DRAFT EAST AFRICAN STANDARD

Fortified edible oils and fats — Specification

EAST AFRICAN COMMUNITY
Contents
Foreword...................................................................................................................... IV

Contents
Foreword...................................................................................................................... IV
Introduction.................................................................................................................... V
1 Scope.......................................................................................................................... 1
2 Normative References .............................................................................................. 1
3 Terms And Definitions .............................................................................................. 1
4 Quality Requirements And Essential Composition .............................................. 2
5 Food Additives.......................................................................................................... 4
7 Contaminants............................................................................................................ 4
8 Hygiene ..................................................................................................................... 4
9 Packaging .................................................................................................................. 4
10 Labelling................................................................................................................... 4
11 Methods Of Sampling ............................................................................................ 5
12 Methods Of Testing ................................................................................................. 5
Bibliography ............................................................................................................... 6
Foreword

Development of the East African Standard 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 which are encountered when goods and services are exchanged within the Community will be removed.

In order to meet the above objectives, the EAC Partner States have enacted an East African Standardization, Quality Assurance, Metrology and Testing Act, 2006 (EAC SQMT Act, 2006) to make provisions for ensuring standardization, quality assurance, metrology and testing of products produced or originating in a third country and traded in the Community in order to facilitate industrial development and trade as well as helping to protect the health and safety of society and the environment in the Community.

East African Standards are formulated in accordance with the procedures established by the East African Standards Committee. The East African Standards Committee is established under the provisions of Article 4 of the EAC SQMT Act, 2006. The Committee is composed of representatives of the National Standards Bodies in Partner States, together with the representatives from the private sectors and consumer organizations. 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 procedures of the Community.

Article 15(1) of the EAC SQMT Act, 2006 provides that “Within six months of the declaration of an East African Standard, the Partner States shall adopt, without deviation from the approved text of the standard, the East African Standard as a national standard and withdraw any existing national standard with similar scope and purpose”.

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.
Introduction

The Health Ministers of the East, Central and Southern Africa (ECSA) Health Community passed a resolution in 2002 directing the Secretariat to work with the countries to fortify commonly consumed foods in the region after recognizing that the high levels of malnutrition in the region. ECSA-HC is an intergovernmental organization that fosters cooperation in health among countries in the East, Central and Southern African Region. It has 10 active member states namely Kenya, Uganda, Tanzania, Malawi, Zambia, Zimbabwe, Lesotho, Swaziland, Mauritius and Seychelles. The mandate of the organization is to promote relevance and efficiency in health in the region.

Following initial promotion efforts, the countries identified staple foods suitable for fortification as oil, sugar, maize meal/ flour and wheat flour. These foods can be used as vehicles to deliver essential micronutrients to the populations. Based on scientific evidence and working with countries using country data, the Secretariat developed implementation focused guidelines on fortification of these foods to help countries start up programs and scale up the existing programs. These guidelines included fortification levels for addition of micronutrients at the factory, and levels for monitoring at commercial level.

Based on the guidelines and other available information, most of the countries in the East African Region and in the larger Africa have initiated national programs on oil fortification with vitamin A; and wheat flour, maize meal/ maize flour fortification with iron, zinc, folic acid, niacin, vitamin B-1, B-2 and B-12 and vitamin A. Sugar fortification with vitamin A has also been considered as a way of supplementing other sources of the vitamin in order to prevent and reduce problems associated with the deficiency of this vitamin. Fats and oils are considered to be some of the most cost effective, technically feasible and widely used vehicle for vitamins A, D and E because the three vitamins are fat soluble and fats and oils, to a greater extent, are centrally processed. Vegetable fats and oils are also consumed by nearly everyone. Salt fortification with iodine continues to be implemented in all the countries.

With the increased trade of food commodities including these fortified foods within the region, it has become imperative to develop regional standards that over and above the other standards, stipulate minimum and maximum levels of the added nutrients, provide clauses on how to pack the fortified product and the use of health and nutrition claims. The guidelines developed through ECSA have now been incorporated into food standards to provide for specific fortified products.

