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**DRAFT MALAWI STANDARD
(SADC HARMONIZED)**

Farmed Tilapia (Bream) – Specification

Note: This is a draft standard and it shall neither be used nor regarded as a Malawi standard

Farmed Tilapia (Bream) – Specification

DRAFT STANDARD FOR PUBLIC REVIEW

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FOREWORD

This draft standard is a Southern African Development Community (SADC) Harmonized Text covering the requirements and methods of tests for farmed tilapia (Bream).

The harmonization of standards and technical regulations in the SADC region is an obligation under the SADC protocol on Trade which was established under the SADC Treaty to provide for elimination of tariffs and non-tariff barriers to trade.

This draft standard is identical to SADC HT 80, *Farmed tilapia (Bream)*.

Acknowledgement is made for the use of the above standard.

TECHNICAL COMMITTEE

This draft standard was prepared by the Technical Committee *MBS/TC 39, Fish and fishery products*, and the following companies, organizations and institutions were represented:

Malawi Bureau of Standards.

MALDECO Fisheries

Malawi College of Fisheries;

Ministry of Agriculture, Irrigation and Water Development – Department of Fisheries;

Lake Harvest; and

Lilongwe University for Agriculture and Natural Resources.

NOTICE

This standard shall be reviewed every five years, or earlier when it is necessary, in order to keep abreast of progress. Comments are welcome and shall be considered when the standard is being reviewed.

DRAFT PROPOSAL

Farmed *Tilapia* (Bream) – Specification

1 SCOPE

This draft standard applies to farmed fresh whole bream of genus *Tilapia* and *Oreochromis*, for direct consumption or further processing.

2 NORMATIVE REFERENCES

The following standard contains provisions, which through reference in this text, constitute provisions of this draft standard. All standards are subject to revision and, since any reference to a standard is deemed to be a reference to the latest edition of that standard, parties to agreements based on this draft standard are encouraged to take steps to ensure the use of the most recent edition of the standard indicated below. Information on current valid national and international standards can be obtained from the Malawi Bureau of Standards.

MS 19: *Labelling of prepacked foods – General standard;*

MS 21: *Food and food processing units – Code of hygienic conditions;*

MS 214: *Potable water – Specification*

MS 237: *Food additives – General standard;*

MS 302: *Contaminants and toxins in foods – General standard;*

ISO 4832: *Microbiology of food and animal feeding stuffs – Horizontal method for the enumeration of coliforms – Colony-count technique;*

ISO 4833: *Microbiology of food and animal feeding stuffs – Horizontal method for the enumeration of microorganisms – Colony-count technique at 30 degrees;*

ISO 6579: *Microbiology of food and animal feeding stuffs – Horizontal method for the detection of Salmonella spp.;*

ISO 7251: *Microbiology of food and animal feeding stuffs – Horizontal method for the detection and enumeration of presumptive Escherichia coli – Most probable number technique;*

ISO 793: *Microbiology of food and animal feeding stuffs – Horizontal method for the enumeration of Clostridium perfringens – Colony-count technique;*

ISO 13720: *Meat and meat products – Enumeration of Pseudomonas spp.;*

ISO 16050: *Foodstuffs – Determination of aflatoxin B1, and the total content of aflatoxin B1, B2, G1 and G2 in cereals, nuts and derived products – High performance liquid chromatographic method;*

ISO 21567: *Microbiology of food and animal feeding stuffs – Horizontal method for the detection of Shigella spp.;*

ISO/TS 21872-1: *Microbiology of food and animal feeding stuffs – Horizontal method for the detection of potentially enteropathogenic Vibrio spp. – Part 1: Detection of Vibrio parahaemolyticus and Vibrio cholera;*

ISO/TS 21872-2: *Microbiology of food and animal feeding stuffs – Horizontal method for the detection of potentially enteropathogenic Vibrio spp. – Part 2: Detection of species other than Vibrio parahaemolyticus and Vibrio cholera*; and

AOAC: *Association of Analytical Chemist*

3 DEFINITIONS

For the purpose of this draft standard, the following definitions shall apply:

3.1

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

3.2

foreign matter

any material which is not of fish origin e.g. sand, stones, metallic chips, plant parts etc.

3.3

fresh whole fish

fish harvested while alive from culture, immediately cleaned and/or chilled to preserve freshness

3.4

veterinary drug

any substance applied or administered to fish, whether used for therapeutic, prophylactic, or diagnostic purposes or for modification of physiological functions or behaviour

3.5

lot

fish from the same origin and harvest

3.6

sound

free from physiological deterioration or adulteration/contamination, that appreciably affects their appearance, edibility and the keeping quality of the dried fish

3.7

Tilapia

fish of the genus *Tilapia* and *Oreochromis*

4. ESSENTIAL COMPOSITION AND QUALITY FACTORS

4.1 Minimum requirements

4.1.1 The head, body, tail, and fins of the fresh whole fish shall be intact.

4.1.2 Defects such as deformations, blemishes, injuries or burst bellies shall not be clearly visible and the fish shall not be decomposed.

4.1.3 By visual inspection, the fish shall be free from parasites or any disease.

4.1.4 No distinct objectionable odour, such as a muddy odour.

4.1.5 Foreign materials, such as pieces of stones, pebbles, sand, or mud, which indicates unhygienic practices, shall not be found by visual inspection.

4.2 Classification

Tilapia can be classified into two classes according to freshness indicated by visual inspection of the eyes, skin, body, gills, belly cavity, meat, and viscera as follows:

4.2.1 Extra Class

Fish in this class shall be of the best quality. It shall be very fresh with freshness score of 4 with respect to grading criteria in the Annex A.

