DEAS1322: 2025

ICS 67.200.200

EAST AFRICAN STANDARD

Sunflower seeds for oil extraction — Specification.

DRAFT

EAST AFRICAN COMMUNITY

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First Edition 2025

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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 015, *Oil seeds, edible fats and oils.*

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Sunflower seeds for oil extraction — Specification

1 Scope

This East African Standard specifies requirements, sampling and testing methods for sunflower (*Helianthus annuus*. L) seeds intended for oil extraction 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.

CXC 1, General principles of food hygiene

EAS 901, Cereals and pulses - Test methods.

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

ISO 665 Oilseeds — Determination of moisture and volatile matter content

ISO 658 Oilseeds — Determination of content of impurities

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

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

ISO 21294 Oilseeds — Manual or automatic discontinuous sampling.

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at http://www.iso.org/obp

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3.1

sunflower seeds

seeds of the plant species *Helianthus annuus.* L

3.2

foreign matter

any organic or inorganic matter other than sunflower seeds.

3.3 immature or shrivelled seeds

sunflower seeds that lack physiological maturity or full development.

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3.4

damaged seeds

Sunflower seeds that are broken, diseased, pest damaged, frost damaged, weather damaged, ground damaged, heat damaged, mould damaged, sprout damaged or those showing internal discoloration of seeds materially affecting their quality

3.5

broken seeds

seeds that are not whole

3.6

pest damaged

seeds showing external visible damage caused by rodents, insects, mites or other pests**3.7**

noxious seeds

seeds other than sunflower seeds which, if present can have a damaging or dangerous effect on health and sensory properties.**3.8**

dehulled seeds

sunflower seeds from which the hull is partially or completely removed.

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3.9

heat damaged

Sunflower seeds which, after being crushed, exhibit a predominantly brown discoloration.

3.10

sclerotes

mass of fungal tissue produced by the fungus Sclerotinia sclerotium

3.11

sprouted seeds

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

4 Requirements

4.1 General requirements

Sunflower seeds for oil extraction shall be:

a) physiologically mature;

b) practically free from visible mould;

b)

c) free from musty, sour, or undesired odours;

d) practically free from foreign matter;

e) practically free from pest infestation;and

g) have colour characteristic of the variety

4.2 Specific requirements

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Sunflower seeds for oil extraction shall comply with specific requirements given in Table 1 whentested in accordance with the methods specified therein.

Table 1- Specific requirements for sunflower seeds for oil extraction

S/N	Characteristic		Requirement	Test method
i)	Moisture content, % (m/m), max.		9	ISO 665
ii)	Noxious seeds, (count per 0.5L), max.	Datura	2	EAS 901
		Wild oats	3	

5 Grading

Where grading is required, sunflower seeds 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 sunflower seeds for oil extraction.

Characteristic	Requirement			Test method
	Grade 1	Grade 2	Grade 3	
Oil content (on dry basis) (% m/m)	>38	25-38	<25	ISO 659
Foreign matter, % (m/m), max,	2	3	4	ISO 658
Immature/shrivelled, % (m/m), max.	1	2	2	Annex A
Other grains, % (m/m), max	0.5	2	3	EAS 901
Dehulled seeds, % (m/m), max	5	5	5	Annex A
Sclerotes, % (m/m), max	1	2	4	Annex A
Heat damaged seeds, % by count, max	0.5	1	2	Annex A
Mouldy seeds, % (m/m), max	1	1	1	Annex A
Sprouted seeds, % (m/m), max	1	2	3	Annex A

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Damaged seeds % (m/m), max	5	8	10	Annex A

6 Contaminants

6.1 Pesticide residues

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

6.2 Aflatoxins

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

Table 3- Aflatoxin limits for sunflower seeds for oil extraction

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

7 Hygiene

shall be produced, prepared and handled in accordance with EAS 39.

8 Packaging

Sunflower seeds for oil extraction shall be packaged in food grade packaging material that will safeguard thehygienic, nutritional, technological and organoleptic qualities of the product

9 Labelling

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In addition to the requirements given in EAS 38, the product shall be legibly and indelibly labelled with the

following information:

a) product name as “sunflower seeds for oil extraction”.

b) grade if applicable

11 Sampling

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

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Annex A
(normative)

A.1 Determination of immature seeds

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

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 immature sunflower seed from the quantity thus shelled and determine the mass thereof.

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

i/I×100

Where;

i is the weight of the immature seeds and

I is the total weight of the sample

A.2 Determination of damaged seeds

A.2.1. Obtain a working sample of at least 20g from a screened sample free of foreign matter and sclerotia.

A.2.2. Shell the seed in the working sample by hand or with a machine so that nucleus portions thereof are retained.

A.2.3. Remove all damaged sunflower seed from the quantity thus shelled and determine the mass thereof.

A.2.4. Determine the percentage of damaged seeds as follows;

d/D×100

Where:

d is the weight of the damaged seeds and

D is the total weight of the sample.

A.3 Determination of mouldy seeds

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

A.3.2. Handpick the representative portion for visually mouldy seeds.

A.3.3. Determine the percentage by weight as follows;

m/M×100

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Where:

m is the weight of mouldy seeds and

M is the total weight of the sample.

A.4 Determination of dehulled seeds

A.4.1 Divide the sample to the appropriate representative portion of 100g

A.4.2. Separate the dehulled seeds from the unhulled seeds.

A.4.3. Weigh the dehulled seeds separately.

A.4.4. Determine the percentage of dehulled seeds as follows;

$$h/H \times 100$$

Where;

h is the weight of dehulled seeds and

H is the total weight of the sample

A.5. Determination of sclerotes

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

A.5.2 Handpick the representative portion for sclerotes (visually white but when hard, become small black structures which vary in size and shape)

A.5.3 Determine the weight of the handpicked sclerotes

A.5.4 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

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A.6. Determination of heat damaged seeds

A.6.1. Clean and divide the sample to the appropriate representative portion of 1000 seeds

A.6.2. Make a crush over the sample.

A.6.3. Visually examine the colour of crushed seeds for evidence of heating.

A.6.4. Count and determine the percentage of heated seeds as follows;

hd/HD×100

Where:

hd is the number of heat damaged seeds and

HD is the total count of the sample.

Note: Heated seeds of other grains are included in the tolerance for Heated.

A.7. Determination of sprouted seeds

A.7.1. Divide the sample to the appropriate representative portion of 100g

A.7.2. Handpick the representative portion for visually sprouted seeds.

A.7.3. Determine the percentage by weight where appropriate as follows;

sp/SP×100

Where;

sp is the weight or number of sprouted seeds and

SP is the total weight of the sample.

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Bibliography

DKS: 3019:2025, Sunflower seeds for oil extraction – Specification

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