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## **DRAFT EAST AFRICAN STANDARD**

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**Milled maize (corn) products — 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 the East African Community. It is envisaged that through harmonized standardization, trade barriers that are encountered when goods and services are exchanged within the Community will be removed.

The Community has established an East African Standards Committee (EASC) mandated to develop and issue East African Standards (EAS). The Committee is composed of representatives of the National Standards Bodies in Partner States, together with the representatives from the public and private sector organizations in the community.

East African Standards are developed through Technical Committees that are representative of key stakeholders including government, academia, consumer groups, private sector and other interested parties. 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 Principles and procedures for development of East African Standards.

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.

The committee responsible for this document is Technical Committee EASC/TC 014, *Cereals and pulses*.

Attention is drawn to the possibility that some of the elements of this document may be subject of patent rights. EAC shall not be held responsible for identifying any or all such patent rights.

This fourth edition cancels and replaces the third edition (EAS 44: 2017), which has been technically revised.

## Milled maize (corn) products — Specification

### 1 Scope

1.1 This draft East African Standard specifies requirements, sampling and test methods for whole maize meal, granulated maize meal, sifted maize meal, maize grits and maize flour from the grains of common maize (*Zeamays L.*) intended for human consumption.

1.2 This standard does not apply to fortified milled maize (corn) products and maize grits intended for brewing, manufacturing of starch and any other industrial use.

### 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.

AOAC 965.22, *Sorting corn grits sieving method modified*

CODEX STAN 193, *Codex general standard for contaminants and toxins in food and feed*

EAS 2, *Maize grains — Specification*

EAS 38, *Labelling of pre-packaged foods — General requirements*

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

EAS 900, *Cereals and pulses — Sampling*

EAS 901, *Cereals and pulses — Test methods*

ISO 2171, *Cereals, pulses and by-products — Determination of ash yield by incineration*

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

ISO 6561-1, *Fruits, vegetables and derived products — Determination of cadmium content — Part 1: Method using graphite furnace atomic absorption spectrometry*

ISO 6561-2, *Fruits, vegetables and derived products — Determination of cadmium content — Part 2: Method using flame atomic absorption spectrometry.*

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

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

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-Parker agar medium*

ISO 7305, *Milled cereal products — Determination of fat acidity*

ISO 11085, *Cereals, cereals-based products and animal feeding stuffs — Determination of crude fat and total fat content by the Randall extraction method*

ISO 16649-2, *Microbiology of food and animal feeding stuffs — Horizontal method for the enumeration of beta- glucuronidase-positive Escherichia coli — Part 2: Colony-count technique at 44 degrees C using 5-bromo-4-chloro-3- indolyl beta-D-glucuronide*

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 Terms and definitions

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

#### 3.1

##### **milled maize (corn) products**

products obtained from maize grains (*Zea mays* L.) through milling process

#### 3.2

##### **whole maize meal**

food prepared from fully mature, sound, un-germinated, whole kernels of maize, (*Zea mays* L.), by a grinding process in which the entire grain is comminuted to a suitable degree of fineness

#### 3.3

##### **granulated maize meal**

coarse product obtained from milling and sifting of clean shelled maize

#### 3.4

##### **sifted maize meal**

form of granulated maize meal that has been reduced to a certain degree of fineness

#### 3.5

##### **sifting**

particle size separation by sieving and aspiration of milled products

#### 3.6

##### **clean maize kernel**

shelled maize that has been subjected to a cleaning process for the removal of foreign and objectionable matter originally present

#### 3.7

##### **maize flour**

product obtained by removing the germ and bran followed by grinding, clean maize kernels using roller mills or other methods and sifting the resulting product to suitable degree of fineness

#### 3.8

##### **food grade packaging material**

material which will safeguard the hygienic, nutritional, technological, and organoleptic qualities of the product

### **3.9**

#### **foreign matter**

organic or inorganic material other than maize flour

### **3.10**

#### **filth**

impurities of animal origin including dead insects

## **4 Requirements**

### **4.1 Raw materials and ingredients**

Maize grains complying with EAS 2

### **4.2 General requirements**

Milled maize (corn) products shall be:

- a) characteristic of the colour of maize from which it is prepared;
- b) free from living insects, worms, filth, and foreign matter;
- c) free from fermented musty or other objectionable odours and colours; and
- d) wholesome and fit for human consumption.

### **4.3 Specific requirements**

Milled maize (corn) products shall comply with the requirements given in Table 1 when tested in accordance with the test methods specified therein.