It is envisaged that, the adoption of these standards and their utilization within the region will help countries adopt food fortification as a strategy to prevent, alleviate or eliminate micronutrient deficiency in the region. Standards will not only promote the health of the population but will also ensure safety of food products and enhance fair trade.

This standard was developed with support from the East, Central and Southern African Health community (ECSA-HC) Secretariat. This was possible through a grant by the A2Z Project of the United States Agency for International Development (USAID). The financial and technical support was used in the process of formulation of fortification levels, development of the draft standards and mobilization of stakeholders to review the standard in national and regional fora. This support is hereby acknowledged.
Fortified edible oils and fats — Specification

1 Scope
This draft East African Standard specifies the requirements and methods of sampling and testing for fortified edible oils and fats intended for human consumption.

This standard is not applicable to margarine and like products where other specific standards exist.

2 Normative references
The following normative documents contain provisions which, through reference in this text constitute provisions of this Standard:

- EAS 38, Labelling of prepackaged foods – Specification
- EAS 39, Code of practice for hygiene the food and drink manufacturing industry
- EAS 103, Schedule for permitted food additives
- EAS 291, Animal and vegetable fats and oils – Sampling
- CAC/GL 1, Codex Alimentarius guidelines for claims.
- CAC/GL 2, Codex Alimentarius nutrition labelling for claims
- CAC/GL 23, Guidelines for use of nutrition and health claims
- CODEXSTAN 193, Codex general Standards for contaminants and toxins in Food and Feed
- ISO 660, Animal and vegetable fats and oils – Determination of acid value and acidity
- ISO 661, Animal and vegetable fats and oils – Preparation of test sample
- ISO 662, Animal and vegetable fats and oils – Determination of moisture and volatile matter content
- ISO 663, Animal and vegetable fats and oils – Determination of insoluble impurities content
- ISO 3960, Animal and vegetable fats and oils – Determination of peroxide value-Iodometric (visual) endpoint determination
- ISO 8294, Animal and vegetable fats and oils – Determination of copper, iron and nickel contents – Graphite furnace atomic absorption method
- ISO 10539, Animal and vegetable fats and oils – Determination of alkalinity
- ISO 15304, Animal and vegetable fats and oils – Determination of the content of trans fatty acid isomers of vegetable fats and oils-Gas chromatographic method
- ISO 27107, Animal and vegetable fats and oils – Determination of peroxide value-Potentiometric end-point determination

3 Terms and definitions
For the purposes of this standard the following terms and definitions shall apply:

3.1 fats and oils
Food stuffs which are composed of glycerides of fatty acids of vegetable, animal or marine origin. They may contain small amounts of other lipids such as phosphatides, unsaponifiable constituents and free fatty acids naturally present in the fat or oil.
3.2 **blended fats and oils**
a mixture of two or more fats and/or oils of plant and/or animal origin.

3.3 **virgin fats and oils**
vegetable fats and oils obtained, by mechanical procedures, e.g. expelling or pressing, and the application of heat only, without altering the nature of the oil. They may be purified by washing with water, settling, filtering and centrifuging only.

3.4 **cold pressed fats and oils**
are edible vegetable fats and oils obtained, without altering the oil, by mechanical procedures, e.g. expelling or pressing, without the application of heat. They may have been purified by washing with water, settling, filtering and centrifuging only.

3.5 **refined fats and oils**
edible fats and oils obtained by mechanical procedures and/or solvent extraction and subjected to refining processes to adopt it specially for use in food products.

3.6 **edible fats and oils**
food stuffs which are composed of glycerides of fatty acids of vegetable, animal or marine origin complying with the provisions of this standard. They may contain small amounts of other lipids such as phosphatides, unsaponifiable constituents and free fatty acids naturally present in the fat or oil.

