ZIMBABWE STANDARD

Food and Food Standards

Fortified Maize Meal — Specifications

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1 SCOPE

This standard specifies the requirements and methods of sampling and testing for fortified milled maize (corn) products namely: maize meal from the grains of common maize (*Zea mays* L) intended for human consumption but excludes samp, grits, maize rice and maize flour

2 REFERENCES

The following normative documents contain provisions, which through reference in this text constitute provisions of this standard. When any of the normative references are updated, then the latest version of those references will automatically apply without requiring an amendment to these specifications and regulations specifically for that purpose.

2.1 Normative References

1) Regulations, SI 136 of 2001: *Food and Food Standards (Food Additives and Prohibited Substances)*
2) Regulations, SI 265 of 2002: *Food and Food Standards (Food Labelling)*
   Regulations, SI 56 of 1989: *Trade Measures (Sale of Articles)*
3) COMESA ZWS HS 409, 2004: *Maize (grains) — Specification*
4) ZWS ISO 2170: 1998, *Cereals and Pulses- Sampling of Milled Products*
5) ZWS 760, 2002: *Milled Whole Maize-Meal and Maize Products — Specification*
6) ZWS126, 1997: *Code of Practice for Hygiene in the Food and Drink Manufacturing Industry*

2.2 Main References

1. CAC/GL 1, 1991: *General Guidelines for Claims.*
2. CAC/GL 2, 2015: *Guidelines on Nutritional Labelling*
3. CAC/GL 9, 2015: *General Principles for the Addition of Essential Nutrients to Foods*
4. CAC/GL 23, 2013: *Guidelines for Use of Nutrition and Health Claims*
5. CAC/RCP 1, 2003: *Recommended International Code of Practice: General Principles of Food Hygiene*

6. CODEX STAN 1, 2010: *General Standard for the Labelling of Pre-packaged Foods*
7. CODEX STAN 146, 1985: *General Standard for the Labelling and Claims for Pre-packaged Foods for Special Dietary Uses*
8. CODEX STAN 153, 1995: *Maize*
9. CODEX STAN 154, 1995: *Whole Maize Meal*
10. CODEX STAN 155, 1995: *De-germed Maize Meal and Maize Grits*
11. CODEX STAN 192, 2015: *General Standard for Food Additives*
12. CODEX STAN 193, 2015: *Codex general Standard for contaminants and toxins in Food and Feed*

2.3 Laboratory References

1. AOAC 912.01: 1912 *Arsenic in Food Gutzeit Method*
2. AOAC 934.07: 1993 *Lead in Food General Dithizone Method*
3. AOAC 942.17: 1993 *Arsenic in Food Molybdenum Blue Method*
4. AOAC 945.40:1945 *Iron in Bread Preparation of Test Sample Then 944.02*
5. AOAC 952.14: 1993 *Mercury in Food Colorimetric Dithizone Method*
6. AOAC 960.40: 1965 *Copper in Food Colorimetric Method*
7. AOAC 963.21: 1965 *Arsenic in Food Kjeldahl Flask Digestion*
8. AOAC 971.21: 1976 *Mercury in Food Flameless Atomic Absorption Spectrophotometric Method*
9. AOAC 972.25: 1976 *Lead in Food Atomic Absorption Spectrophotometric*
10. AOAC 982.23: 1988 *Cadmium and Lead in Food Anodic Stripping Voltammetric Method* Not Oils
11. AOAC 982.23: 1988 *Cadmium and Lead in Food Anodic Stripping Voltammetric Method*
12. AOAC 984.27: 1986 *Calcium, Copper, Iron, Magnesium, Manganese, Phosphorus, Potassium, Sodium, and Zinc in Infant Formula Inductively Coupled Plasma Emission Spectroscopic Method*
13. AOAC 985.35: 1997 *Minerals in Infant Formula, Enteral Products, and Pet Foods Atomic Absorption Spectrophotometric Method* (Applicable to Ca, Mg, Fe, Zn, Cu, Mn, Na, and K.)
14. AOAC 986.15: 1988 *Arsenic, Cadmium, Lead, Selenium, and Zinc in Human and Pet Foods Multielement Method*
15. AOAC 999.10: 2005 *Lead, Cadmium, Zinc, Cop per, and Iron in Foods Atomic Absorption Spectrophotometry after Microwave Digestion*
16. AOAC 999.11: 2005 *Lead, Cadmium, Copper, Iron, and Zinc in Foods Atomic Absorption Spectrophotometry after Dry Ashing* AOAC 944.02:1993 *Iron in Flour Spectrophotometric Method*
17. AOAC 2011.14: 2013 *Calcium, Copper, Iron, Magnesium, Manganese, Potassium, Phosphorus, Sodium, and Zinc in Fortified Food Products Microwave Digestion and Inductively Coupled Plasma-Optical Emission Spectrometry*
18. AOAC 2013.06: 2013 *Arsenic, Cadmium, Mercury, and Lead in Foods Pressure Digestion and Inductively Coupled Plasma-Mass Spectrometry*

