
Dry faba beans — Specification

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This African Standard was prepared by the ARSO Technical Committee on Cereals, pulses and derived products (ARSO/TC 12).

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Introduction

Faba bean contains about 30% protein (twice as much as that of cereals), and some varieties even reach over 40%. Among the edible leguminous bean crops, it is next to soybean in terms of protein content. Faba bean protein contains the eight essential amino acids that the human body cannot synthesize. Except for tryptophan and methionine, the contents of the other six amino acids are high, especially lysine, which is twice as high as that in cereal grains. In terms of flour, lysine content is four times as high. Faba bean is a leguminous crop rich in starch, high in protein and low in fat. The total amount of the eight essential amino acids in faba bean is 3.3 times that in wheat, and 2.95 times that in maize. Its lysine content is 7.7 times that of wheat and 6.4 times that of maize, and surpasses the content in meat. Therefore, faba bean is being recommended as a new source of plant protein, and is receiving attention in some European and African countries. The vitamin content in faba bean is higher than that of rice and wheat too.

Faba bean can be taken as a staple food as well as a subsidiary food. As staple food, faba bean can be mixed with flour and maize flours to make into various kinds of noodles and the mixture of faba bean flour and wheat flour can be processed into delicious and nutritious bread.

Faba bean is a good raw material for manufacturing a great variety of traditional subsidiary food items such as vermicelli, noodles, soy sauce, pepper sauce, protein powder, starch and fibrous powder. Apart from these, it also can be processed into other nutritious food items by means of technology and the productive value is 3-5 times as much as that of the primary product.

Faba beans are part of the strategic food commodity basket recognized by the declaration of the African Union Food Security Summit held in December 2006 in Abuja, Nigeria. This standard was harmonized as part of the response by the resolution of the AU Food Security Summit to harmonize standards and grades for strategic food commodities as a means of promoting and facilitating intra-African food trade. Such facilitation would lead to free movement of food commodities from areas of surplus to areas of deficit, leading to overall achievement of food and nutrition security, food self-sufficiency and socioeconomic development of the African continent.

Dry faba beans — Specification

1 Scope

This Final Draft African Standard specifies the requirements, sampling and test methods for dry faba beans of cultivated varieties (cultivars) grown from *Vicia faba* L. 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.

ARS 53, *General principles of food hygiene — Code of practice*

ARS 56, *Prepackaged foods — Labelling*

AOAC Official Method 999.10:1999, *Determination of lead, cadmium, copper, iron and zinc in foods — Atomic absorption spectrophotometry after microwave digestion*

AOAC Official Method 999.11:1999, *Determination of lead, cadmium, copper, iron and zinc in foods — Atomic absorption spectrophotometry after dry ashing*

AOAC Official Method 2001.04, *Determination of Fumonisin B₁ and B₂ in corn and corn flakes — Liquid chromatography with immunoaffinity column cleanup*

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

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 24333, *Cereals and cereal products — Sampling*

ISO 24557, *Pulses — Determination of moisture content — Air-oven method*

3 Terms and definitions

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

3.1

dry faba beans

dry mature seeds of *Vicia faba* L.

3.2

broken

pieces of dry faba beans that are less than three-quarters the size of a whole grain

3.3

foreign matter'

all organic and inorganic material other than dry fonio grain or broken fonio grain and other edible grains

3.3.1

inorganic matter

stones, glass, pieces of soil and other mineral matter

3.3.2

organic matter

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any animal or plant matter (seed coats, straws, weeds) other than fonio grain, broken fonio grain, inorganic extraneous matter and harmful/toxic seeds

3.4

heated-damaged beans

faba beans are considered heated or rotted if they are materially discoloured as a result of heating or rotting. Seed coats appear dark brown to black. The cotyledon tissue of dissected beans appears tan or brown.

3.5

poisonous, toxic and/or harmful seeds

seeds such as *Crotalaria* (*Crotalaria spp.*), Corn cockle (*Agrostemma githago* L.), Castor bean (*Ricinus communis* L.), Jimson weed (*Datura spp.*) which, if present in quantities above a certain limit, can have a damaging or dangerous effect on health, sensory properties or technological performance

3.5

heated-damaged beans

dry faba beans which show damage owing to attack by rodents, insects, mites or other pests

3.6

other edible grains

grains other than dry faba bean (*Vicia faba* L.), whole or broken such as maize, sorghum, wheat

3.7

immature/shriveled beans

dry faba beans which are under-developed and wrinkled over their entire surface

3.8

rotten and diseased beans

dry faba beans affected by mould growth or bacterial decomposition, or other causes that may be noticed without having to cut the grains to examine them and render them unsafe for human consumption