3.7 **fortified edible fats and oils**
edible fats and oils containing added micronutrients in accordance with this standard.

3.8 **fortificant**
a compound which contains the specified micronutrient intended to be added to a food vehicle.

3.9 **food fortification**
practice of deliberately adding essential micronutrients in a food to improve the nutritional quality of the food and to provide a public health benefit with minimal risk to health.

4 **Quality requirements and essential composition**

4.1 **Organoletic characteristics**
Fortified edible fats and oils shall be free from foreign and/or rancid odour and/or taste. The colour of the product shall be characteristic of designated product.

4.2 **Chemical and physical characteristics**
Fortified edible fats and oils shall conform to the maximum levels for physical and chemical characteristics indicated in Table 1.
Table 1: Maximum limits1 for physical and chemical characteristics for fortified edible fats and oils

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Level</th>
<th>Method of test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Matter volatile at 105°C, % by mass, max.</td>
<td>0.2</td>
<td>ISO 662</td>
</tr>
<tr>
<td>Insoluble impurities, % by mass, max.</td>
<td>0.05</td>
<td>ISO 663</td>
</tr>
<tr>
<td>Soap content, % by mass, max.</td>
<td>0.005</td>
<td>10539</td>
</tr>
<tr>
<td>Iron (Fe):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Refined fats and oils, mg/kg, max.</td>
<td>2.5</td>
<td>ISO 8294</td>
</tr>
<tr>
<td>Virgin fats and oils, mg/kg, max.</td>
<td>5.0</td>
<td>ISO 8294</td>
</tr>
<tr>
<td>Cold pressed fats and oils, mg/kg, max.</td>
<td>5.0</td>
<td>ISO 8294</td>
</tr>
<tr>
<td>Copper (Cu):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Refined fats and oils, mg/kg, max.</td>
<td>0.1</td>
<td>ISO 8294</td>
</tr>
<tr>
<td>Virgin fats and oils, mg/kg, max.</td>
<td>0.4</td>
<td>ISO 8294</td>
</tr>
<tr>
<td>Cold pressed fats and oils, mg/kg, max.</td>
<td>0.4</td>
<td>ISO 8294</td>
</tr>
<tr>
<td>Acid value:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Refined fats and oils, mg KOH/g fat or oil, max.</td>
<td>0.6</td>
<td>ISO 660</td>
</tr>
<tr>
<td>Virgin fats and oils, mg KOH/g fat or oil, max.</td>
<td>4.0</td>
<td>ISO 3960 or ISO 27107</td>
</tr>
<tr>
<td>Cold pressed fats and oils, mg KOH/g fat or oil, max.</td>
<td>4.0</td>
<td>ISO 3960 or ISO 27107</td>
</tr>
</tbody>
</table>

Peroxide value2

| Nutrient and cold pressed fats and oils, milliequivalents of active oxygen/kg oil, max. | 15 | ISO 3960 or ISO 27107 |
| Other fats and oils, milliequivalents of active oxygen/kg oil, max. | 10 | ISO 3960 or ISO 27107 |

The impact of these parameters on the stability of vitamin A in fortified edible fats and oils is not conclusively known. Users of the standards should evaluate such impacts.

In order to ensure the stability of vitamin A in fortified oil, edible fats and oils should be fortified only at peroxide values below 2 milliequivalents of active oxygen/kg oil.

5 Fortification requirements

5.1 Levels of Vitamin A1

The fortified edible oil or fat shall conform to the requirements and the levels of vitamin A provided in Table 2.

Table 2: Requirements for Vitamin A in fortified edible oil or fat

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Fortificant compound</th>
<th>Recommended factory level</th>
<th>Regulatory levels, mg/100g</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitamin A</td>
<td>Vitamin A (Retinyl) palmitate</td>
<td>3.5±0.5</td>
<td>2.0</td>
</tr>
</tbody>
</table>

5.2 Fortificants

Vitamin A shall be added in the form of stabilized vitamin A compound such as vitamin A palmitate 1.7 m IU^2/g or 1.0 m IU/g.

