1: Detection of Salmonella spp*

KS ISO 6888-1, *Microbiology of food and animal feeding stuffs — Horizontal method for the enumeration of coagulase-positive staphylococci (staphylococcus Aureus and other species) — Part 1: Technique using baird-pac*

KS ISO 10272-1, *Microbiology of the food chain-Horizontal method for detection and enumeration of Campylobacter spp. — Part 1: Detection method*

KS ISO 11290-2 *Microbiology of the food chain — Horizontal method for the detection and enumeration of Listeria monocytogenes and of Listeria spp. — Part 2: Enumeration method*

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KS ISO 16649-2, *Microbiology of food and animal feeding stuffs — Horizontal method for the enumeration of B-glucuronidase-positive Escherichia coli — Part 1: Colony-count technique at 44 using membranes and 5-bromo-4*

KS ISO 13547-2, *Copper, lead, zinc and nickel sulphide Concentrates — Determination of arsenic Part 2: Acid digestion and inductively coupled plasma atomic emission spectrometric method*

KS 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*

ISO 22964:2017, *Microbiology of the food chain — horizontal method for the detection of cronobacter spp.*

KS ISO 27085, *Animal feeding stuffs — Determination of calcium, sodium, phosphorus, magnesium, potassium, iron, zinc, copper, manganese, cobalt, molybdenum, arsenic, lead and cadmium by ICP-AES*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1

product containing edible insects

ready to use product or a product which will require further processing before consumption whose ingredients include edible insect products. They include products such as cookies, biscuits, snacks, flours and bread.

3.2

edible insect product

product that has been processed by heat treating insects that have been harvested either from domesticated farms, semi cultivated farms or from wild harvesting. The product is presented in the form of whole insect or in powder form

3.3

domesticated insect farms

farming of insects in established farms where the insects are held in confinement

3.4

semi-cultivated insect farms

type of domesticated farming of insects where the insects are not confinement rather they are in their natural environment which is manipulated to some degree to produce the edible insects

3.5

whole insect product

insect dried product where some inedible parts of the insects such as wings; hair have been removed during or after drying

3.6

powdered insect product

particulate product of dried insects that is achieved by milling or grinding dry whole insect product

4 Requirements

4.1 General requirements

4.1.1 Products containing edible insects shall:

- a) have acceptable flavour and odour;
- b) be free from adulterants and extraneous material;
- c) be free from infestation and contamination from pests; and

d) be free from rancid, musty or any other foreign taste characteristic of spoilage.

4.1.2 The products containing edible insects shall have at least 10 % of the ingredients from dried insects' product complying with KS 2922-1.

NOTE For baked products such as bread, scones may contain at least 5 %.

4.1.3 Other ingredients used shall comply with the relevant Kenya Standards.

4.2 Specific requirements

Products containing edible insects shall comply with the specific requirements given in Table 1, when tested in accordance with the test methods prescribed therein:

Table 1 — Requirements for products containing edible insects

| S/N | Parameter | Limit, % | Test method |
|--|----------------------------------|-----------------|-------------|
| i. | Moisture content, m/m, max. | g ^{ab} | KS ISO 6496 |
| ii. | Acid insoluble ash, %, m/m, max. | 1 | KS ISO 5985 |
| <p>^a Where there exists a Kenya Standard for similar product such as bread, biscuit or wafers the requirement in that standard shall apply.</p> <p>^b This parameter does not apply to products presented as liquid/aqueous/high moisture extruded products/paste solution.</p> | | | |

5 Optional ingredients

Products containing edible insects may contain other approved food ingredients complying with relevant Kenya Standards.

6 Food additives

Only permitted food additives in accordance with KS CODEX STAN 192 for similar products may be used.

7 Hygiene

7.1 The products containing edible insects shall be prepared and packaged in premises built and maintained under hygienic conditions in accordance with the Public Health Act, Cap. 242, the Food Drugs and Chemicals Substances Act, Cap. 254 of the Laws of Kenya and KS EAS 39.

7.2 Products containing edible insects shall be free from any pathogenic microorganism and shall in particular comply with the microbiological requirements indicated in Table 2 when tested in accordance with the test methods specified therein.

Table 2 — Microbiological limits for products containing edible insects

| S/N | Type of micro-organism | Maximum number of counts | Test method |
|-------|---|---------------------------|-----------------|
| i. | Total Aerobic Counts at 30 °C, CFU/g | 10 ⁵ | KS ISO 4833-1 |
| ii. | <i>Salmonella</i> in 25 g | Shall be absent | KS ISO 6579-1 |
| iii. | <i>E. Coli</i> , CFU/g | Less than 10 ^a | KS ISO 16649-2 |
| iv. | <i>Coagulase positive Staphylococci aureas</i> CFU/g | Less than 10 | KS ISO 6888-1 |
| v. | <i>Listeria monocytogenes</i> , CFU/25 g | Absent | KS ISO 11290-2 |
| vi. | <i>Cronobacter spp. (Enterobacter sakazakii)</i> CFU/10 g | Absent | ISO 22964 |
| vii. | <i>Campylobacter</i> , CFU/25 g | Absent | KS ISO 10272-1: |
| viii. | Yeast and moulds, CFU/g | 10 ² | KS ISO 21527-2 |

^a For ready to use. Products that will require further processing before consumption as per the direction of use a maximum of 10² shall apply.

8 Contaminants

8.1 Heavy metal contaminants

Products containing edible insects shall not contain heavy metal contaminants in amounts established under WHO or FAO to cause adverse effect to health and in particular shall comply with the limits indicated in Table 3, when tested in accordance with the test methods specified therein.

Table 3 — Limits for heavy metal contaminants for products containing edible insects

| S/N | Contaminant | Max. limit, mg/kg | Test method |
|------|--------------|-------------------|----------------|
| i. | Lead (Pb) | 0.5 | KS ISO 6633 |
| ii. | Arsenic (Ar) | 0.1 | KS ISO 13547-2 |
| iii. | Cadmium (Cd) | 0.4 | KS ISO 27085 |

8.2 Mycotoxins

Products containing edible insects shall have a maximum of 10 µg/kg of total aflatoxin and a maximum of 5 µg/kg of Aflatoxin B1.

9 Packaging

9.1 The products containing edible insects shall be packaged in food grade materials that will ensure the safety and integrity of the product throughout the shelf life.

9.2 The fill of the container shall be in accordance with the Weights and Measures Act, Cap. 513 of the Laws of Kenya.

10 Labelling

10.1 In addition to the labelling requirements of KS EAS 38, the label shall include the following information:

- a) name of the product shall be named appropriate to its true nature such as “**XXX flour**” where xxx is the insect e.g cricket based/enriched wheat flour’, ‘Cricket based/enriched biscuit’, ‘cricket based/enriched cookies’, ‘cricket based/enrichment snack’;
- b) as part of the ingredient, shall declare one of the ingredient as “**Dried edible insect XXX**”, (common name of insect) e.g. dried edible insect powder (crickets);
- c) statement that, “**contain an ingredient that may cause allergy reaction**”;
- d) direction for use of the product where product may require further processing before use; and
- e) storage instructions.

10.2 Any health and/or nutrition claim on products containing edible insects shall comply with the provisions of KS EAS 804 and KS EAS 805.