19. AOAC 2015.01: 2015 *Heavy Metals in Food Inductively Coupled Plasma–Mass Spectrometry*
20. AOAC 2015.06: 2015 *Minerals and Trace Elements in Infant Formula and Adult/Pediatric Nutritional Formula ICP/MS Method*
21. CAC/ GL 21, 2013: *Principles and Guidelines for the Established and Application of Microbiological Criteria for Foods*
22. CODEX STAN 228, 2004: *General Methods Analysis for Contaminants*
23. CODEX STAN 229, 2003: *Analysis of Pesticide Residues: Recommended Methods*
24. CODEX STAN 234, 2015: *Recommended Methods of Analysis and Sampling*
25. ISO 2171, 2011: *Cereals, Pulses and By-Products — Determination of Ash Yield by Incineration*
26. ISO 4832: 20156 Reviewed 2010, *Microbiology of Food and Animal Feeding Stuffs — Horizontal Method for the Enumeration of Coliforms – Colony- Count Technique*
27. ISO 4833-1:2013, *Microbiology of Food and Animal Feeding Stuffs – Horizontal Method for the Enumeration of Micro-organisms -- Colony-Count Technique at 30°C*
28. ISO 5498, 2014: *Agricultural Food Products - Determination of Crude Fibre Content - General Method*
29. ISO 5985, 2013: Animal feeding stuffs -- Determination of ash insoluble in hydrochloric acid
30. ISO 6540, 2011: *Maize -- Determination of moisture content (on milled grains and on whole grains)*
31. ISO 6579, 2002 Reviewed 2012, *Microbiology of Food and Animal Feeding Stuffs – Horizontal Method for the Detection of Salmonella Species*
32. ISO 6888-1, -2, -3, 2003, *Microbiology of Food and Animal Feeding Stuffs -Horizontal Method for the Enumeration of Coagulase- Positive Staphylococci (Staphylococcus aureus and other species):*
    a. Part 1: Technique using Baird-Parker agar medium
    b. Part 2: Technique using rabbit plasma fibrinogen agar medium
    c. Part 3: Detection and MPN technique for low numbers
33. ISO 7251: 2014, *Microbiology of Food and Animal Feeding Stuffs -Horizontal Method for the Detection and Enumeration of Presumptive Escherichia Coli -Most Probable Number Technique*
34. ISO 7305, 2013: *Milled cereal products – Determination of Fat Acidity*
35. ISO 7932: 2015, *Microbiology of Food and Animal Feeding Stuffs — Horizontal Method for the Enumeration of Presumptive Bacillus Cereus — Colony-Count Technique at 30°C* ISO 11085, 2015: *Cereals, Cereals - Based Products and Animal Feeding Stuffs -- Determination of Crude Fat and Total Fat Content by the Randall Extraction Method*
36. ISO 16050: 2003 Reviewed 2014, *Foodstuffs — Determination of Aflatoxins B1, and the Total Content of Aflatoxins B1, B2, G1 and G2 in Cereals, Nuts and Derived products — High-Performance Liquid Chromatographic Method* NEED REPLACEMENT METHOD
37. ISO 20483 Revised 2013, *Cereals and Pulses – Determination of the Nitrogen Content and Calculation of the Crude Protein Content – Kjeldhal Method*

