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EAST AFRICAN STANDARD

Hens egg products for use in the food industry — Specification

EAST AFRICAN COMMUNITY

Foreword

Development of the East African Standards has been necessitated by the need for harmonizing requirements governing quality of products and services in East Africa. 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 Test 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.

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Introduction

The purpose of this East African Standard for egg products is to facilitate trade by specifying a uniform language for use between buyer and seller. The language describes egg products traded and defines a coding system for communication and electronic trade.

In Clause 5 the following code is used for egg products:

Egg product	UNECE code (data field 1)
Hen-egg product	90

In the preparation of this East African Standard, the following sources were consulted extensively:

Regulations Governing the Voluntary Grading of Shell Eggs, 7 CFR Part 56, Effective March 30, 2008

United States Standards, Grades, and Weight Classes for Shell Eggs, AMS 56, Effective July 20, 2000

UNECE EP 63:1986/1994, *Hens egg products for use in the food industry*

Codex Alimentarius website: http://www.codexalimentarius.net/mrls/vetdrugs/jsp/vetd_q-e.jsp

USDA Foreign Agricultural Service website: <http://www.mrlatabase.com>

USDA Agricultural Marketing Service website: <http://www.ams.usda.gov/AMSV1.0/Standards>

European Union: http://ec.europa.eu/enterprise/sectors/pharmaceuticals/veterinary-use/maximum-residue-limits/index_en.htm

Assistance derived from these sources is hereby acknowledged.

Contents

1	Scope	1
2	Normative references	1
3	Definitions.....	2
4	Quality requirements	5
4.1	Minimum requirements	5
4.2	Purchaser-specified requirements	5
4.3	Specific requirements	13
6	Code for purchaser requirements for egg products.....	14
6.1	Definition of the code	14
6.2	Example	15
7	Provisions concerning methods of analysis	15
Annex A	Physical and chemical indicators of conventional egg products	16
Annex B	Methods of analysis and sampling	17
Annex C (informative)	Requirements for operation and maintenance of premises for processing egg products	22

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Hens egg products for use in the food industry — Specification

1 Scope

This East African Standard specifies the requirements for products made from eggs obtained from hens of the species *Gallus gallus* which are intended for use in the manufacture of food for human consumption and produced as quality foodstuffs. It provides a variety of options to purchasers for grading, packing, labelling and other aspects of egg products traded internationally.

To ensure that items comply with the requirements of this standard, purchasers may choose to use the services of an independent, unbiased third party.

To supply egg products across international borders, legislative requirements relating to food hygiene and veterinary inspection must be complied with. The standard does not attempt to prescribe those aspects, which are covered elsewhere: such provisions are left for national or international legislation or the requirements of the importing country.

The standard contains references to other international agreements, standards and codes of practice which aim to provide guidance to Governments on upholding quality. The appropriate Codex Alimentarius Commission standards and codes, and in particular the Code of Hygienic Practice for eggs and egg products¹ should be consulted as the international reference concerning health and hygiene requirements.

2 Normative references

The following referenced documents are indispensable for the application 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 Official Method 931.06:1931, *Phosphorus (Total) (P_2O_5) in Eggs*

CAC/RCP 1, *Recommended international code of practice — General principles of food hygiene*

EAS 35, *Edible salt — Specification*

EAS 12, *Drinking (potable water) — Specification*

EAS 38, *Labelling of prepackaged foods — Specification*

EAS 39, *Hygiene in the food and drink manufacturing industry — Code of practice*

EAS 41, *Fruits, vegetables and derived products — Sampling and methods of test*

EAS 103, *Schedule for permitted food additives*

EAS 123, *Distilled water — Specification*

ISO 936, *Meat and meat products — Determination of total ash*

ISO 1736, *Dried milk and dried milk products — Determination of fat content — Gravimetric method (Reference method)*

¹The Codex Alimentarius Commission *Code of Hygienic Practice for Eggs and Egg Products*, CAC/RCP 15. In European Union countries, regulations (EC) No. 852/2004 and (EC) No. 853/2004 on the hygiene of foodstuffs are also applicable to egg products.