3.9

discoloured faba beans

dry faba beans which are damaged, by heat, frost or water

3.10

defective/damaged beans

dry faba beans that have been broken, pest damaged, shriveled, immature, rotten, mouldy, diseased, germinated, discoloured and heat damaged

3.11

food grade packaging material

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

4 Requirements

4.1 General requirements

Dry faba beans shall:

- a) consist of mature dry pulses of *Vicia faba* L.;
- b) be clean, well-filled, wholesome, uniform in size, shape, colour and in sound merchantable conditions;
- c) be free from substances which render them unfit for human or animal consumption or processing into or utilisation thereof as food or feed;
- d) be free from off-flavours, musty, sour or other undesirable odour, obnoxious smell and discolouration;

e) be free of pests, animal droppings, fungal infection, animal droppings, fungal infection, added colouring matter, impurities of plant and animal origin including insects, rodent hair and excreta and shall meet any other sanitary and phytosanitary requirements; and

f) shall be free from toxic or noxious seeds that are commonly recognized as harmful to health.

4.2 Specific requirements

4.2.1 Grading

Dry faba beans shall be graded into three grades on the basis of the tolerable limits established in Table 1 when tested in accordance with the test methods specified therein which shall be additional to the general requirements set out in this standard.

Table 1 — Specific requirements for dry faba beans

S/N	Characteristic	Maximum limit % m/m, max.			Test method
		Grade 1	Grade 2	Grade 3	
i.	Foreign matter	0.2	0.5	1	ISO 605
ii.	Inorganic matter	0.1	0.2	0.3	
iii.	Broken beans	1	2	3	
iv.	Pest damaged beans	0.3	0.8	1.5	
v.	Rotten and diseased beans	0.2	0.5	0.5	
vi.	Discoloured beans	1	3	3	
vii.	Immature/shrivelled beans	2	4	5	
viii.	Other varieties	0.1	0.5	3.0	
ix.	Other edible grains	0.1	0.2	0.5	
x.	Filth	0.1	0.1	0.1	
xi.	Total defective beans	3	6	8	
xii.	Moisture	14.0	14.0	14.0	ISO 24557

NOTE The parameter, total defective grains is not the sum total of the individual defects. It is limited to 70% of the sum total of individual defects.

5 Contaminants

5.1 Heavy metals

Dry faba beans shall comply with those maximum limits for metal contaminants established by the Codex Alimentarius Commission for this commodity.

5.2 Pesticide residues

Dry faba beans shall comply with those maximum pesticide residue limits established by the Codex Alimentarius Commission for this commodity.

6 Hygiene

6.1 Dry faba beans shall be produced, prepared and handled in accordance with the provisions of appropriate sections of ARS 53.

7 Packaging

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7.1 Dry faba beans shall be packed in suitable food grade packaging materials. When the product is packaged in sacks, these shall be clean, sturdy and strongly sewn or sealed.

7.3 Each package shall contain dry faba beans of the same variety and of the same grade designation.

8 Labelling

8.1 Labelling of retail packages

In addition to the requirements in ARS 56, each package shall be legibly and indelibly marked with the following:

- a) product name as “Dry faba beans”;
- b) grade;
- c) name, address and physical location of the producer/ packer/importer;
- d) lot/batch/code number;
- e) net weight, in SI units;
- f) the declaration “Food for Human Consumption”;
- g) storage instruction as “Store in a cool dry place away from any contaminants”;
- h) crop year;
- i) packing date;
- j) instructions on disposal of used package;
- k) country of origin;
- l) a declaration on whether the dry faba beans were genetically modified or not; and
- m) a caution note indicating that ‘Faba beans are rich in tyramine, and thus should be avoided by those taking monoamine oxidase inhibitors.’

8.2 Labelling of non-retail containers

Information detailed in 8.1 shall be given either on the container or in accompanying documents, except that the name of the product, lot identification and the name and address of the processor or packer as well as storage instructions, shall appear on the container.

For products purchased for use by the buyer/retailer, at least the name of producer, lot number and/or ‘crop year’ shall be indicated on the container.

Lot identification and the name and address of the processor or packer may be replaced by an identification mark provided that such a mark is clearly identifiable with the accompanying documents.

9 Sampling

Sampling shall be done in accordance with ISO 24333.

Bibliography

- [1] EAS 763:2012, *Faba beans — Specification*
- [2] *Fababeans, Official Grain Grading Guide, August 1, 2012, Canadian Grain Commission*
- [3] *Australian Pulse Standards, 2012/2013: Faba beans — Minimum standards*

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