

# DRAFT UGANDA STANDARD

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## Fortified edible fats and oils — Specification

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## National foreword

Uganda National Bureau of Standards (UNBS) is a parastatal under the Ministry of Trade, Industry and Cooperatives established under Cap 327, of the Laws of Uganda, as amended. UNBS is mandated to co-ordinate the elaboration of standards and is

- (a) a member of International Organisation for Standardisation (ISO) and
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- (c) the National Enquiry Point on TBT Agreement of the World Trade Organisation (WTO).

The work of preparing Uganda Standards is carried out through Technical Committees. A Technical Committee is established to deliberate on standards in a given field or area and consists of representatives of consumers, traders, academicians, manufacturers, government and other stakeholders.

Draft Uganda Standards adopted by the Technical Committee are widely circulated to stakeholders and the general public for comments. The committee reviews the comments before recommending the draft standards for approval and declaration as Uganda Standards by the National Standards Council.

This Draft Uganda Standard, DUS DEAS 769:2017, *Fortified edible fats and oils — Specification*, is identical with and has been reproduced from an International Standard, ISO 769:2017, *Fortified edible fats and oils products — Specification*, and is being proposed for adoption as a Uganda Standard.

This standard cancels and replaces the first edition US EAS 769: 2012, which has been technically revised.

This standard was developed by Food and agriculture Standards Technical Committee (UNBS/TC 2).

Wherever the words, "East African Standard" appear, they should be replaced by "Uganda Standard."



**DEAS 769: 2017**

ICS 67.200.10

## **DRAFT EAST AFRICAN STANDARD**

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**Fortified edible fats and oils — Specification**

**EAST AFRICAN COMMUNITY**

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## Foreword

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

The Community has established an East African Standards Committee (EASC) mandated to develop and issue East African Standards (EAS). The Committee is composed of representatives of the National Standards Bodies in Partner States, together with the representatives from the public and private sector organizations in the community.

East African Standards are developed through Technical Committees that are representative of key stakeholders including government, academia, consumer groups, private sector and other interested parties. 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 Principles and procedures for development of East African Standards.

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.

The committee responsible for this document is Technical Committee EASC/TC 018, *Nutrition and Foods for Special Dietary Uses*.

Attention is drawn to the possibility that some of the elements of this document may be subject of patent rights. EAC shall not be held responsible for identifying any or all such patent rights.

This second edition cancels and replaces the first 2012 edition (EAS 769: 2012), which has been technically revised.



## Introduction

The Health Ministers of the East, Central and Southern Africa (ECSA-HC) 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 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 by 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.

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## Fortified edible fats and oils — Specification

### 1 Scope

This Draft East African Standard specifies the requirements, sampling and tests methods for fortified edible fats and oils intended for human consumption.

This Draft East African Standard is not applicable to fat spreads and blended spreads.

### 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 952.13, *Arsenic in food. Silver diethyldithiocarbamate*

AOAC 2001.13, *Determination of Vitamin A (Retinol) in Food*

CODEX STAN 192, *General standard for food additives*

CODEXSTAN 193, *General standard for contaminants and toxins in food and feed*

EAS 38, *Labelling of pre-packaged foods — Specification*

EAS 39, *Code of practice for hygiene the food and drink manufacturing industry*

EAS 803, *Nutrition labelling — Requirements*

EAS 804, *Claims on food — General requirements*

EAS 805, *Use of nutrition and health claims — Requirements*

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 5555, *Animal and vegetable fats and oils — Sampling*

ISO 8294, *Animal and vegetable fats and oils — Determination of copper, iron and nickel contents —*

ISO 10539, *Animal and vegetable fats and oils — Determination of alkalinity*

ISO 12193, *Animal and vegetable fats and oils — Determination of lead by direct graphite furnace atomic absorption spectroscopy*

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 17189, *Butter, edible oil emulsions and spreadable fats — Determination of fat content (Reference method)*

ISO 20633, *Infant formula and adult nutritionals -- Determination of vitamin E and vitamin A by normal phase high performance liquid chromatography*

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 document, the following terms and definitions apply.

**3.1**  
**edible fats and oils**  
foodstuffs 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**  
**virgin fats and oils**  
edible oil obtained without altering the nature of oil by mechanical procedures for example expelling or pressing, and the application of heat only. It may have been purified by washing with water, settling, filtering and centrifuging only

**3.3**  
**non-virgin (refined) fats and oils**  
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

**3.4**  
**cold pressed fats and oils**  
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**  
**edible vegetable fat**  
foodstuffs which are composed primarily of glycerides of fatty acids being obtained only from vegetable sources. They may contain small amounts of other lipids such as phosphatides, unsaponifiable constituents and of free fatty acids naturally present in the oil.

**3.6**  
**blended fats and oils**  
mixture of two or more fats and/or oils of plant and/or animal origin

**3.7**  
**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

### 3.8

#### **fortified edible fats and oils**

edible fats and oils containing added micronutrients in accordance with this standard

### 3.9

#### **fortificant**

compound which contains the specified micronutrient intended to be added to a food vehicle

### 3.10

#### **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

### 3.11

#### **food grade material**

material, made of substances that are safe and suitable for their intended use and which will not impart any toxic substance or undesirable odour or flavour to the product.