ISO 1737, *Evaporated milk and sweetened condensed milk — Determination of fat content — Gravimetric method (Reference method)*

ISO 4831, *Microbiology of food and animal feeding stuffs — Horizontal method for the detection and enumeration of coliforms — Most probable number technique*

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

ISO 48333, *Microbiology of food and animal feeding stuffs — Horizontal method for the enumeration of microorganisms — Colony-count technique at 30 degrees C*

ISO 5537, *Dried milk — Determination of moisture content (Reference method)*

ISO 5985, *Animal feeding stuffs — Determination of ash insoluble in hydrochloric acid*

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

ISO 6579, *Microbiology of food and animal feeding stuffs — Horizontal method for the detection of Salmonella spp.*

ISO 8156, *Dried milk and dried milk products — Determination of insolubility index*

ISO 9390, *Water quality — Determination of borate — Spectrometric method using azomethine-H*

ISO 13730, *Meat and meat products — Determination of total phosphorus content — Spectrometric method*

ISO 21527-1, *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*

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*

3 Definitions

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

egg products

all, or a portion of, the contents found inside eggs separated from the shell, with or without added ingredients, intended for human consumption. An egg product may contain food ingredients and food additives intended to give them certain characteristics and/or to preserve their quality. Additives should be permitted as edible in accordance with EAS 103 and permitted for use in importing countries.

food raw materials for production of egg products

raw materials of plant, animal, microbiological, mineral or artificial origin and water used to produce foodstuffs, excluding food and biologically active additives

food additives

natural and/or artificial materials and combinations of such materials introduced into foodstuffs to give them specific characteristics and/or preserve their quality, the use of which is authorized by the Codex Alimentarius Commission regulations on foodstuffs and permitted in importing countries

food ingredients

the constituent elements of foodstuffs specified in their composition

whole egg without shell (melange)

the homogeneous product obtained from the complete contents of broken-out hen eggs-in-shell, in accordance with good manufacturing practice. Small quantities of egg albumen or egg yolk may be added to whole egg in order to standardize the product so that the compositional requirements set out in the table in annex I are met.

liquid egg product

a product obtained from whole eggs without shell (melange), egg albumen and egg yolk without adding or removing water

egg yolk

the homogeneous product produced from the separation of the yolk of broken-out hen eggs-in-shell, in accordance with good manufacturing practice. Small quantities of egg albumen may be added to egg yolk in order to standardize the product so that the compositional requirements set out in the table in annex I are met.

egg albumen²

the homogeneous product obtained from the separation of the egg albumen of broken-out hen eggs-in-shell, in accordance with good manufacturing practice

Frozen egg product

a product obtained from a liquid egg product which has been subjected to a freezing process, including deep freezing, and maintained in its frozen state

dried egg product

a product obtained from a liquid egg product from which water has been removed by a drying process to give a product in powder or granulated form

concentrated (condensed) egg product

an egg product with a higher solids content than the equivalent liquid or frozen product obtained by the removal of water. The specific value of the higher solids content in a concentrated egg product is agreed between buyer and seller.

blended egg product

an egg product prepared in such a way that the proportion of the constituents of broken-out hen eggs-in-shell is altered in comparison with the whole egg, egg yolk and egg albumen. The specific value of the proportion of the constituents in a blended egg product is agreed between buyer and seller.

conventional (natural) egg product

an egg product obtained using conventional methods without the use of special procedures to alter the egg's properties and/or composition

modified egg product

an egg product whose properties have been altered using special procedures which are consistent with good manufacturing practice

fermented egg product

an egg product obtained through the action of fermentation agents, which are used to alter its properties (e.g. enhancing its natural functional properties: foamability, emulsification) and/or to stabilize (desugar) it. Cultures or agents used to ferment/stabilize egg products must be authorized as referenced in paragraph 10 above.