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

- British Pharmacopoeia (BP),
- Food Chemical Codex (FCC),
- Merck Index (MI),
- United States National Formulary (NF),
- European Pharmacopoeia (Ph Eur),
- United States Pharmacopoeia (USP);
- CAC Codex Alimentarius Commission

1 Countries may add other micronutrients such as vitamin D if available country data indicate deficiency in such nutrients.

2 One International Units (IU) of Vitamin A = 0.33 micrograms Retinol equivalent

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6 Food additives

Fortified edible fats and oils may contain only those food additives and in amounts as indicated in EAS 103.

7 Contaminants

7.1 Heavy metals

Fortified edible fats and oils shall conform to the maximum limits for heavy metals established in CODEXSTAN 193.

7.2 Pesticide residues

Fortified edible fats and oils shall conform to the maximum residue limits for pesticide residues established by the Codex Alimentarius Commission for this commodity.

Note: Where the use of certain pesticides is prohibited by some Partner States, then it shall be notified to all Partner States accordingly.

8 Hygiene

Fortified edible fats and oils shall be produced, prepared and handled in accordance with the provisions of appropriate sections of EAS 39.

9 Packaging

9.1 Fortified edible fats and oils shall be packaged in food grade, non-absorbent materials which do not have adverse influence upon effects on the composition of the product, its properties and appearance.

NOTE 1: Packaging materials may be required to meet different regulations in the different destination countries.

NOTE 2: The package fill should conform to the requirements of the legal metrology of the destination country.

NOTE 3: EAS community partner states are signatory to the (ILO) for maximum package weight for 50kg per load where human loading and offloading is involved.

10 Labelling

10.1 General labelling

In addition to the mandatory labelling provisions found in EAS 38, the following specific provisions apply:

a) The name of the product shall be edible ‘X’ fat or oil or blended ‘X’ fat or oil where X is the word vegetable or animal or name of such vegetable or animal.
b) The words ‘fortified with Vitamin A’ shall be declared in close proximity to the name of the oil or fat.
c) The words cold pressed, virgin, non-virgin or refined shall be declared on the label to indicate the type of oil or fat.
d) Where vegetable fat has been subject to any process of esterification or to processing which alters its fatty acid composition or its consistency, the name of the product or any synonym shall not be used unless qualified to indicate the nature of the product.
e) Date marking shall be declared in the following manner: The "date of minimum durability" (preceded by the words "best before") shall be declared by the day, month and year in
uncoded numerical sequence except that for products with a shelf life of more than three months, the month and year will suffice.

f) Instructions on disposal of used package;
g) Each product unit may also be marked with the national food fortification Logo, where the industry qualifies to use the mark.

10.2 Labelling exemptions

The following exceptions shall apply:

a) The product shall be designated in accordance with the laws of the community and in manner so as to not mislead the consumer about the nature of the product.

b) The labelling of non-retail containers is restricted to outer containers for a number of prepackaged foods only and shall appear in the following manner:

- The name of the product,
- Lot identification; and
- The name and address of the manufacturer or packer shall appear on the container.

10.3 Labelling prohibition

Edible fats and oils consisting of fats and/or oils of animal origin or marine origin shall not be labelled vegetable fats or oils.

10.4 Nutrition labelling

The amount of vitamin A in the fortified fat or oil shall be declared on the label in accordance with CAC/GL 2.

10.5 Nutrition and health claims

Fortified fats and oils may have claims on the importance of the vitamin A in nutrition and health. Such claims when declared shall be consistent with CAC/GL 1 and CAC/GL 23.

11 Methods of sampling

Sampling shall be done in accordance with the EAS 291.

12 Methods of Testing

Testing for micronutrients may be conducted using any ECSA methods of test.
Bibliography