**Table 1 — Specific requirements for milled maize (corn) products**

S/No.	Characteristic	Requirement					Test method
		Sifted maize meal	Granulated maize meal	Whole maize meal	Maize flour	Maize grit	
i)	Crude fibre on moisture free basis % m/m, max.	0.7	1.0	3.0	0.7	1.0	ISO 5498
ii)	Crude fat on moisture free basis, % m/m, max.	3.0	3.0	3.1*	3.0	3.0	ISO 11085
iii)	Moisture content, %m/m, max.	14	14	14 [13.5]	14	14	EAS 901
iv)	Total ash on moisture free basis, % m/m, max.	1.0	1.0	3.0	1.0	1.0	ISO 2171
v)	Total ash on moisture free basis, % m/m, max.	1.0	1.0	3.0	1.0	1.0	ISO 2171
vi)	Acid insoluble ash on moisture free basis, % m/m, max.	0.15	0.35	0.40	0.15	0.15	ISO 5985
vii)	Fat acidity, mg KOH per 100 g of product, on moisture free basis, max.	80	80	80 [200]	80	80	ISO 7305
viii)	Residue on sieving through 1000-micron sieve, %, m/m, max.	0.5	N/A	N/A	0.5	N/A	AOAC 965.22
* Minimum crude fat on moisture free basis for whole maize meal							
N/A Not applicable							

## 5 Food additives

Milled maize (corn) products may contain only the permitted food additives specified in CODEX STAN 192.

## 6 Hygiene

**6.1** Milled maize (corn) products shall be prepared and handled in accordance with EAS 39.

**6.2** The product shall comply with the microbiological limits in Table 2 when tested in accordance with test methods specified therein.

**Table 2 — Microbiological limits for milled maize (corn) products**

S/N	Micro-organism	Limit	Test method
i)	Total aerobic count, cfu/g, max.	10 <sup>5</sup>	ISO 4833-1
ii)	<i>Escherichia coli</i> , cfu/g	<1x 10 <sup>2</sup>	ISO 16649-2
iii)	<i>Salmonella</i> , per 25 g	Absent	ISO 6579-1
iv)	Yeast and moulds, cfu/g, max.	10 <sup>4</sup>	ISO 21527-2
v)	<i>Staphylococcus aureus</i> , cfu/g	<10	ISO 6888-1

## 7 Contaminants

### 7.1 Pesticide residues

Milled maize (corn) products shall comply with those maximum residue limits established by the Codex Alimentarius Commission for this commodity.

### 7.2 Heavy metals

Milled maize (corn) products shall comply with the heavy metal limits in Table 3 when tested in accordance with test methods specified therein.

**Table 3 — Heavy metals limits for milled maize (corn) products**

S/N	Heavy metal	Maximum limit mg/kg	Test method
ii)	Lead (Pb)	0.2	ISO 6633
iii)	Cadmium (Cd)	0.1	ISO 6561-1 ISO 6561-2

### 7.3 Mycotoxins

Milled maize (corn) products shall comply with mycotoxin limits specified in Table 4 when tested in accordance with test methods specified therein.



**Table 4 — Mycotoxins limits for milled maize (corn) products**

<b>S/ N</b>	<b>Mycotoxin</b>	<b>Maximum Limit µg/kg</b>	<b>Test method</b>
i.	Total aflatoxins	10	EAS 901
ii.	Aflatoxins B <sub>1</sub>	5	
iii.	Fumonisin	2 000	

## **8 Weights and measures**

Milled maize (corn) products shall be packaged in accordance with the weights and measures regulations of the destination country.

NOTE EAC Partner States are signatory to the International Labour Organizations (ILO) for maximum package weight of 50 kg where human loading and offloading is involved

## **9 Packaging**

Milled maize (corn) products shall be packaged in food grade packaging materials. When sacks are used for packaging, they shall be clean, sturdy and securely sewn or sealed.

## **10 Labelling**

The following specific labelling requirements shall apply and shall be legibly and indelibly marked in accordance with the requirements of EAS 38:

- a) name of product as "Whole Maize Meal, Sifted Maize meal, Maize Flour or Granulated Maize Meal";
- b) name and address of the manufacturer/packer/importer;
- c) brand name and/or registered trade mark;
- d) batch or code number;
- e) net weight in SI units;
- f) storage instruction as "Store in a cool dry place away from any contaminants";
- g) the statement "Food for human consumption";
- h) country of origin;
- i) date of manufacture;
- j) expiry date; and
- k) instructions for disposal of used package.

## **11 Sampling**

Sampling shall be done in accordance with EAS 900.

## Bibliography

- [1] CODEX STAN 154:1985(Rev.1:1995), *Standard for whole maize (corn) meal*
- [2] EAS 44:2017, *Milled maize (corn) products — Specification*

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