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Fish feed premix — Specification

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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 635 was prepared by Technical Committee RSB/TC 08, *Animal feeding stuffs.*

Committee membership

The following organizations were represented on the Technical Committee on *Animal feeding stuffs* (RSB/TC 08) in the preparation of this standard.

Gatsibo Food Processing Company (GFPC) Ltd

Innovation in Production (INNOPRO) Ltd

National Industrial Research and Development Agency (NIRDA)

Red black Ltd

Rwanda Best Ltd

Rwanda Inspectorate, Competition and Consumer Protection Authority (RICA)

Sakaza Fruit Processing Ltd

University of Rwanda - College of Agriculture, Animal Sciences and Veterinary Medicine (UR-CAVEM)

Rwanda Standards Board (RSB) – Secretariat

Fish feed premix — Specification

1 Scope

This Draft Rwanda Standard specifies requirements, sampling, and test methods for fish feed premix as a source of vitamins and trace elements for fish.

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 982.29, *Determination of vitamin D in mixed feeds, premixes and pet food*

AOAC 985.01, *Metals and other elements in plants and pet foods*

AOAC 993.20, *Iodine value of fats and oils Wijs (cyclohexane – acetic acid solvent) method*

AOAC 2004.07, *Determination of vitamin B6 by HPLC*

AOAC 2011.19, *Chromium, selenium, and molybdenum in infant F*

RS ISO 6491, *Animal feeding stuffs — Determination of phosphorus content — Spectrometric method*

RS ISO 6497, *Animal feeding stuffs — Sampling*

RS ISO 6579-1, *Microbiology of the food chain — Horizontal method for the detection, enumeration and serotyping of Salmonella — Part 1: Detection of Salmonella spp.*

RS ISO 16649-2, *Microbiology of food and animal feeding stuffs — Horizontal method for the enumeration of beta-glucuronidase-positive Escherichia coli — Part 2: Colony-count technique at 44 degrees C using 5-bromo-4-chloro-3-indolyl beta-D-glucuronide*

RS 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*

RS ISO 6888-1, Microbiology of the food chain — Horizontal method for the enumeration of coagulase-positive staphylococci (Staphylococcus aureus and other species) — Part 1: Method using Baird-Parker agar medium

ISO 21468, *Infant formula and adult nutritionals — Determination of free and total choline and free and total carnitine — Liquid chromatography tandem mass spectrometry (HPLC-MS/MS)*

RS ISO 21527-2, Microbiology of food and animal feeding stuffs — Horizontal method for the enumeration of yeasts and moulds — Part 2: Colony count technique in products with water activity less than or equal to 0,95

ISO 14565, *Animal feeding stuffs — Determination of vitamin A content — Method using high-performance liquid chromatography*

AOAC 985.33, Official Method 985.33. Vitamin C (Reduced Ascorbic Acid) in Ready-to-Feed Milk-Based Infant Formula 2,6-Dichloroindophenol Titrimetric Method.

ISO 6867, *Animal feeding stuffs — Determination of vitamin E content — Method using high-performance liquid chromatography*

AOAC 2015.14, *Simultaneous Determination of Total Vitamins B1, B2, and B6 in Infant Formula and Related Nutritionals*

RS ISO 20634*, Infant formula and adult nutritionals — Determination of vitamin B12 by reversed phase high performance liquid chromatography (RP-HPLC)*

ISO 20639*, Infant formula and adult nutritionals — Determination of pantothenic acid by ultra high performance liquid chromatography and tandem mass spectrometry method (UHPLC-MS/MS)*

RS ISO 23305, *Fortified milk powders, infant formula and adult nutritionals — Determination of total biotin by liquid chromatography coupled with immunoaffinity column clean-up extraction*

ISO 6869*, Animal feeding stuffs — Determination of the contents of calcium, copper, iron, magnesium, manganese, potassium, sodium and zinc — Method using atomic absorption spectrometry*

RS ISO 4833-1, *Microbiology of the food chain — Horizontal method for the enumeration of microorganisms Part 1: Colony count at 30 °C by the pour plate technique*

RS CXC 54, *Code of practice on Good Animal Feeding*

AOAC 999.15, *Vitamin K in milk and infant formulas. Liquid chromatographic method*

AOAC 992.05, *Total Folate (Pteroylglutamic Acid) in Infant Formula — Microbiological Methods*

ISO 20647, *Infant formula and adult nutritionals — Determination of total iodine — Inductively coupled plasma mass spectrometry (ICP-MS)*

RS ISO 20639, *Infant formula and adult nutritionals — Determination of pantothenic acid by ultra high performance liquid chromatography and tandem mass spectrometry method (UHPLC-MS/MS)*

3 Terms and definitions

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

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

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

3.1

Premix

mixture of either vitamins, trace minerals, diluents, or a combination. It may contain other feed additives such as amino acids.

