RWANDA STANDARD

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Second edition

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Iron bio-fortified dry beans — Specification

ICS 67.060

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In order to match with technological development and to keep continuous progress in industries, standards are subject to periodic review. Users shall ascertain that they are in possession of the latest edition

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Foreword

Rwanda Standards are prepared by Technical Committees and approved by Rwanda Standards Board (RSB) Board of Directors in accordance with the procedures of RSB, in compliance with Annex 3 of the WTO/TBT agreement on the preparation, adoption and application of standards.

The main task of technical committees is to prepare national standards. Final Draft Rwanda Standards adopted by Technical committees are ratified by members of RSB Board of Directors for publication and gazettment as Rwanda Standards.

DRS 350 was prepared by Technical Committee RSB/TC 003, *Cereals, pulses, legumes and cereal products.*

In the preparation of this standard, reference was made to the following standard (s):

1) RS EAS 46: 2017, Dry beans — Specification

The assistance derived from the above source is hereby acknowledged with thanks.

This secondedition cancels and replaces the firstedition (RS 350:2018), which has been technically revised.

Committee membership

The following organizations were represented on the Technical Committee on *Cereals, pulses, legumes and cereal products* (RSB/TC 003) in the preparation of this standard.

Enterprise URWIBUTSO/SINA GERARD

MANOSALIWA Food Industries Ltd

MINIMEX Ltd

National Agricultural Export Development Board (NAEB)

National Industrial Research and Development Agency (NIRDA)

Nyarutarama Business Incubation Center

One Acre Fund-Tubura

Rwanda Food and Drugs Authority

Zamura Feeds Ltd

Rwanda Standards Board (RSB) – Secretariat

Iron bio-fortified beans — Specification

1 Scope

This Draft Rwanda Standard specifies requirements, sampling and test methods for iron bio-fortified dry common beans (Phaseolus vulgaris 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.

AOAC 972.25, *Lead in food — Atomic absorption spectrophotometric method*

AOAC 973.34, *Cadmium in food — Atomic absorption spectrophotometric method*

AOAC 999.10, *Lead, Cadmium, Zinc, Copper, and Iron in Foods. Atomic Absorption Spectrophotometry*

RS CAC/RCP 1, *Code of Practice — General principles of food hygiene*

RS EAS 38, *Labelling of pre-packaged foods — Requirements*

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

RS ISO 24333, *Cereals and cereal products — Sampling*

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

3 Terms and definitions

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

3.1

iron bio-fortified dry beans

dry beans produced from varieties that have higher level of iron

3.2

bio-fortification

practice of deliberately increasing the content of an essential micronutrient, i.e. vitamins and minerals (including trace elements) in a food, through agronomic practices, conventional plant breeding

3.3

dry beans

dry threshed field and garden beans of the variety *Phaseolus vulgaris* L.

3.4

defective beans

slightly or seriously defective

3.4.1

slightly defective beans

immature, slightly stained, wrinkled or broken

3.4.1.1

immature beans

which are light, not fully filled and thin due to under development

3.4.1.2

broken beans

which the cotyledons are separated or one or both cotyledons have been broken

3.4.2

severely defective beans

pest damaged, mouldy, rotten, Seriously Stained beans, Germinated and heat damaged

3.5

foreign/extraneous matter

fraction consisting of inorganic extraneous matter and organic extraneous matter other than filth

3.6

inorganic foreign/extraneous matter

stones, glass, pieces of soil and other mineral matter

3.7

filth

impurities of animal origin such as dead insects, fragments or remains of insects

3.8

food grade material

packaging material, made of substances which are safe and suitable for their intended use and which will not impart any toxic substance or undesirable odour or flavour to the product

3.9

contrasting varieties

beans of other varieties that are of a different colour, size, or shape from the beans of the designated variety

3.10

other edible grains

other than common bean (*Phaseolis vulgaris*), whole or broken such as maize, sorghum, wheat, etc that are naturally comestible

3.11

Harmful/toxic seeds

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

4 Requirements

4.1 General requirements

Iron bio-fortified dry beans shall be:

a) dried and mature;

b) well-filled;

c) uniform in size, colour and shape and produced from one variety;

d) free from off flavours and musty or other undesirable odour.

4.2 Specific requirements

Iron bio-fortified dry beans shall be categorised into three grades on the basis of the tolerable limits established in Table 1.

Table 1 — Specific requirements

S/N	Characteristics	Maximum limits,%, m/m			Test method
		Grade 1	Grade 2	Grade 3	
i.	Moisture content	14			RS ISO 24557
ii.	Foreign/ matter	0.5	0.75	1	RS ISO 605
iii.	Inorganic foreign matter	0.1	0.2	0.3	
iv.	Filth	0.1			
v.	Other edible grains	0.1	0.2	0.5	
vi.	Contrasting varieties	0.5	1	1.5	
vii.	Slightly defective beans[a]	1	3	7	
viii.	Severely defective beans	0.2	0.4	1	
ix.	Total defective beans	0.8	2.4	5.6	
x.	Harmful/toxic seeds	0.05			

[a] broken bean shall not exceed 3.0% of the slightly defective beans

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

4.3 Iron content requirements

Iron bio-fortified beans shall be classified and have iron content limits as per the Table 2.

Table 2 — Levels of iron in bio-fortified beans

S/N	Class	Iron content mg/kg	Test method
i.	Class I (C1)	≥ 90	AOAC 999.10
ii.	Class II (C2)	≥ 80 to < 90	
iii.	Class III (C3)	≥ 60 to < 80	

5 Contaminants

5.1 Pesticide residues

Iron bio-fortified dry beans shall comply with those maximum pesticide residue limits established by the Codex Alimentarius Commission for this commodity.

5.2 Heavy metals

Iron bio-fortified dry beans shall comply with those maximum limits for heavy metals stated in Table 2.

Table 3 — Heavy metals limits for beans

Heavy metal	Maximum limit, mg/kg	Test method
Lead	0.1	AOAC 999.11
Cadmium	0.1	

6 Hygiene

Iron bio-fortified dry beans shall be produced, handled and stored in accordance with RS CAC/RCP 1.

7 Packaging

7.1 Iron bio-fortified dry beans shall be packaged in food grade packaging materials that do not affect the quality of the product.

7.2 Each package shall contain iron bio-fortified dry beans of the same grade designation.

8 Labelling

8.1 General

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

a) product name as “Iron bio-fortified dry beans”;

b) grade;

c) iron content;

d) class;

e) nameand address of the producer/packer/distributor/ importer/exporter/vendor

f) batch number;

g) net content shall be declared in the metric system;

h) storage instructions’;

i) crop year;

j) packing date.

k) instructions on disposal of used package;

l) country of origin; and

m) the declaration “Food for Human Consumption”.

8.2 Labelling of non-retail containers

Information 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. However, 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 the RS ISO 24333.

Bibliography

[1] RS 350: 2018 Iron biofortified beans — Specification (First edition)

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