stabilized egg product

an egg product obtained by desugaring with the use of special procedures (such as fermentation or ultrafiltration)

acidified egg product

an egg product obtained by adding acidity regulators (additives intended to alter the product's pH level)

² Except for egg albumen obtained by the centrifugal separation of broken-out hen eggs.

heat-treated egg albumen

dried egg albumen which has been subjected, in accordance with good manufacturing practice, to a high temperature for a specific period of time to enhance its foaming properties

salted or sugared egg product

an egg product obtained by adding salt or sugar in quantities prescribed by good manufacturing practice

commodity lot

a quantity of egg product produced between planned breaks in production

contaminated

in respect of processed egg, means containing

- (a) a chemical, drug, food additive, heavy metal, industrial pollutant, ingredient, medicament, microbe, pesticide, poison, toxin or any other substance not permitted by, or in an amount in excess of limits prescribed in food regulations, or
- (b) any substance that renders the processed egg inedible

denature

to give inedible processed egg the appearance or characteristics of being inedible

dried egg

whole egg, egg yolk or albumen in dried form

dried egg mix

dried whole egg mix or dried yolk mix

dried whole egg mix

dried whole egg that contains salt or a sweetening agent, or both, in an amount not exceeding 32 per cent of the mix by weight

dried yolk mix

dried yolk that contains salt or a sweetening agent, or both, in an amount not exceeding 22 per cent of the mix by weight

egg product

a dried, frozen or liquid food that contains at least 50 per cent by weight of frozen egg, frozen egg mix, liquid egg, liquid egg mix, dried egg or dried egg mix

egg solid

egg yolk or albumen that contains, or egg yolk and albumen that contain, no shell or water

inedible egg

an egg that is not suitable for human consumption and includes an egg that

- (a) is contaminated with an odour foreign to that of a normal egg,
- (b) is musty or mouldy,
- (c) has been in an incubator, or
- (d) has any internal defect other than a meat spot or blood spot not in excess of 3.2 mm in diameter

inedible processed egg

processed egg that contains any inedible egg or that is otherwise not suitable for human consumption

ingredient

an individual unit of food, including an ovum, that is combined with one or more other individual units of food to form an integral unit of food

sanitizing agent

a substance that destroys bacteria in eggs and has a strength of between 100 and 200 parts per million of available chlorine or its equivalent

4 Quality requirements

The purpose of this standard is to define the quality requirements which egg products must satisfy at all stages of marketing after their preparation and packaging.

4.1 Minimum requirements

4.1.1 All types of egg product shall be made with Class B and Class A eggs obtained from farmed hens of the species *Gallus gallus* and produced in establishments regularly operated under the food safety and inspection regulations in force.

4.1.2 Egg products must be:

- (a) Homogeneous in minimum solids matter content, colour and pH
- (b) Fit for use in the production of foodstuffs
- (c) Free from shell fragments and in accordance with tolerances for extraneous matter in Annex A
- (d) The taste, colour and odour of egg products shall be natural and characteristic of each product; dried egg products shall be easily reconstituted.

4.2 Purchaser-specified requirements

The following subsections define the requirements that can be specified by the purchaser together with the codes to be used in the coding system.

Additional purchaser-specified requirements, which are either not accounted for in the code (e.g. if code 9 "other" is used) or which provide additional clarification to the product or packing description, shall be agreed between buyer and seller and be documented appropriately.

4.2.1 Source materials

Egg products shall be prepared from eggs that

- (a) are edible;
- (b) are not leakers, except in the case of eggs that become leakers while being transferred to the egg breaking equipment and that are prepared in a manner to prevent the contamination of processed egg; and
- (c) are free from dirt and other foreign matter.
- (d) have content that is not separated from its shell by means of centrifugal separation.

