EAST AFRICAN COMMUNITY

EDICT OF GOVERNMENT

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EAS 757 (2011) (English): Sorghum grains – Specification

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EAST AFRICAN STANDARD

Sorghum grains — 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

This standard has been developed to take into account:

— the needs of the market for the product;

— the need to facilitate fair domestic, regional and international trade and prevent technical barriers to trade by establishing a common trading language for buyers and sellers.

— the structure of the CODEX, UNECE, USA, ISO and other internationally significant standards;

— the needs of the producers in gaining knowledge of market standards, conformity assessment, commercial cultivars and crop production process;

— the need to transport the product in a manner that ensures keeping of quality until it reaches the consumer;

— the need for the plant protection authority to certify, through a simplified form, that the product is fit for cross-border and international trade without carrying plant disease vectors;

— the need to promote good agricultural practices that will enhance wider market access, involvement of small-scale traders and hence making farming a viable means of wealth creation; and

— the need to ensure a reliable production base of consistent and safe crops that meet customer requirements.

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Sorghum grains — Specification

1 Scope

This East African Standard specifies the quality and grading requirements and methods of sampling and test for sorghum grains of varieties (cultivars) grown from *Sorghum bicolor* (L.) Moench intended for human consumption, i.e., ready for its intended use as human food, presented in packaged form or sold loose from the package directly to the consumer. It does not apply to other products derived from sorghum grains.

2 Normative references

The following normative documents contain provisions which, through reference in this text constitute provisions of this East African Standard

ISO 605*, Pulses — Determination of impurities, size, foreign odours, insects, and species and variety — Test methods*

ISO 711, *Cereals and cereal products — Determination of moisture content (Basic reference method)*

ISO 712*, Cereals and cereal products — Determination of moisture content — Routine reference method*

ISO 5223, *Test sieves for cereals*

ISO 6639-1, *Cereals and pulses — Determination of hidden insect infestation — Part 1: General principles*

ISO 6639-2, *Cereals and pulses — Determination of hidden insect infestation — Part 2: Sampling*

ISO 6639-3, *Cereals and pulses — Determination of hidden insect infestation — Part 3: Reference method*
ISO 9648, Sorghum – Determination of tannin

ISO 6639-4, *Cereals and pulses — Determination of hidden insect infestation — Part 4: Rapid methods*

ISO 13690, *Cereals, pulses and milled products — Sampling of static batches*

ISO 16050, *Foodstuffs — Determination of aflatoxin B_1, and the total content of aflatoxin B_1, B_2, G_1 and G_2 in cereals, nuts and derived products — High performance liquid chromatographic method*

EAS 38, *Labelling of pre-packaged foods — Specification*

EAS 79, *Cereals and pulses as grain — Methods of sampling*

EAS 217, *Methods for the microbiological examination of foods*

EAS 39, Code of Hygiene Practice in Food and Drink Manufacturing Industry

CODEX Stan 193, Codex general Standards for contaminants and toxins in Food and Feed

3 Terms and Definitions

For the purpose of this East African Standard, the following definitions shall apply

3.1
sorghum grain

Grain that, before the removal of dockage, consists of 50 % or more of whole kernels of sorghum (*Sorghum bicolor* (L.) Moench) excluding non-grain sorghum and not more than 10.0 % of other grains for which standards have been established.

3.2
broken kernels
pieces of sorghum grain which passes through a screen having round holes of 1.8mm in diameter

3.3
damaged grains
kernels, pieces of sorghum kernels, and other grains that are badly ground damaged, badly weather damaged, diseased, frost-damaged, germ-damaged, heat-damaged, insect-bored, mould-damaged, sprout-damaged, or otherwise materially damaged.

3.4
decorticated grains
grains from which the external casings and whole or parts of the germ have been removed in an appropriate manner, using mechanical treatment

3.5
foreign matter
all organic and inorganic material other than pearl millet, broken kernels, other grains and filth.
Foreign matter includes loose Pearl millet seed coats.

3.6
immature and shrivelled grains
grains that are not properly developed

3.7
poisonous, toxic and/or harmful seeds
any seed which if present in quantities above permissible limit may have damaging or dangerous effect on health, organoleptic properties or technological performance such as Jimson weed — Datura (*D. fastuosa* Linn and *D. stramonium* Linn.) corn cokle (*Agrostemma githago* L., *Machai Lallium remulenum* Linn.) Akra (Vicia species), *Argemone mexicana*, Khesari and other seeds that are commonly recognized as harmful to health

3.8
sprouted

Sprouted grains are those with any visible evidence of root system beginning to emerge.

3.9
test weight
the density of a measured volume of grain expressed in kilograms per hectolitre

4 Quality requirements

4.1 General quality requirements

4.1.1 Sorghum grains shall meet the following general requirements/limits as determined using the relevant standards listed in Clause 2:

a) shall be the dried mature grains of *Sorghum bicolor* (L.) Moench;

b) shall be, hard, clean, wholesome, uniform in size and shape;

c) shall be free from abnormal flavours, musty, sour or other undesireable odour, obnoxious smell and discolouration;

d) shall be safe and suitable for human consumption;

e) shall be free from micro-organisms and substances originating from micro-organisms, fungi or other poisonous or deleterious substances in amounts that may constitute a hazard to human health.

4.1.2 Sorghum grains shall be in form of well-filled seeds of uniform colour.

4.2 Specific requirements

4.2.1 Grading

Sorghum grains shall be classified into three grades on the basis of the tolerable limits established in Table 1 which shall be additional to the general requirements set out in this standard.