4 Requirements

4.1 General requirements

4.1.1 Fish feed premix shall contain concentrated forms of vitamins, minerals and a suitable carrier.

4.1.2 Fish feed premix shall be:

a) in the form of a fine powder, granular or liquid;
b) free from harmful constituents, metallic objects and adulterants; and
c) free from fermented, musty, rancid or uncharacteristic odour.

4.2 Specific requirements

4.2.1 Fish feed premix shall comply with the mineral requirements given in Table 1 when tested in accordance with the test methods specified therein.

Table 1 — Mineral and vitamin requirements for fish feed premix at 5kg of premix Per Ton of Dry Feed

S/N	Parameters	Requirements	Test method
1.	Vitamin A (IU/mg), min	5,000,000	ISO 14565
2.	Vitamin D3 (IU/mg), min	2,500,000	AOAC 982.29
3.	Vitamin C (mg), min	750,000	AOAC 985.33
4.	Vitamin E (mg), min	250,000	ISO 6867
5.	Vitamin K3 (mg), min	10,000	AOAC 999.15
6.	Vitamin B1 (mg), min	5,000	AOAC 2015.14
7.	Vitamin B2 (mg), min	45,000	

10.	Vitamin B3 (niacin) (mg), min	165,500	
8.	Vitamin B6 (mg), min	15,000	
9.	Vitamin B5 (Pantothenic acid) (mg), min	50,000	RS ISO 20639
10.	Folic Acid (Vitamin B9) (mg), min	6000	AOAC 992.05
11.	Vitamin B12 (mg), min	45	RS ISO 20634
12.	Choline (mg), min	200,000	ISO 21468
13.	Biotin (mg), min	12,450	RS ISO 23305
Macro Elements			
14.	Phosphorus % (min)	225	RS ISO 6491
15.	Magnesium % (min)	200	ISO 6869
16.	Potassium % (min)	1,300	
Micro Elements			
17.	Copper (mg/kg) (min)	25,000	
18.	Iron (mg/kg) (min)	150,000	
19.	Manganese (mg/kg) (min)	12,000	
20.	Zinc (mg/kg) (min)	100,000	
21.	Iodine (mg/kg) (min)	3,000	ISO 20647
22.	Selenium (mg/kg) (min)	1,250	AOAC 2011.19

5 Contaminants

5.1 Heavy metals

Fish feed premix shall not contain heavy metals in levels exceeding the limits indicated in Table 2 when tested in accordance with the test methods therein.

Table 2 — Heavy metal limits for Fish feed premix

S/N	Parameters	Maximum limits mg/kg	Test method
i.	Arsenic	0.1	AOAC 985.01
ii.	Cadmium	1.0	
iii.	Lead	1.0	
iv.	Mercury	0.5	

5.2 Aflatoxins

Fish feed premix shall not contain aflatoxins in levels exceeding the limits given in Table 3 when tested in accordance with test methods specified therein.

Table 3 — Aflatoxin limits for fish feed premix

S/N	Aflatoxin	Maximum limits µg/kg	Test method
i.	Total aflatoxins	20	RS ISO 16050

5.3 Pesticide residues

Fish feed premix shall comply with those maximum pesticide residue limits established by the Codex Alimentarius Commission.

6 Hygiene

6.1 Fish feed premix shall be produced and handled in accordance with RS CXC 54.

6.2 Fish feed premix shall not exceed those microbiological limits specified in Table 4 when tested in accordance with test methods specified therein.

Table 4 — Microbiological limits for fish feed premix

S/N	microorganism	limits	Test method
i.	Total viable count, CFU/g, max	10^5	RS ISO 4833-1
ii.	Escherichia coli, CFU/g	Absent	RS ISO 16649-2
iii.	Salmonella spp in 25 g	Absent	RS ISO 6579-1
iv.	Staphylococcus aureus, CFU/g	Absent	RS ISO 6888-1
v.	Yeasts and moulds, CFU/g, max	10^2	RS ISO 21527-2

7 Packaging

7.1 Fish feed premix shall be packaged in materials that safeguard the safety, hygienic, nutritional, and organoleptic quality of the product

7.2 Fish feed premix shall be packaged in materials that are of sufficient strength, and properly sealed so as to withstand reasonable handling without tearing, bursting or falling open during normal handling and transportation

7.3 The packaging materials shall be new and not previously used.

8 Labelling

Each package of fish feed premix shall be legibly and indelibly labelled with the following:

a) name of the product shall be “fish feed premix”;
b) name and address of the processor/manufacturer
c) net weight;
d) list of ingredients;
e) nutrients declaration;

f) lot/batch number;
g) date of manufacture;
h) expiry date;
i) storage conditions;
j) instruction for use;
k) instructions on disposal of used package; and
l) country of origin.

9 Sampling

Sampling shall be done in accordance with RS ISO 6497.

Bibliography

[1] *National Agency for food and drug administration and control (NAFDAC) 2023. Animal feed premix registration regulations*. https://www.nafdac.gov.ng/wp-content/uploads/Files/Resources/Regulations/Draft_Regulations_2023/Animal-Feed-Premixes-Registration-Regulations-2023.pdf

Price based on nnn pages