Source material code (data field 2)	Category/description
0	Not specified
1	Class A eggs
2	Class B eggs
3	Class B eggs with cracked shells but undamaged membranes
4	Egg products
5-8	Codes not used
9	Other

4.2.2 Product type

Product code (data field 3)	Category/description
00	Not specified
01	Liquid whole egg
02	Concentrated whole egg
03	Dried whole egg in powder form
04	Granulated dried whole egg
05-09	Codes not used
10	Liquid blended egg product
11	Concentrated blended egg product
12	Dried blended egg product in powder form
13	Granulated dried blended egg product
14-19	Codes not used
20	Liquid yolk
21	Dried yolk in powder form
22	Granulated dried yolk
23-29	Codes not used
30	Liquid egg albumen
31	Concentrated egg albumen
32	Spray-dried egg albumen in powder form
33	Granulated spray-dried egg albumen
34	Pan-dried egg albumen in powder form
35	Granulated pan-dried egg albumen
36-98	Codes not used
99	Other

4.2.3 Physical and chemical indicators of conventional egg products

Liquid, frozen or dried egg products from whole eggs, egg yolks and egg albumen obtained using conventional technologies and not special procedures designed to change the product's properties and/or composition shall meet the requirements set out in the table in Annex A. Any method of analyses used must be internationally approved, for example by the Association of Official Analytical Chemists (AOAC)³. The percentage expression of the weight ratio of the components of the egg product shall be established with regard to the egg part only of the given product. Quality parameters and testing methods different from those in Annex B can be agreed between the buyer and the seller.

4.2.4 Processing of egg products

Egg products shall be processed in accordance with the Joint FAO/WHO Codex Alimentarius Commission Code of Hygienic Practice for Eggs and Egg Products. The egg products must be treated in an establishment approved by the relevant official agency having jurisdiction.

4.2.4.1 Pasteurization

The results of pasteurization processes shall be verified using proper testing procedures.

Pasteurization code (data field 4)	Category/description
0	Not specified
1	Pasteurization
2-8	Codes not used
9	Other

Association of Official Analytical Chemists (AOAC). Official Methods of Analysis, 18th edition. Revision 2, 2007 (updates can be found at: www.aoc.org).

4.2.4.2 Special procedures

To modify egg products and/or enhance their positive characteristics, special procedures may be used, in accordance with good manufacturing practice, including fermentation, stabilization (desugaring) and regulation of acidity (acidification). Application of such procedures must be permitted for use by the importing country.

(i) Fermentation

Fermentation code (data field 5)	Category/description
0	Not specified
1	Fermentation
2-8	Codes not used
9	Other

(ii) Stabilization (desugaring)

Stabilization code (data field 6)	Category/description
0	Not specified
1	Stabilization
2-8	Codes not used
9	Other

(iii) Regulation of acidity (acidification)

Regulation of acidity (acidification) code (data field 7)	Category/description
0	Not specified
1	Regulation of acidity (acidification)
2-8	Codes not used
9	Other

(iv) Heat treatment of egg albumen

Code for heat treatment of egg albumen (data field 8)	Category/description
0	Not specified
1	Heat treatment of egg albumen
2-8	Codes not used
9	Other

(v) Ionizing radiation⁴

Ionizing radiation code (data field 9)	Category/description
0	Not specified
1	Ionizing radiation
2-8	Codes not used
9	Other

(vi) UV radiation⁵

UV radiation code (data field 10)	Category/description
0	Not specified
1	UV radiation

⁴ Egg products and/or additives processed with ionizing or UV-radiation are supplied in accordance with legislation in force in the importing country. In the case of fermented products, these indicators are registered prior to the fermentation process.

2-8	Codes not used
9	Other

4.2.5 Microbiological criteria

In addition to any national requirements, the microbiological condition of egg products shall be in conformity with the Codex Code of Hygienic Practice for Eggs and Egg Products.

4.2.6 Provisions concerning contaminants

Egg products shall not contain any contaminants in amounts greater than those specified in the residue-monitoring legislation of the importing country.

