



DRAFT TANZANIA STANDARD

Edible rice bran oil (rice oil) — Specification

Draft for stakeholders comments

TANZANIA BUREAU OF STANDARDS

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0 Foreword

Edible rice bran oil is a vegetable oil derived from the bran of rice (*Oryza sativa* L). It is widely used in baked goods, salad dressings, marinades, etc. Considering that the product is used for human consumption, it is very important to ensure its safety and quality.

This Tanzania Standard lays down specifications aiming at ensuring the safety and quality of edible rice bran oil produced or traded in the country for human consumption.

In preparation of this Tanzania Standard, considerable help was derived from:

CXS 210:1999 (Amended 2025), *Codex standard for named vegetable oils* published by Codex Alimentarius Commission.

In reporting the results of a test or analysis made in accordance with this Tanzania Standard, if the final value observed or calculated is to be rounded off, it shall be done in accordance with TZS 4.

1 Scope

This Tanzania Standard specifies the requirements, sampling and test methods for rice bran oil derived from the bran of rice (*Oryza sativa* 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

CXS 192, *General standards for food additives*

TZS 4, *Rounding off numerical values*

TZS 54, *Animal and vegetable fats and oils — Sampling*

TZS 76, *General method for determination of arsenic silver diethyldithiocarmate photometric method*

TZS 109, *Food processing units — Code of hygiene — General*

TZS 268, *General atomic absorption — Spectro — Photometric method for determination of lead in food stuffs*

TZS 538, *Packaging and labeling of foods-General requirements*

TZS 799, *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*

TZS 1313, *Fortified edible oils and fats — Specification*

TZS 1322, *Oils and fats — Sampling and test methods — Purity test*

TZS 1324, *Animal and vegetable fats and oils — Determination of peroxide value-Iodometric (visual) end point determination*

TZS 1325, *Animal and vegetable fats and oils — Determination of saponification value*

TZS 1326, *Animal and vegetable fats and oils — Determination of moisture and volatile matter*

TZS 1327, *Animal and vegetable fats and oils — Determination of iodine value*

TZS 1328, *Essential oils — Determination of relative density at 20 °C — Reference method*

TZS 1329, *Animal and vegetable fats and oils — Determination of refractive index*

TZS 1331, *Animal and vegetable fats and oils — Determination of acid value and acidity*

TZS 1332, *Animal and vegetable fats and oils — Determination of unsaponifiable matter—method using diethyl ether extraction*

TZS 1335, *Animal and vegetable fats and oils — Determination of copper, iron and nickel —I content graphite furnace atomic absorption*

TZS 1336, *Animal and vegetable fats and oils — Determination of insoluble impurities content*

3 Terms and definitions

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

3.1 edible rice bran oil

edible oil derived from the bran of rice (*Oryza sativa* L) that complies with the requirements of this standard

3.2 virgin rice bran oil

rice bran oil obtained, without altering the nature of the oil, by mechanical procedures, for example, expelling or pressing, and the application of heat only. The oil may have been purified by washing with water, settling, filtering and centrifuging only.

3.3 cold pressed rice bran oil

rice bran oil obtained, without altering the nature of the oil, by mechanical procedures only, for example, expelling or pressing, without the application of heat. The oil may have been purified by washing with water, settling, filtering and centrifuging only.

3.4 refined rice bran oil

rice bran oil obtained by mechanical procedures and/or solvent extraction and subjected to refining processes

4 Requirements

4.1 General requirements

4.1.1 Edible rice bran oil shall be free from:

- a) adulterants, sediments, suspended or foreign matter, separated water; and
- b) rancid odour and taste

4.1.2 Colour shall be characteristic of the designated product

4.2 Specific requirements

Edible rice bran oil shall comply with the specific requirements given in Table 1 when tested in accordance with the test methods specified therein.

Table 1 — Specific requirements for edible rice bran oil

S/No.	Parameter	Requirement		Test method
i.	Relative density (at 20 °C/water at 20 °C)	0.910 - 0.929		TZS 1328
ii.	Refractive index, (ND 40 °C)	1.460 - 1.473		TZS 1329
iii.	Saponification value, mg KOH/g oil	180 - 199		TZS 1325
iv.	Iodine value (Wij's), g/100	90 – 115		TZS 1327
v.	Unsaponifiable matter, g/kg, max.	65		TZS 1332
vi.	Moisture and volatile matter at 105 °C, % m/m, max.	0.2		TZS 1326
vii.	Insoluble impurities, % m/m, max.	0.05		TZS 1336
viii.	Acid value, % mg KOH/g Oil, max.	Refined oils	0.6	TZS 1331
		Cold pressed and virgin oils	4	
ix.	Soap content, % m/m, max.	0.005		TZS 1322
x.	Peroxide value, mEq peroxide-oxygen/kg oil, max.	Refined rice bran oil	10	TZS 1324
		Cold pressed and virgin rice bran oil	15	
xi.	Iron (Fe) mg/kg,max.	Refined rice bran oil	1.5	TZS 1335
		Cold pressed and virgin rice bran oil	5.0	
xii.	Copper (Cu) mg/kg,max .	Refined rice bran oil	0.1	TZS 1335
		Cold pressed and virgin rice bran oil	0.4	
xiii.	Fatty acids composition expressed in %			Annex A
xiv.	Levels of desmethylsterols,mg/kg			Annex B

5 Food additives

- 5.1** Food additives shall not be used in virgin or cold pressed rice bran oil.
- 5.2** Refined rice bran oil may contain food additives in accordance with CXS 192.