## 4 Requirements

### 4.1 General requirements

Fortified edible fats and oils shall be:

- a) free from foreign and/or rancid odour and/or taste; and
- b) characteristic colour of designated product.

### 4.2 Specific requirements

Fortified edible fats and oils shall comply with requirements given in Table 1 when tested in accordance with the methods specified therein.

**Table 1 — Specific requirements for fortified edible fats and oils**

S/N	Characteristic		Requirement	Test method
i.	Fat content, % by mass, min.		99.5	ISO 17189
ii.	Moisture and matter volatile at 105 °C, % m/m, max		0.2	ISO 662
iii.	Acid value, mg KOH/g, max.	Non virgin	0.6	ISO 660
		Virgin	4	
		Cold pressed	4	
iv.	Peroxide value, mEq. Peroxide oxygen/kg, max.	Non virgin	10	ISO 3960
		Virgin	15	
		Cold pressed	15	

## **5 Fortification requirements**

### **5.1 Levels of vitamin A**

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

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

Nutrient	Fortificant compound	Limit mg/kg		Test method
		Min.	Max.	
Vitamin A	Vitamin A (Retinyl) palmitate	20	40	ISO 20633 AOAC 2001.13

## 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/g or 1.0 m IU/g.

Note One International Units (IU) of Vitamin A= 0.33 micrograms Retinol Equivalent

## 6 Food additives

Fortified edible fats and oils may contain food additives in accordance with CODEX STAN 192.

## 7 Contaminants

### 7.1 Pesticide residues

The maximum levels of pesticide residues in fortified edible fats and oil shall comply with the levels recommended by Codex Alimentarius Commission

### 7.2 Other contaminants

Fortified edible fats and oils shall comply with those maximum limits specified in Table 3 when tested in accordance with the methods specified therein.

**Table 3 — Limits for contaminants in fortified edible fat and oils**

S/N	Contaminant		Maximum level	Test method
i.	Insoluble impurities, % m/m		0.05	ISO 663
ii.	Soap content, % m/m		0.005	ISO 10539
iii.	Iron, mg/kg	Virgin	5	ISO 8294
		Non virgin	2.5	
		Cold pressed	5	
iv.	Copper, mg/kg	Virgin	0.4	
		Non virgin	0.1	
		Cold pressed	0.4	
v.	Lead, mg/kg		0.1	ISO 12193
vi.	Arsenic, mg/kg		0.1	AOAC 952.13

## 8 Hygiene

Fortified edible fats and oils shall be produced, processed, handled and stored in accordance with EAS 39.

## 9 Weights and measures

Fortified edible fats and oils shall be packaged in accordance with the weights and measures regulations of the destination country.

NOTE EAC Partner States are signatory to the International Labour Organizations (ILO) for maximum package weight of 50 kg where human loading and offloading is involved.

## 10 Labelling

### 10.1 General labelling

In addition to the requirements of EAS 38, the following specific provisions apply:

- a) the name of the product shall be fortified edible 'X' fat or 'X' oil or blended 'X' fat or blended 'X' oil where "X" is the word vegetable or animal or name of such vegetable or animal;
- b) the words "cold pressed", "virgin", "non-virgin" or "refined" shall be declared on the label to indicate the type of oil or fat;
- c) 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;
- d) date marking shall be declared in the following manner "best before"
- e) instructions on disposal of used package shall be declared;
- f) each product unit may also be marked with the national food fortification Logo, where the industry qualifies to use the mark; and
- g) storage instructions, keep away from direct sunlight.

### 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; and
- b) the labelling of non-retail containers is restricted to outer containers for a number of pre-packaged foods only and shall appear in the following manner:
  - 1) the name of the product;
  - 2) lot identification; and
  - 3) the name and physical address of the manufacturer or packer shall appear on the container.



### **10.3 Labelling prohibition**

Fortified edible fats and oils consisting of fats and/or oils of animal origin or marine origin shall not be labelled as 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 EAS 803.

### **10.5 Nutrition and health claims**

Fortified edible 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 EAS 804 and EAS 805.

## **11 Sampling**

Sampling and sample preparation for testing shall be carried out in accordance with ISO 5555 and ISO 661 respectively.

## **Annex A** (informative)

### **Fortificant at factory level**

**A.1** For Vitamin A, the recommended factory level, should be  $35 \pm 5$  mg/kg

**A.2** Fortificant for use shall be stable compounds conforming to specifications in any of the following documents:

- a) British Pharmacopoeia (BP);
- b) Food Chemical Codex (FCC);
- c) Merck Index (MI);
- d) United States National Formulary (NF);
- e) European Pharmacopoeia (Ph Eur);
- f) United States Pharmacopoeia (USP); and
- g) Codex Alimentarius Commission (CAC).

## Bibliography

- [1] CODEX STAN 19, *Codex Standard for Edible Fats and Oils Not Covered By Individual Standards*
- [2] ECSA-HC, *Guidelines of fortification levels for staples*

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