4.2.7 Provisions concerning hygiene

4.2.7.1 The hygiene requirements for the manufacture of egg products and the premises, equipment and personnel manufacturing or participating in their manufacture should be as specified in the Codex Code of Hygienic Practice for Eggs and Egg Products.

4.2.7.2 In addition, egg products shall satisfy the appropriate tests specified in chapter IV of the present standard.

4.2.8 Product history

4.2.8.1 Traceability

The requirements concerning production history by the specified purchaser require that a Hazard Analysis and Critical Control Point (HACCP) programme, including traceability systems, be in place. Traceability requires a verifiable method for identifying products or commodity lots at all relevant stages of production. Traceability records must be able to substantiate the claims being made, and the procedures used to certify conformity must be in accordance with the provisions concerning conformity-assessment requirements of 4.2.11.

4.2.8.2 Refrigeration

The purchaser may specify the use of refrigeration for egg products, which must be consistent with the legislation of the importing country. Where no such legislation exists, the legislation of the exporting country shall be used.

Refrigeration code (data field 11)	Category	Description
0	Not specified	
1	Chilled	Internal product temperature maintained at $\geq 0^{\circ}\text{C}$ and $\leq +4^{\circ}\text{C}$ at all times following packing and subsequent refrigeration
2	Frozen	Internal product temperature maintained at $\leq -12^{\circ}\text{C}$ at all times following packing and subsequent freezing
3	Deep-frozen	Internal product temperature maintained at $\leq -18^{\circ}\text{C}$ at all times following freezing
4-8	Codes not used	
9	Other	Can be used to describe any other refrigeration agreed between buyer and seller

4.2.8.3 Functional properties

The purchaser may specify functional properties for the egg product which shall be consistent with the legislation of the importing country. In the absence of such legislation, the functional properties of egg products shall be agreed between buyer and seller.

Functional properties code	Category/description
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(data field 12)	
0	Not specified
1	Conventional (natural)
2	Enhanced foamability
3	Enhanced emulsification
4	Enhanced gelatinization
5-8	Codes not used
9	Can be used to describe any other enhanced function agreed between buyer and seller

4.2.8.4 Use of additives and ingredients

The purchaser may specify the introduction of additives into the egg product, which shall be consistent with the legislation of the importing country. In the absence of any such legislation, the use of additives shall be agreed between buyer and seller.

Additive code (data field 13)	Category/description
00	Not specified
01	Food additive(s)
02-09	Codes not used
10	Added food ingredient(s)
11-19	Codes not used
20	Added salt
21-29	Codes not used
30	Added sugar
31-39	Codes not used
40	Food additive(s) and added food ingredient(s)
41	Food additive(s) and added salt
42	Food additive(s) and added sugar
43	Food additive(s), added food ingredient(s) and salt
44	Food additive(s), added food ingredient(s) and sugar
45-49	Codes not used
50	Added food ingredient(s) and salt
51	Added food ingredient(s) and sugar
52-98	Codes not used
99	Can be used to describe any other additives agreed between buyer and seller

4.2.9 Quality level

A quality level for egg products can be specified as follows:

Quality code (data field 14)	Category	Description
0	Not specified	Must meet the minimum requirements set out in 4.1
1	Quality level	Product meets quality level
2-8	Codes not used	
9	Other	Other quality level or system agreed between buyer and seller

4.2.10 Provisions concerning labelling

4.2.10.1 Labelling of packages

Labelling of packages should conform to the corresponding provisions of the Codex Code of Hygienic Practice for Eggs and Egg Products⁵. Packages containing egg products shall bear the following particulars, as appropriate, in characters which are conspicuous, clearly legible and indelible:

- (a) Product description:
 - Liquid whole egg
 - Frozen whole egg
 - Dried whole egg (powder or granules)
 - Liquid egg yolk
 - Frozen egg yolk
 - Dried egg yolk (powder or granules)
 - Liquid egg albumen
 - Frozen egg albumen
 - Pan-dried egg albumen (powder or granules)
 - Spray-dried egg albumen (powder or granules)
 - Liquid blended egg
 - Frozen blended egg
 - Dried blended egg (powder or granules)
 - Concentrated whole egg
 - Concentrated egg albumen
- (b) Indications:
 - The indication “heat-treated” where the egg albumen has been heat-treated
 - The indication “stabilized” where the product has been desugared
 - The indication “acidified” where the product has been so treated
- (c) When products are marketed as quality, they must bear the marking relevant quality mark
- (d) A list of ingredients, including water and food additives present, in descending order by weight
- (e) Name, or trade mark, and address of manufacturer, and/or of packer, distributor, exporter, importer
- (f) Identification number of the egg product processing establishment and commodity lot number, each lot being allocated a sequential number
- (g) Country of origin of the eggs and the egg product
- (h) Net weight in either SI (*Système international*) units, or *avoirdupois*
- (i) Date of manufacture or “use-by date”
- (j) Consignments of egg products, destined not for retail but for use as an ingredient in the manufacture of another product, must have a label giving the temperature at which the egg products must be maintained and the period during which conservation may thus be assured
- (k) For liquid egg, the label must also bear the words “non-pasteurised liquid egg — to be treated at place of destination” and indicate the date and hour of breaking.

Packages containing egg products shall be labelled in accordance with the importing country legislation.

4.2.10.2 Labelling of bulk containers

⁵ The Code refers to the Codex General Standard for the Labelling of Prepacked Foods, CODEX STAN 1-1985. Revised 1991. Amended 1999.

Where liquid egg products are marketed in a tanker churn or other suitable bulk container, the information specified in (a) to (e) and in (h) above may be provided in accompanying documents. The information provided for in (f) and in (i), (j) and (k), however, must appear on the container.

4.2.11 Provisions concerning conformity-assessment requirements

The purchaser may request third-party conformity assessment of specified requirements. In such cases, the name of the third-party certifying authority and the assessment requirements that will be used must be agreed upon by the buyer and seller.

The third-party certification authority will provide a written report to the contractor that states assessment observations for each agreed element.

The assessment may be limited in scope or it may be comprehensive to assess conformance to the requirements identified in this standard or other specified standards.

Conformity-assessment code (data field 15)	Category
0	Not specified
1	Specified standard
2	Specified standard element(s)
3	Specified combined standard elements
4-8	Codes not used
9	Other

4.2.12 Provisions concerning packaging, storage and transport

Packaging, storage and transport should conform to the corresponding provisions of the Codex Code of Hygienic Practice for Eggs and Egg Products.

Egg products shall be packed in such a manner as to protect them adequately, in accordance with the relevant requirements, and to also prevent contamination. The packaging material shall not impart any extraneous taste, odour or colour to the egg products and shall be in accordance with legislation of the importing country.

Storage conditions prior to dispatch and the equipment used for transport shall be appropriate to the physical condition of the egg products and shall be in accordance with the requirements of the importing country.

4.2.12.1 Pack weight

A “pack” is a specific quantity of egg product. Its weight shall be indicated as net weight. The definition of the net weight and its application and verification must be agreed between buyer and seller according to the table below:

Pack weight code (data field P1)	Category/description
0	Not indicated
1	Net weight specified
2-8	Codes not used
9	Other

4.2.12.2 Primary packaging

The primary packaging is in direct contact with the product and is used to segregate the product into individual consumer or bulk units. The following types of primary packaging may be specified:

Primary packaging code (data field P2)	Category/description
00	Not specified
01	Plastic bag
02	Metal can

03	Metal churn (agitation provided)
04	Metal canister/container
05	Metal tank
06	Metal container
07	Plastic pail
08	Plastic canister
09	Plastic barrel
10-98	Codes not used
99	Other

4.2.12.3 Labelling of the primary packaging

Labelling of the primary package may be specified as follows:

Labelling code (data field P3)	Category/description
0	Not specified
1	Consumer labels must be in accordance with the requirements of the importing country
2	Not labelled
3-9	Codes not used

4.2.12.4 Primary package weight

The weight of the primary package is equal to the net weight of the product it contains. The definition of the net weight and its application and verification must be agreed between buyer and seller.