6 Fortification

Edible rice bran oil may be fortified in accordance with TZS 1313.

7 Hygiene

Edible rice bran oil shall be produced, processed, handled and stored in accordance with TZS 109.

8 Contaminants

8.1 Pesticide residues

Edible rice bran oil shall comply with relevant maximum pesticide residue limits established by the Codex Alimentarius Commission.

8.2 Heavy metals

Edible rice bran oil shall not exceed the maximum limits for heavy metal contaminants specified in Table 2 when tested in accordance with test methods specified therein.

Table 2 — Maximum limits for heavy metal in edible rice bran oil

S/No.	Parameter	Maximum Limit mg/kg,	Test method
i)	Lead (Pb)	0.08	TZS 268
ii)	Arsenic (As)	0.1	TZS 76

8.3 Aflatoxin

Edible rice bran oil shall not exceed the maximum limits for Aflatoxin specified in Table 3 when tested in accordance with test methods specified therein.

Table 3 —Limits for aflatoxins in edible rice bran oil

S/No	Parameter	Limit mg/kg, max.	Test method
i)	Total aflatoxin content	10	TZS 799
ii)	Aflatoxin B1	5	

9 Packaging, marking and labelling

9.1 Packaging

In addition to the requirements given in TZS 538, edible rice bran oil shall be packaged in food grade containers and sealed in a manner to ensure safety and quality requirements of the product are maintained throughout the shelf life.

9.2 Marking and labelling

9.2.1 In addition to the requirements given in TZS 538, each container of edible rice bran oil shall be legibly and indelibly marked with the following information:

- a) name of the product as " Rice bran oil";
- b) words "Virgin" or "Cold pressed" or "Refined" to indicate the type of the oil;
- c) name and physical address of the manufacturer and/or packer;
- d) batch or lot number;
- e) date of manufacture;
- f) expiry date;
- g) net weight or volume in metric unit;
- h) country of origin;
- i) storage conditions; and
- j) list of ingredients in descending order, including the specific name of additives when used in refined oil.

9.2.2 The containers may also be marked with the TBS standards mark of quality.

NOTE — The TBS Standards Mark of Quality may be used by manufacturers only under licence from TBS. Particulars of conditions under which the licences are granted, may be obtained from TBS.

10 Sampling and tests

10.1 Sampling

Edible rice bran oil shall be sampled in accordance with TZS 54.

10.2 Tests

Edible rice bran oil shall be tested in accordance with the test methods given in this Tanzania Standard.

Annex A

(Normative)

Gas Liquid Chromatography (GLC) fatty acid composition

Ranges of fatty acids composition of edible rice bran oil as determined by Gas Liquid Chromatography (expressed as percentage of total fatty acids) are as given in Table A.1.

Table A.1 — GLC fatty acid composition for edible rice bran oil

Fatty acid	%, composition	Test method
C6:0	ND	TZS 288
C8:0	ND	
C10:0	ND	
C12:0	ND-0.2	
C14:0	ND-1.0	
C16:0	14-23	
C16:1	ND-0.5	
C17:0	ND	
C17:1	ND	
C18:0	0.9-4.0	
C18:1	38-48	
C18:2	21-42	
C18:3	0.1-2.9	
C20:0	ND-0.9	
C20:1	ND-0.8	
C20:2	ND	
C22:0	ND-1.0	
C22:1	ND	
C22:2	ND	
C24:0	ND-0.9	
C24:1	ND	
ND – non detectable, defined as ≤ 0.05%		

Annex B

(Normative)

Levels of desmethylsterols

The levels of desmethylsterols in rice bran oil as a percentage of total sterols shall be as given in Table A.2.

Table A.2 — Levels of desmethylsterols in rice bran oil from authentic samples as a percentage of total sterols.

Desmethylsterol	Level in rice bran oil ¹⁾	Test methods
Cholesterol	ND - 0.5	TZS 1371-1
Brassicasterol	ND - 0.3	
Campesterol	11.0 – 35.0	
Stigmasterol	6.0 - 40.0	
Beta-sitosterol	25.0 - 67.0	
Delta-5-avenasterol	ND – 9.9	
Delta -7- stigmastenol	ND – 14.1	
Delta-7-avenasterol	ND – 4.4	
Others	7.5 - 12.8	
Total sterols (mg/kg)	10 500 – 31 000	
ND – Non-detectable, defined as ≤ 0.05%		