38. ISO 21527-1: 2012, *Microbiology of food and animal feeding stuffs -- Horizontal method for the enumeration of yeasts and moulds -- Part 1: Colony count technique in products with water activity greater than 0.95*
39. ISO 21527-2, 2012: *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*
40. ISO 24333, 2009: *Cereals and Cereal Products – Sampling [Not suitable for fortification sampling due to homogeneity]*
41. OIML R 87, 2004: *Quantity of product in prepacka*ges

Determination of Vitamin A may be carried out by an internationally accepted technique or methodology.

2.4 Risk Management References

1. CAC/GL 19, 2013: *Principles and Guidelines for the Exchange of Information in Food Safety Emergency Situations*
2. CAC/GL 20, 1995: *Principles for Food Import and Export Inspection and Certification*
3. CAC/GL 21, 2013: *Principles and Guidelines for the Establishment and Application of Microbiological Criteria Related to Foods*
4. CAC/GL 25, 1997: *Guidelines for the Exchange of Information Between Countries on Rejections of Imported Food*
5. CAC/GL 26, 2010: *Guidelines for the Design, Operation, Assessment and Accreditation of Food Import and Export Inspection and Certification Systems*
6. CAC/GL 27, 2006: *Guidelines for the Assessment of the Competence of Testing Laboratories Involved in the Import and Export Control of Food*
7. CAC/GL 30, 2012: *Principles and Guidelines for the Conduct of Microbiological Risk Assessment*
8. CAC/GL 33, 1999: *Recommended Methods of Sampling for the Determination of Pesticide Residues for Compliance with Maximum Residual Limits (MRLs)*
9. CAC/GL 34, 1999: *Guidelines for the Development of Equivalence Agreements Regarding Food Import and Export Inspection and Certification Systems*
10. CAC/GL 36, 2015: *Class Names and the International Numbering System for Food Additives*
11. CAC/GL 38, 2009: *Guidelines For Design, Production, Issuance And Use Of Generic Official Certificates*
12. CAC/GL 40, 2010: *Guidelines on Good Laboratory Practice in Pesticide Residue Analysis*
13. CAC/GL 41, 2011: *Analysis of Pesticide Residues Vol 2A Part 1 Portion to test*
14. CAC/GL 44, 2011:*Principles for the Risk Analysis of Foods Derived from Modern Biotechnology*
15. CAC/GL 45, 2008: Guidelines for the Conduct of Food Safety Assessment of Foods Derived from Recombinant-DNA Plants

16. CAC/GL 46, 2003: Guidelines for the Conduct of Food Safety Assessment of Foods Produced using Recombinant-DNA Microorganisms
17. CAC/GL 47, 2006: *Guidelines for Food Import Control Systems*
18. CAC/GL 50, 2004: *General Guidelines on Sampling*
19. CAC/GL 53, Latest 2008: Guidelines in the Judgment of Equivalence of Sanitary Measures Associated with Food Inspection and Certification Systems
20. CAC/GL 54, 2011: *Guidelines on Measurement Uncertainty*
21. CAC/GL 60, 2006: Principles for Traceability / Product Tracing as a Tool within a Food Inspection and Certification System
22. CAC/GL 62, 2007: Working Principles for Risk Analysis for Food Safety for Application by Governments
23. CAC/GL 63, Latest 2008:Principles and Guidelines for the Conduct of Microbiological Risk Management (MRM)
24. CAC/GL 70, 2009: *Guidelines for Settling Disputes over Analytical (Test) Results*
25. CAC/GL 83, 2015: *Principles for the Use of Sampling and Testing in International Food Trade*