Primary package weight code (data field P4)	Category/description
0	Not specified
1	Net weight specified
2-8	Codes not used
9	Other

4.2.12.5 Secondary packaging

Secondary packaging is used to protect and identify the product during transport. Secondary packages consist of one or more primary packages and must be labelled in accordance with the requirements of the importing country. The following types of secondary packaging may be specified:

Secondary packaging code (data field P5)	Category
0	Not specified
1	Multiwall (laminated multi-layer) paper sack
2	Plastic box
3	Corrugated-paper box
4-8	Codes not used
9	Other

4.2.12.6 Secondary package weight

Secondary package (packaging for transport) weight is expressed as five digits with one decimal place (0000.0 kg). Secondary package weight tolerances and weight ranges are determined by buyer and seller.

Secondary package weight code (data field P6)	Category/description
00000	Not specified
00001 - 99999	Five-digit weight in kilograms (0000.0 kg) specified

4.2.12.7 Egg product packaging and packing coding format

The following table shows the general application of the coding format for describing packaging and packing for egg products:

Data field	Description	Chapter	Code range
P1	Pack weight	4.2.12.1	0-9
P2	Primary packaging	4.2.12.2	00-99
P3	Primary package labelling	4.2.12.3	0-9
P4	Primary package weight	4.2.12.4	0-9
P5	Secondary packaging	4.2.12.5	0-9
P6	Secondary package weight	4.2.12.6	00000-99999

4.3 Specific requirements

4.3.1 Frozen egg, frozen egg mix, liquid egg or liquid egg mix shall, in addition to meeting the requirements set out in 4.2,

- (a) be free from any odour or flavour foreign to a normal egg from which the shell has been removed;
- (b) have a coliform count of no more than 10 per gram;
- (c) have a total viable bacteria count of no more than 50,000 per gram; and
- (d) contain, in the case of frozen egg or liquid egg, not less than the following amount of egg solids by weight, namely,
 - (i) 24.2 per cent in the case of whole egg, and
 - (ii) 43 per cent in the case of egg yolk.

4.3.2 Frozen egg product or liquid egg product shall, in addition to meeting the requirements set out in 4.2,

- (a) be free from any odour or flavour foreign to a normal egg from which the shell has been removed;
- (b) have a coliform count of no more than 10 per gram; and
- (c) have a total viable bacteria count of no more than 50,000 per gram.

4.3.3 Dried egg or dried egg mix shall, in addition to meeting the requirements set out in 4.2,

- (a) be free from any scorched or other odour or flavour foreign to a normal egg from which the shell and water have been removed;
- (b) have a coliform count of no more than 10 per gram;
- (c) have a total viable bacteria count of no more than
 - (i) 50,000 per gram in the case of whole egg, whole egg mix, yolk and yolk mix, and
 - (ii) 10,000 per gram in the case of albumen;
- (d) contain, in the case of spray-dried albumen, not more than 8 per cent water and, in the case of pan-dried albumen, not more than 16 per cent water; and
- (e) contain, in the case of yolk or whole egg, not more than 5 per cent water.

4.3.4 Dried egg product shall, in addition to meeting the requirements set out in 4.2,

- (a) be free from any scorched or other odour or flavour foreign to a normal egg from which the shell and water have been removed;
- (b) have a coliform count of no more than 10 per gram; and
- (c) have a total viable bacteria count of no more than 50,000 per gram

5 Packing and marking

5.1 Packing

5.1.1 Every container of processed egg shall (a) be clean and free from discoloration and objectionable odours; (b) be strong enough to protect the processed egg; (c) if made of corrugated fibreboard, be new; (d) have a new liner where a liner is used; and (e) contain only processed egg that has the same common name.

