

KENYA STANDARD

DKS 3035:2025

ICS 67.200.20

First Edition

Linseed (Flaxseed) for oil extraction — Specification

Public Review Draft

TECHNICAL COMMITTEE REPRESENTATION

The following organizations were represented on the Technical Committee:

Agriculture and Food Authority - Nuts and Oil Crops Directorate
Government Chemist's Department
Jungle Nuts Ltd.
Kakuzi PLC
Kenya Agricultural and Livestock Organization
Kenya Nut Company Limited
Kenyatta University
Kenya Plant Health Inspectorate Service (KEPHIS)
Ministry of Health
National Public Health Laboratories
Sagana Nuts Limited
Agventure Ltd
Healthy U 2000 limited
Giloil Company Limited
Bidco Africa Limited
Kenya Industrial Research and Development Institute (KIRDI)
University of Nairobi
Kentaste Products Limited
Kapa Oil Refineries
Kenya Bureau of Standards — Secretariat

REVISION OF KENYA STANDARDS

In order to keep abreast of progress in industry, Kenya Standards shall be regularly reviewed. Suggestions for improvements to published standards, addressed to the Managing Director, Kenya Bureau of Standards, are welcome.

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Foreword

This Kenya Standard was prepared by the Edible nuts and seeds Technical Committee under the guidance of the Standards Projects Committee, and it is in accordance with the procedures of the Kenya Bureau of Standards.

Kenya Bureau of Standards (KEBS) has established Technical Committees (TCs) mandated to develop Kenya Standards (KS). The Committees are composed of representatives from the public and private sector organizations in Kenya.

Kenya Standards are developed through Technical Committees that are representatives of key stakeholders including government, academia, consumer groups, private sector and other interested parties. Draft Kenya Standards are circulated to stakeholders through the KEBS website and notifications to World Trade Organization (WTO). The comments received are discussed and incorporated before finalization of the standards, in accordance with the Procedures for Development of Kenya Standards.

Kenya Standards are subject to review, to keep pace with technological advances. Users of the Kenya Standards are therefore expected to ensure that they always have the latest versions of the standards they are implementing.

Linseed (flaxseed) is among the oilseed crops grown in Kenya.

This Kenya Standard is intended to guide farmers/traders in achieving quality of linseed(flaxseed) required for oil extraction in internal and external markets.

During the preparation of this standard, reference was made to the following documents.

Australian Oilseeds Federation, Section 1: Quality standards, Technical Information and Typical analysis.

Canadian Grain Commission, Official grain grading guide.

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

Public Review Draft

Linseed (Flaxseed) for oil extraction — Specification

1 Scope

This draft Kenya Standard specifies requirements, sampling and testing methods for linseed (flaxseed) (*Linum usitatissimum*) intended for oil extraction.

2 Normative references

The following referenced documents are referred to in the text in such a way that some or all 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.

CXC 1, General principles of food hygiene

KS EAS 901, Cereals and pulses - Test methods.

KS ISO 664, Oilseeds - Reduction of laboratory sample to test sample

KS ISO 665 Oilseeds — Determination of moisture and volatile matter content

KS ISO 658 Oilseeds — Determination of content of impurities

KS ISO 659 Oilseeds — Determination of oil content (Reference method)

KS ISO 16050 Foodstuffs — Determination of aflatoxin B1, and the total content of aflatoxins B1, B2, G1 and G2 in cereals, nuts and derived products — High-performance liquid chromatographic method

KS ISO 21294 Oilseeds — Manual or automatic discontinuous sampling.

3 Terms and definitions

3.1

Linseed (Flaxseed)

seeds of the plant species *Linum usitatissimum*. L.)

3.2

foreign matter

any organic or inorganic matter other than linseed.

3.3

damaged seeds

linseed and pieces of linseed that are diseased, frost damaged, green, immature, insect damaged and otherwise materially damaged.

3.4

broken seeds

seeds that are not whole.

3.5

pest damaged

seeds which show damage or attack by rodents, insects, mites or other pests that may be noticed without cutting the seeds to examine them.

3.6

noxious seeds

seeds other than linseed which, if present can have a damaging or dangerous effect on health and sensory properties.

3.7

heat damaged

seeds with discoloured cotyledons ranging in colour from orange to dark brown depending on the severity of heat damage.

3.8

sclerotes

hard masses of fungal tissue produced by fungus *Sclerotinia sclerotium*. The sclerotia vary in size and form and consist of a dark black exterior, a white interior and a rough surface texture

3.9

sprouted seeds

seeds in which the seed coat has split, and the primary root has emerged. It includes grains or kernels where the primary root has been knocked off during the harvesting or handling process.

3.10

other grains

edible grain, whole or broken, other than linseed, which may include cereals, pulses and oilseeds.

4 Requirements

4.1 General requirements

Linseed for oil extraction shall be;

- a) physiologically mature;
- b) practically free from foreign matter;
- c) free from pests infestation;
- d) practically free from visible mould;
- e) have colour characteristic of the variety;
- f) free from musty, sour, or other undesired odours and
- g) practically free from noxious seeds

4.2 Specific requirements

Linseed for oil extraction shall comply with specific requirements given in Table 1 when tested in accordance with the methods specified therein.