4.2.2 Ungraded sorghum grains

Shall be sorghum grains which do not fall within the requirements of Grades 1, 2 and 3 of this standard but are not rejected sorghum grains.

Note: For Tanzania and Burundi this requirement shall not apply.

4.2.3 Reject grade sorghum grains

This comprises sorghum grains which have objectionable odour, off flavour, living insects or which do not possess the quality characteristics specified in Table 1. They cannot satisfy the conditions of ungraded sorghum grains and shall be graded as reject sorghum grains and shall be regarded as unfit for human consumption.

Table 1 — Specific requirements for sorghum grains

Characteristic			Specification			Method of test
			Grade 1	Grade 2	Grade 3	
Description			Grain sorghum of red, white or yellow varieties only			
Moisture, max (%)			13	13	13	ISO 711/712
Test Weight Min (kg/hl)			71	62	62	ISO 605
Total Admixture Max (% by wt) (Total of foreign material, screenings and trash)			11.0	30.0	50.0	
Foreign Material Max (% by wt)			2.0	3.0	4.0	
Foreign matter, decorticated seed (% by wt)			0.5	0.5	0.5	
Screenings Max (% by wt)(All matter passing through a 2.0mm slotted screen – 40 shakes in the direction of the slots using an agitator)			11.0	25.0	50.0	
Trash Max (% by wt)(Chaff and other sorghum Trash retained above a 2.0mm slotted screen following the Screenings process)			5.0	15.0	15.0	
Crude protein, % by dry mass basis, *min*			7.0	7.0	7.0	EAS 82
Ergot affected grains %m/m			0.05			
Tannin content, % on dry mass basis, *max.*		Whole grains	0.5	0.5	0.5	ISO 9648
		Decorticated grains	0.3	0.3	0.3	
Defective grains, max (% by count, 300 grain sample	Weather stained		5.0	20.0	20.0	ISO 605
	Field fungi		5.0	10.0	10.0	
	Dry green		5.0	10.0	10.0	
	Immature grain(Fully green in colour)		5.0	10.0	10.0	
	Split/Broken		7.0	10.0	10.0	
	Total defective		5.0	8.0	10.0	
Small Foreign Seeds (% by weight)			1.6	1.6	1.6	
Total Aflatoxin (AFB1+AFB2+AFG1 +AFG2)), ppb max			10			ISO 16050
Aflatoxin B1 only, ppb max			5			
Fumonisin ppm max			2			

5 Contaminants

5.1 Toxic metals

Soghurm grains shall comply with those maximum limits for heavy metals established by the Codex Alimentarius Commission for this commodity.

5.2 Pesticide residues

Soghurm grains shall comply with those maximum pesticide residue limits established by the Codex Alimentarius Commission for this commodity

Note: **where the use of certain pesticides is prohibited by some Partner States, then it shall be notified to all Partner States accordingly.**

5.3 Mycotoxin limits

Sorghum grains shall comply with those maximum mycotoxin limits established by the Codex Alimentarius Commission for this commodity. In particular, total aflatoxin levels in sorghum grains for human consumption shall not exceed 10 µg/kg (ppb) with B_1 not exceeding 5 µg/kg (ppb) when tested according to ISO 16050.

6 Hygiene

6.1 Sorghum grains shall be produced, prepared and handled in accordance with the provisions of appropriate sections of EAS 39

6.4 When tested by appropriate standards of sampling and examination listed in Clause 2, the products:

— shall be free from microorganisms in amounts which may represent a hazard to health and shall not exceed the limits stipulated in Table 2;

— shall be free from parasites which may represent a hazard to health; and

— shall not contain any substance originating from microorganisms in amounts which may represent a hazard to health.

Table 2 — Microbiological limits

	Type of micro-organism	**Limits**	**Test method**
i)	Yeasts and moulds, max. per g	10^4	EAS 217
ii)	*S.aureus* per 25 g	Not detectable	
iii)	*E. Coli*, max. per g	Not detectable	
iv)	*Salmonella,* max. per 25 g	Not detectable	

7 Packaging

7.1 Sorghum grains shall be packed in suitable packages which shall be clean, sound, free from insect, fungal infestation and the packing material shall be of food grade quality

7.2 Sorghum grains shall be packed in containers which will safeguard the hygienic, nutritional, and organoleptic qualities of the products.

7.3 The containers, including packaging material, shall be made of substances which are safe and suitable for their intended use. They shall not impart any toxic substance or undesirable odour or flavor to the product.

7.4 Each package shall contain Sorghum grains of the same type and of the same grade designation.

7.5 If sorghum grains are presented in bags, the bags shall also be free of pests and contaminants.

7.6 Each package shall be securely closed and sealed.

8 Marking or labelling

In addition to the requirements in EAS 38, each package shall be legibly and indelibly marked with the following:

i) product name as “Whole Sorghum grains”

ii) variety;

iii) grade;

iv) name, address and physical location of the producer/ packer/importer;

v) lot/batch/code number;

vi) net weight, in kg;

Note: EAC partner states are signatory to the International Labour Organizations (ILO) for maximum package weight of 50kg where human loading and offloading is involved.

vii) the declaration “Food for Human Consumption’’;

viii) storage instruction as “Store in a cool dry place away from any contaminants’’;

ix) crop year;

x) packing date;

xi) instructions on disposal of used package;

xii) country of origin;

xiii) a declaration on whether the sorghum was genetically modified or not.

9 Sampling

Sampling shall be done in accordance with the EAS 79/ISO 13690.

