

**DRAFT KENYA STANDARD**

**DKS 2922-1:2020**

**First Edition**

## **Edible Insects**

### **Part 1:**

### **Edible insects' products - Specification**



**Kenya Bureau of  
Standards**

Standards for Quality life

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## Edible insects

### Part 1:

## Edible insects' products — Specification

Kenya Bureau of Standards, Popo Road, Off Mombasa Road,  
P.O. Box 54974 - 00200, Nairobi, Kenya



+254 020 6948000, + 254 722202137, + 254 734600471



info@kebs.org



@KEBS\_ke



Kenya bureau of standards (KEBS)

## Foreword

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

There is increased demand to seek alternative sources of nutritious products to supplement existing traditional sources of nutrients such as meat, fruits, cereals and legumes. This is mainly due to decreased agricultural output of these products, increase of population, reduced agricultural land, rural-urban migration among other reasons. Recent scientific evidences are pointing at the great unexploited potential that edible insects possess in contributing to the overall food security and nutrition. There is a lot of innovation currently going on to introduce edible insects as alternative nutrient enhancing ingredients to existing food products. It is against this emerging trend that this standard was developed to particularly provide a basis of assuring the general safety and quality of dried insect products. The standards address itself to parameters that are directly related to safety and quality of the products such as moisture contents which has an effect on keeping quality of the products, heavy metal and microbiological contaminations owing to susceptibility of the insects to contaminations as well as offering guidance to packaging and labelling.

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

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

Rumpold, Birgit & Schlüter, Oliver. (2015). Insect-based protein sources and their potential for human consumption: Nutritional composition and processing. *Animal Frontiers*. 5. 20-24. 10.2527/af.2015-0015.

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

## Edible Insects Products — Specification

### 1 Scope

This Draft Kenya standard specifies the requirements, sampling and test methods for edible insects' products intended for human consumption.

### 2 Normative references

The following 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.

DKS 2921, *Primary production of Insects for Food and Feed — Code of practice*

KS CODEX STAN 192, *Codex General standard for Food Additives*

KS EAS 38, *Labeling 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 soecies) - 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. / Meat and Poultry Products*

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*

Public Health Act Cap 242

### 3 Terms and definitions

For the purposes of this document, the following term and definition apply:

#### 3.1

##### **Edible insect Product**

Is a product that has been processed from edible insects harvested either from domesticated farms or from the wild. The product may be presented in the form of whole insect, milled, paste, liquid/aqueous or in powder form

#### 3.2

##### **Whole insect Product**

Is an edible insect product either whole or where some inedible parts of the insects such as wings, gut hair have been removed during or after drying

#### 3.3

##### **Powdered insect Product**

Is 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** Edible insects intended to be processed into dried edible insect products shall be to the minimum harvested and processed in accordance to DKS 2921. Where the insects are farmed, they shall comply fully to DKS 2921.

**4.1.2** Dried edible insects' products shall be:

- a) presented in either whole or granulated or powder form and either fried or dried
- b) free from adulterants, extraneous material and objectionable odour.
- c) free from infestation and contamination from pests

#### 4.2 Specific requirements

Dried edible insects' products shall conform to the specific requirements when tested with the test methods described in table:

**Table 1 — Requirements for dried insects' products - specification**

s/n	Parameter	Limits, %,	Test method
i).	Moisture Content, m/m, max	12	KS ISO 6496
ii).	Protein Content % m/m min.	15	KS ISO 5983-1
iii).	Acid insoluble ash, (max), %, m/m	1	KS ISO 5985

## 6 Optional ingredients

Dried edible insect products may contain other approved food ingredients to enhance flavour and palatability such as edible salt, seasonings and herbs complying with relevant Kenya Standards.

## 7 Food additives

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

## 8 Hygiene

**8.1** The dried insects' products shall be prepared and packaged in premises built and maintained under hygienic condition in accordance with Public Health Act Cap 242, the Food Drugs and Chemicals Substances Act, Cap. 254 of the Laws of Kenya and KS EAS 39.

**8.2** Dried insects' products 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 dried Insect products**

S/N	Type of micro-organism	Maximum number of counts	Test method
i.	Total Aerobic Counts at 30 °C, CFU/g	10 <sup>5</sup>	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 <sup>a</sup>	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/25g	Absent	KS ISO 11290-2
vi.	<i>Cronobacter spp. (Enterobacter sakazakii)</i> CFU/10g	Absent	ISO 22964
vii.	<i>Campylobacter</i> , CFU/25g	Absent	KS ISO 10272-1:
viii.	Yeast and moulds CFU/g	10 <sup>2</sup>	KS ISO 21527-2
<sup>a</sup> For ready to use. Products that will require further processing before consumption as per the direction of use a maximum of 10 <sup>2</sup> shall apply.			

## 9 Contaminants

### 9.1 Heavy Metal Contaminants

Dried Insect Products 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 edible insects products

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	0.4	KS ISO 27085

## 9.2 Mycotoxins

Dried edible insects' products shall have a maximum of 10 µg/Kg of Total aflatoxin and a maximum of 5 µg/Kg of Aflatoxin B<sub>1</sub>

## 10 Packaging and labelling

### 10.1 Packaging

**10.1.1** The edible Insects products shall be packaged in food grade materials that will ensure the safety and integrity of the product throughout the shelf life.

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

### 10.2 Labelling

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

- name of the product shall be either 'Dried whole insect' or 'Dried powdered insects' or 'Dried milled insects' or 'fried insect products' or 'grinded/ground insect products';
- Declare the insect by common name and biological name in brackets;
- Direction for use of the product; and
- storage instructions.

**10.2.2** Any health and/or nutrition claim on dried insect products shall conform to the provisions of KS EAS 804 and KS EAS 805.



**Annex A**  
**(Informative)**

**Potential species for production of edible insect products**

As a guide, the latest publication of *the list of edible insects of the world* as compiled and published by Wageningen University web portal (<https://www.wur.nl/en/Research-Results/Chair-groups/Plant-Sciences/Laboratory-of-Entomology/Edible-insects/Worldwide-species-list.htm>) may be used to guide on the potential species. Compendium (s) developed, validated and published by national research centres and local universities may also be used as a reference. Where a local list has been developed it shall be preferred.

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