Table 1- Specific requirements for linseed for oil extraction

S/N	Characteristic		Requirement	Test method
	Moisture content, % (m/m), max.		10	KS ISO 665
	Noxious seeds ^a (count per 0.5L), max.	Datura stramonium	2	Clause 4.3.2.12 of KS EAS 901
		Wild oats	3	
^a does not apply to linseed for industrial oil extraction				

5. Grading

Where grading is required, linseed for oil extraction shall comply with the requirements given in table 2 when tested in accordance with the test methods specified therein.

Table 2-Grading requirements for linseed for oil extraction.

Characteristic	Requirement			Test method
	Grade 1	Grade 2	Grade 3	

Oil content (on dry basis) (% m/m)	>35	30-35	<30	KS ISO 659
Foreign matter, % (m/m), max,	2	3	4	KS ISO 658
Broken seeds, % (m/m), max	2	3	7	Annex A
Other grains, % (m/m), max	0.5	2	3	Clause 4.3.2.12 of KS EAS 901
Sclerotes, % (m/m), max	1	2	4	Annex A
Heat damaged seeds, % by count, max	1	2	10	Annex A
Mouldy seeds, % (m/m), max	1	1	1	Annex A
Sprouted seeds, % (m/m), max	5	5	5	Annex A
Damaged seeds % (m/m), max	5	8	10	Annex A
Rye grass ergot, (length in cm per 0.5L, max)	0.5	0.5	0.5	Annex A

6 Contaminants

6.1 Pesticide residues

Linseed for oil extraction shall comply with those maximum residue limits as established by Codex Alimentarius Commission.

Note: Does not apply to linseed for industrial oil extraction.

6.2 Aflatoxins

Aflatoxin level for linseed for oil extraction shall not exceed maximum limits as given in Table 3 when tested in accordance with the test method specified therein:

Table 3- Aflatoxin limits for linseed for oil extraction

S/N	Aflatoxins	Maximum limit (µg/kg)	Method of test
i.	Total aflatoxin	15	KS ISO 16050
ii.	Aflatoxin B1	5	

Note: Does not apply to linseed for industrial oil extraction.

7 Hygiene

Linseed for oil extraction intended for human consumption shall be produced, prepared, handled and stored in accordance with CXC 1.

8 Packaging

Linseed for oil extraction shall be packaged in appropriate materials that will safeguard the hygienic, chemical and applicable organoleptic properties of the produce during storage and transportation.

9. Labelling

9.1 Each package shall have the following information in the accompanying documents;

- a) product name as “linseed” or “flaxseed”.
- b) name, address and physical location of the producer or packer or distributor or importer or exporter or vendor.
- d) lot/batch/code number.
- e) net weight.
- f) crop year.
- g) country of origin and

9.2 Where a consignment is made up of several packages, the accompanying information shall be traceable to each package.

10 Sampling

Sampling and sample preparation for test shall be done in accordance with KS ISO 21294 and KS ISO 664 respectively.

Annex A (Normative)

A.1 Determination of damaged seeds

A.1.1. Obtain a working sample of at least 20g from a screened sample free of foreign matter and sclerotia.

A.1.2. Shell the seed in the working sample by hand or with a machine so that nucleus portions thereof are retained.

A.1.3. Remove all damaged sunflower seed from the quantity thus shelled and determine the mass thereof.

A.1.4. Determine the percentage of damaged seeds as follows;

$$d/D \times 100$$

Where:

d is the weight of the damaged seeds and

D is the total weight of the sample.

A.2 Determination of mouldy seeds

A.2.1. Divide the sample to the appropriate representative portion of 100g

A.2.2. Handpick the representative portion for visually mouldy seeds.

A.2.3. Determine the percentage by weight as follows;

$$m/M \times 100$$

Where:

m is the weight of mouldy seeds and

M is the total weight of the sample.

A.3. Determination of sclerotes

A.3.1 Divide the sample to the appropriate representative portion of 100g

A.3.2 Handpick the representative portion for sclerotes (visually white but when hard, become small black structures which vary in size and shape)

A.3.3 Determine the weight of the handpicked sclerotes

A.3.4 Determine the percentage sclerotes as follows.

$$s/S \times 100$$

where;

s is the weight of the sclerotes and

S is the weight of the total sample

A.4. Determination of heat damaged seeds

A.4.1. Clean and divide the sample to the appropriate representative portion of 1000 seeds

A.4.2. Make a crush over the sample.

A.4.3. Visually examine the colour of crushed seeds for evidence of heating.

A.4.4. Count and determine the percentage of heated seeds as follows;

$$hd/HD \times 100$$

Where:

hd is the number of heat damaged seeds and

HD is the total count of the sample.

A.5. Determination of sprouted seeds

A.5.1. Divide the sample to the appropriate representative portion of 100g

A.5.2. Handpick the representative portion for visually sprouted seeds.

A.5.3. Determine the percentage by weight where appropriate as follows;

$$sp/SP \times 100$$

Where;

sp is the weight or number of sprouted seeds and

SP is the total weight of the sample.

A.5. Determination of broken seeds

A.5.1. Divide the sample to the appropriate representative portion of 1000 seeds

A.5.2. Handpick the representative portion for visually broken seeds.

A.5.3. Determine the percentage by count as follows;

$$b/B \times 100$$

Where;

b is the number of broken seeds and

B is the total sample.

A.6. Determination of Rye grass ergot

A.6.1. Divide the sample to the appropriate representative portion of 500g.

A.6.2. Handpick the representative portion for pieces of rye grass ergot.

A.6.3. Align the pieces end on end against a ruler to determine the total length in cm.