3 DEFINITIONS AND ACROYNMS

For the purposes of this Standard the following definitions shall apply:

3.1 **AACCI:** means American Association of Cereal Chemists International

3.2 **AOAC:** means Association of Official Analytical Chemists

3.3 **Carrier:** means a suitable, inert, edible food-grade diluent for micronutrients

3.4 **Diluents:** means a suitable, inert, edible food-grade carrier for micronutrients

3.5 **Food fortification:** means the addition of one or more essential nutrients to a food whether or not it is normally contained in the food, for the purpose of preventing and correcting a demonstrated deficiency of one or more nutrients in the population or specific population groups.

3.6 **Food vehicle:** means foodstuff identified to be fortified with the prescribed micronutrient (s) as prescribed in this standard

3.7 **Fortificant:** means a compound that contains the specified micronutrient intended to be added to a food

3.8 **Fortified milled maize products:** means maize meal, roller meal, sifted maize meal or any other name used to describe maize that has been milled and meets the criteria in Table 1 and to which micronutrients have been added in accordance with this standard

3.9 **Inspector:** means an authorised member of the Environmental Health Services (National, Provincial, or Local Authority)

3.10 **ISO:** means International Organisation for Standardisation

3.11 **Micronutrient:** means a natural or synthesized vitamin, mineral or trace element that is essential for normal growth, development and maintenance of life, of which a deficit will cause characteristic biochemical or physiological changes

3.12 **MRL:** means Maximum Residual Limit

3.13 **OIML:** International Organisation of Legal Metrology

3.14 **Premix:** means a blend of fortificants and diluents formulated to provide specified and determinable amounts of micronutrients

3.15 **Quality Control:** means the techniques and assessments used to document the compliance of the product with established technical standards. Annex 1, 2, and 3

3.16 **Quality Assurance:** means the implementation of planned systematic activities necessary to ensure that the product meets quality standards. Annex 1, 2 and 3

3.17 **SAZ:** means Standards Association of Zimbabwe

3.18 **Small Scale Manufacturers of maize meal:** means those manufacturers that do not produce and sell maize on a commercial basis, i.e. in their own branded packaging

4 QUALITY REQUIREMENTS

4.1 Raw materials

The maize from which the maize meal is obtained shall be of sound quality, free from sand, have characteristic odour and flavour conforming to ZWS 391:1996

4.2 General **R**equirements

1) Fortified maize meal products shall have the characteristic colour and shall be free from any objectionable flavours and odours.

2) The flour shall be free from insects, worms, fungal infestation, rodent contaminations and foreign matter.

4.3 Specific Requirements

The types of milled maize products shall comply with the compositional requirements given in Table 1:

Table 1: Specific Requirements for Milled Maize Products

Characteristics	Super Refined/ Pearl-meal	Refined / Roller meal	Straight run	Test method

	(Sifted Maize meal)	(Granulated Maize meal)	(Whole Maize Meal)	
Crude fibre content, % by mass, max.	0.7	1.6	3.0	ISO5458
Crude fat a moisture free basis, % by mass, max.	1.5	2.5	3.5	ISO 11085
Moisture content, % by mass, max.	14	14	14	ISO 6540
Total ash, % by mass, max.	1.0	<1.6	3.0	ISO 2171
Acid insoluble ash, % by mass, max.	0.15	0.35	0.40	ISO 5985:2013
Crude protein (N x 6.25) % by mass, min	7.0	7.0	8.0	ISO 20483
Fat acidity, mg KOH (Potassium hydroxide) per 100g of product, on dry mass basis, max	50	50	50	ISO 7305
Particle size	95% shall pass800µm standard wire sieve	95% shall pass800µm standard wire sieve	95% shall pass1250 µm standard wire sieve	