4.2.2 Class I

Fish in this class shall be of good quality. It is second to the Extra Class with freshness score not lower than 3 with respect to grading criteria in the Annex.

NOTE: The grading of fish shall be carried out by trained personnel

4.3 Sizing

General fish sizes shall be defined as in the Table 1.

Table 1 – Sizing of *Tilapia*

1	2
Sizes	Weights (g/fish)
1	>1,000
2	>700 -1000
3	>500 – 700
4	>300 - 500
5	≤ 300

4.4 Tolerances

Quality tolerances of fresh fish in each container shall be as follows:

4.4.1 Extra class

Fish with quality lower than Extra Class but at least of Class I with quality score of 3 in all features are allowed for not more than 5 % of the lot.

4.4.2 Class I

Fish with quality lower than Class I with quality score of not less than 2 in all features are allowed for not more than 5 % of the lot.

4.5 Microbiological limits

When tested in accordance with appropriate methods indicated, microbial counts shall be within the limits as described in Table 2.

Table 2 – Microbiological limits for farmed *Tilapia* (Bream)

1	2	3	4
SL No	Micro-organisms	Max. limits	Method of test
i)	<i>Salmonella</i> per 25 g	Absent	ISO 6579
ii)	<i>E. coli</i> per g	Absent	ISO 7251
iii)	<i>Listeria monocytogenes</i>	Absent	ISO 11290 Part 1
iv)	<i>Staphylococcus aureus</i> cfu per g	10 ²	ISO 6888
v)	<i>Clostridium perfringens</i> per gram	Absent	ISO 7937
vi)	<i>Vibrio Spp</i> per gram	Absent	ISO 21872
vii)	Total viable count per gram	10 ⁵	ISO 4833

5 HYGIENE

5.1 Culturing, harvesting, post-harvest handling, and transportation of tilapia shall be carried out under hygienic practices in accordance with MS 21 and MS 790 to prevent contamination that may be unsafe to consumers or cause the deterioration of the fish.

5.2 Water used for washing the fish shall comply with MS 214.

6 CONTAMINANTS

6.1 The product covered by this draft standard shall comply with the maximum limits of heavy metals and other contaminants specified in MS 302.

6.2 The product shall comply with the residual limits of veterinary drugs specified by the Codex alimentarius and

7 PACKAGING AND LABELLING

7.1 Packaging

7.1.1 Fish in the same container shall be from the same source.

7.1.2 Fish shall be packaged in food grade containers.

7.1.3 When ice is used, it shall be made from potable water in compliance with MS 214.

8.2 Labelling

In addition to the requirements stipulated in MS 19, the following specific labeling requirements shall apply and shall be legibly and indelibly marked:

8.2.1 Name of the product;

8.2.2 Storage and transportation conditions declaring the temperature to be -1 °C or lower;

8.2.3 Name and physical address of processor;

8.2.4 Net weight in metric units;

8.2.5 Date of production;

8.2.6 Batch or code number;

8.2.7 Expiry date; and

8.2.8 Country of origin and/or water body.

8.3 Labelling of non-retail containers

8.3.1 Information on the above provisions 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.

8.3.2 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.

ANNEX A
(Normative)

GRADING CRITERIA FOR QUALITY CLASSIFICATION

Part	Parameter	Score
Eyes	Bright and clear, convex, good shape	4
	Slightly cloudy, convex to slightly concave	3
	Slightly cloudy, slightly concave, slightly red	2
	Cloudy, concave or distended with water, red	1
Skin and body	Scales firmly adhere to body, natural color, bright and shiny, no fishy odor, firm and elastic texture	4
	Scales firmly adhere to body, natural color, shiny, moderately slimy but colorless, no fishy odor, firm and elastic texture	3
	Scales slightly bleached, moderately adhere to body, slightly fishy, texture firm to slightly soft	2
	Scales bleached, dull, and easily separating from body, fishy or putrid, soft and not elastic texture	1
Gills	Bright red, no fishy or off odor, not slimy to slightly slimy	4
	Dark red, no fishy or off odor, moderately slimy	3
	Bleached color, slightly fishy or rancid, very slimy	2
	Discolored, rancid or putrid, very slimy	1
Belly cavity	No staining of digestive enzymes	4
	Slight staining of digestive enzymes	3
	Distinctive staining of digestive enzymes	2
	Dark stain of digestive enzymes	1
Meat	Translucent, pink, fresh, no fishy odor, firm and elastic	4
	Pink, no fishy odor or slightly fruity/aromatic odor, firm and elastic	3
	Greenish pink or with dark spots, slightly fishy, slightly soft texture	2
	Greenish, fishy or putrid, very soft and not elastic texture	1
Gut	Intact, fresh or neutral odor	4
	Intact, slightly fishy	3
	Incompletely intact, digested and soft, fishy	2
	Mushy viscera, putrid	1

THE MALAWI BUREAU OF STANDARDS

The Malawi Bureau of Standards is the standardizing body in Malawi under the aegis of the Ministry of Industry and Trade. Set up in 1972 by the Malawi Bureau of Standards Act (Cap: 51:02), the Bureau is a parastatal body whose activities aim at formulating and promoting the general adoption of standards relating to structures, commodities, materials, practices, operations and from time to time revise, alter and amend the same to incorporate advanced technology.

CERTIFICATION MARK SCHEME

To bring the advantages of standardization within the reach of the common consumer, the Bureau operates a Certification Mark Scheme. Under this scheme, manufacturers who produce goods that conform to national standards are granted permits to use the Bureau's "Mark of Quality" depicted below on their products. This Mark gives confidence to the consumer of the commodity's reliability