NOTE: ISO 712 is not applicable to maize

5 FORTIFICATION REQUIREMENTS

5.1 Micronutrient Content

The minimum addition of micronutrients for maize meal is based on the assumptions related to each micronutrient compound as specified in Table 2 below:

Table 2: Assumption of Micronutrient Content in Relevant Micronutrient Compounds

Micronutrient	Fortificant Compound	Activity

Vitamin A	Retinyl Palmitate	Retinyl palmitate 250,000 IU/g Activity 75,000 µg RE/g Encapsulated, Protected and Stablised. 1 µg RE = 3.33 IU
Vitamin B_1	Thiamine mononitrate	Thiamine mononitrate minimum 81% activity
Vitamin B_2	Riboflavin	100% activity
Vitamin B_3	Niacinamide	Nicotinamide/Niacinamide minimum 99% activity
Vitamin B_6	Pyridoxine hydrochloride	Pyridoxine hydrochloride 82% activity
Vitamin B_9	Folic Acid	Folic acid minimum 90.5% activity
Vitamin B_{12}	Cyanocobalamin	Vitamin B_{12} 0.1% minimum activity[1] water soluble ~~minimum 0.001 % activity~~
Iron	NaFeEDTA[2]	12.5% iron assumed
Zinc	Zinc Oxide	Zinc oxide minimum 80% zinc

[1] Use of 1% cyanocobalamin is permitted with suitable adjustment of the fortification mix formulation

[2] NaFeEDTA shall comply with the requirements given in the latest version of the Food Chemicals Codex.

5.2 Premix

NOTE 1: This premix formulation in Table 3 is designed with minimum nutrient composition and does not take into consideration factory over-ranges in the preparations of the premix

Table 3: Guidelines for Maize Meal Premix Formulation

A	B	C	D	E	F
Micronutrient	Fortificant compound	Selected Fortification Level (mg/kg) wheat flour	Amount of Fortificant (mg/kg) wheat flour	**Premix Formulation**	
				[Fortificant] (g/kg premix)	[Nutrient] (g/kg premix)
Vitamin A	Retinyl Palmitate-250,000 IU/g (dry)	1,5	20,0	44,3	3
Vitamin B_1	Thiamin mononitrate	4,5	5,6	12,3	9.96
Vitamin B_2	Riboflavin	3,0	3,0	6,7	6.7
Vitamin B_3 (Niacin)	Niacinamide	25,0	25,3	56,0	55

Vitamin B_6	Pyridoxine hydrochloride	5,0	6,1	13,5	11
Vitamin B_9 (Folate)	Folic Acid	1,3	1,4	3,2	2.9
Vitamin B_{12}	Vitamin B_{12} 0.1% WS	0,015	15,0	33,3	0,03
Iron	NaFeEDTA	20	153,8	341,1	44
Zinc	Zinc oxide	40	50,0	110,9	89
	Carrier			To Complete 1000g	

NOTE: The above are guidelines for premix formulation are based on assumptions in Table 2 that will achieve the **minimum** requirements of column C when added at 350g/MT

5.3 Levels of Micronutrients

The maize meal shall be fortified with all the micronutrients indicated using the fortificants shown in such a way that the product conforms to the limits set in Table 4 below.

Table 4: Requirements for Minimum Levels of Micronutrients in Fortified Maize Meal

Micronutrient	Fortificant Compound	Minimum levels mg/kg
Vitamin A	Retinyl Palmitate	1.5
Vitamin B1	Thiamin mononitrate	4.5
Vitamin B2	Riboflavin	3.0
Vitamin B3	Niacinamide	25.0
Vitamin B6	Pyridoxine hydrochloride	5.0
Vitamin B9	Folic acid	1.3
Vitamin B12	Cyanocobalamin (Water soluble, 0.1%)	0.015
Zinc	Zinc oxide	40.0
Iron	NaFeEDTA	20.0

Factories should aim at fortifying the products at levels to ensure the product conforms to the regulatory minimum levels throughout the distribution chain when stored in accordance with 10.1 (6) “Store in a cool dry place away from any contaminants” .

5.4 Fortificants

Fortificant for use shall be stable compounds conforming to specifications in any of the following documents:

1) British Pharmacopoeia (BP),
2) Food Chemical Codex (FCC),
3) Merck Index (MI),
4) United States National Formulary (NF),
5) European Pharmacopoeia (Ph. Eur),
6) United States Pharmacopoeia (USP);

7) FAO / WHO CODEX Alimentarius Commission (CAC)

5.5 Quality Assurance Certificate for Fortificants

A Quality Assurance Certificate shall be provided by the Premix Manufacturers and periodic analysis shall be conducted by a third party to verify the micronutrient content as well as sensory evaluation properties of the premix.

5.6 Stability of Fortificants and Premixes

Manufacturer shall ensure it can establish and demonstrate upon request that its premixes are in compliance with the applicable standard as of the last date of its best before date or expiration date when stored and handled in accordance with manufacturers' instructions.

6 FOOD ADDITIVES

The product may contain only permitted additives complying with Codex CAC MISC 6 2013 - Specifications for Food Additives.

7 HYGIENE

Maize meal shall be produced, prepared and handled in accordance with the provisions of appropriate sections of ZWS 126:1997

The product shall be free from pathogenic micro-organism and shall comply with microbiological limits in Table 5

Table 5: Microbiological Limits for Fortified Milled Maize meal

Micro-organism	Maximum limit	Methods of test
Total aerobic count, cfu/g, max	10^5	ISO 4833
Escherichia coli, cfu/g, max	Absent	ISO 7251
Salmonella per 25g, max	Absent	ISO 6579
Bacillus Cereus 25g, max	Absent	ISO 7932
Yeast and Moulds, cfu/g, max	10^3	ISO 21527-2 or ISO 7954
Staphylococcus aureus, cfu/g, max	Absent	ISO 6888 – 1, ISO 6888 – 2, or ISO 6888 - 3

8 CONTAMINANTS

8.1 Heavy Metals

Maize meal shall comply with those maximum limits for heavy metals established by the Codex Alimentarius Commission for this commodity.

Table 6: Heavy Metal Maximum Permissible Limits

Elements	Maximum Permissible Limit mg/kg	Method of Test
Arsenic	0.10	**Use any of the AOAC or ISO Methods listed in 2.3 Laboratory References**
Copper	2.0	
Cadmium	0.02	
Lead	0.1	
Mercury	0.01	

8.2 Pesticide Residues

Maize meal shall comply with those maximum pesticide residue limits established by the Codex Alimentarius Commission for this commodity.

8.3 Mycotoxins

Maize meal shall comply with those maximum mycotoxin limits established by the Codex Alimentarius Commission for this commodity. The total aflatoxin levels in the maize meal for human consumption shall not exceed 15 μ /kg (ppb), with aflatoxin B1 not exceeding 4.0 μ g/kg (ppb), SI 136 of 2001. THIS METHOD CANNOT DO THIS

9 PACKAGING

1) Fortified milled maize products shall be packed in suitable packages that shall be clean, sound, free from insects, fungal infestation, and the packing material shall be of food grade quality.

2) Fortified milled maize products shall be packed in containers that will safeguard the hygienic, nutritional, technological and organoleptic qualities of the products.

3) The containers, including packaging material, shall be made of materials that are safe and suitable for their intended use. They shall not impart any toxic substance or undesirable odour or flavour to the product.

4) Each package shall be securely closed and sealed.

5) Packaging for fortified maize meal shall not be reused

NOTE 1: Type of packaging materials shall be required to meet the requirement of the SI 120, 2016

NOTE 2: The package fill shall conform to the requirements of the SI 56 of 1989.

NOTE 3: Zimbabwe is a signatory to the International Labour Organisation for

maximum package weight for 50kg per load where human loading and offloading is involved OIML R87.

10 LABELING

10.1 General Labeling

Fortified maize meal shall be labeled in accordance with the SI 120, 2016. Each package shall be legibly and indelibly marked with the following:

1) Product Name — "Fortified Super Refined/Fortified Pearl Meal (Sifted Maize Meal), Refined Roller Meal (Granulated Maize Meal), and Straight-Run Meal (Whole Maize Meal)";
2) The word "Fortified" shall be declared before the name of the product;
3) Name, Address and Physical Location of the Manufacturer/ Packer/Importer;
4) Lot or Batch Number in code or in clear format;
5) Net weight, in kg;
6) Storage Instruction as "Store in a cool dry place away from any contaminants";
7) Date of Manufacture;
8) Best Before Date;
9) Instructions on disposal of used package;
10) Country of Origin;
11) Each Product Unit must also be marked with the National Food Fortification Logo for Zimbabwe, where the Industry Qualifies to use the mark

10.2 Nutrition Labeling

The names and the amount of the nutrients added in the maize meal shall be declared on the label in accordance with CAC/GL 2, 2015

10.3 Nutrition and Health Claims

Fortified milled maize products may have claims on the importance of the added nutrients in nutrition and health. Such claims when declared shall be consistent with CAC/GL 1, 1991 and CAC/GL 23, 2013.

11 METHODS OF SAMPLING

Sampling shall be done in accordance with ISO 24333 of 2009 Sampling Methods.

12 METHODS OF TESTING

Testing for micronutrients may be conducted using any internationally recognized methods of testing.

ANNEX 1: QUALITY CONTROL PRINCIPLES: MANUFACTURERS

Manufacturers of fortified maize meals shall:

1. Keep monthly records of the amount of fortification mixes used every month. The records shall correspond with the monthly production records

2. Ensure that fortification mixes are stored under the conditions laid down by the Manufacturer

3. Ensure that strict stock rotation procedures are adhered to in order to prevent old stock losing potency and to comply with the shelf life expiry date.

4. Ensure that all critical stages of the manufacturing process are monitored to ensure that the correct dosage levels are maintained through the following measures through the following measures:
   (a) process control for premix addition
   (b) finished product inspection
   (c) inspection and internal audit

ANNEX 2: QUALITY CONTROL PRINCIPLES: Importers or Suppliers

Manufacturers, Importers or Suppliers of fortification mixes shall:

1) Keep monthly records of the quantities of fortification mixes sold to maize meal manufacturers as well as a list of the names and addresses of the aforesaid purchasers

2) Ensure that the quality standard for diluents and fortificants, independently or mixed with a diluents shall be in accordance with standards as determined in the latest edition of either the Food Chemicals Codex (FCC), USP, BP, Ph. Eur, NF, MI or FAO/WHO or CAC.

3) Ensure that each batch of a fortification mix shall comply with the requirements of this Standard when added in accordance with the manufacturer's instructions.

4) Submit one 500g sample of wheat flour fortification mix every six months to a laboratory that has, where possible, accreditation for the methods of analysis as indicated by the fortification mix manufacturers, importer or suppliers and keep the analysis report on record and submit a copy of the report to the Environmental Health Depart of the Ministry of Health

5) Bear the cost of the analysis mentioned above in Annex 2: Paragraph 4.

ANNEX 3: QUALITY ASSURANCE CERTIFICATE

Each batch of premix shall be accompanied by a Quality Assurance Certificate that includes the following specifications:

(This certificate is not transferable from one batch to another)

1) Company Name:
2) Name of Premix:
3) Batch No:
4) Nutrient Composition:
5) Microbiological Results
6) Rate of Addition/Dosage:
7) Date of Manufacture:
8) Expiry Date:

As well as:

1) Address (Postal):
2) Physical Address:
3) Telephone No:
4) Fax No:
5) E-mail Address:
6) DECLARATION:

"It is hereby certified that (batch)------fortification mix complies qualitatively and quantitatively with the following specifications:"