5.2 Marking

5.2.1 Every container of processed egg prepared pursuant to this standard, other than a container that is an integral part of a vehicle, shall be marked with the information required on a label of a food under the EAS 38.

5.2.2 Every prepackaged product prepared pursuant to this standard shall be marked, in official languages, with the information required on the label of a prepackaged product under EAS 38.

5.2.3 Every container to which 5.2.1 and 5.2.2 apply shall be marked with the following additional information:

- (a) the lot number;
- (b) where the processed egg was prepared from eggs of the domestic turkey or from eggs of the domestic turkey and eggs of the domestic chicken, the words “product of turkey eggs” or “product of turkey eggs and chicken eggs”, as the case may be;
- (e) if the processed egg is dried albumen, the words “pan-dried” or “spray-dried”, as the case may be;
- (f) where the processed egg is imported, the words “Product of” followed by the name of the country of origin;
- (g) where the processed egg is dried egg, some of which was imported from another country, the words “Product of” followed by the name “Kenya” and the name of the other country; and
- (h) if beta-carotene has been added, the words “contains colour” or “colour added”.

5.2.4 The common name and the registration number shall be shown.

6 Code for purchaser requirements for egg products

6.1 Definition of the code

The code for purchaser requirements for egg products has 17 fields and 20 digits (2 digits unused) and is a combination of the codes defined in 4.2.

No.	Name	Chapter	Code range
1	Egg product	Introduction	00-99
2	Source material	4.2.1	0-9
3	Product type	4.2.2	00-99
4	Pasteurization	4.2.4.1	0-9

No.	Name	Chapter	Code range
5	Fermentation	4.2.4.2 (i)	0-9
6	Stabilization (desugaring)	4.2.4.2 (ii)	0-9
7	Regulation of acidity (acidification)	4.2.4.2 (iii)	0-9
8	Heat treatment of egg albumen	4.2.4.2 (iv)	0-9
9	Ionizing radiation	4.2.4.2 (v)	0-9
10	UV radiation	4.2.4.2 (vi)	0-9
11	Refrigeration	4.2.8.2	0-9
12	Functional properties	4.2.8.3	0-9
13	Use of additives and ingredients	4.2.8.4	00-99
14	Quality level	4.2.9	0-9
15	Field not used	—	0-9
16	Field not used	—	0-9
17	Conformity assessment	4.2.11	0-9

6.2 Example

6.2.1 The following table describes a dried whole egg product in powder form, manufactured from Class B hen eggs. The product is pasteurized and stabilized through fermentation. It is produced without acidification, temperature control or ionizing or UV radiation and has no additives. The product has conventional functional properties and meets the quality level. It is not refrigerated during the period following packing. Conformity with the specified standard should be certified by the company nominated by the purchaser.

6.2.2 This item has the following egg product code:

90 2 03 1 1 1 0 0 0 0 0 1 00 1 0 0 1.

Data field No.	Name	Requirement	Code value
1	Egg product	Egg product	90
2	Source material	Class B hen eggs	2
3	Product type	Dried whole egg in powder form	03
4	Pasteurization	Pasteurized	1
5	Fermentation	Fermented	1
6	Stabilization (desugaring)	Stabilized	1
7	Regulation of acidity (acidification)	Not acidified	0
8	Heat treatment of egg albumen	Not heat treated	0
9	Ionizing radiation	Not treated with ionizing radiation	0
10	UV radiation	Not treated with UV radiation	0
11	Refrigeration	Not refrigerated	0
12	Functional properties	Conventional (natural)	1
13	Use of additives and ingredients	Without additives	00
14	Quality level	Quality level	1
15	Field not used	-	0
16	Field not used	-	0
17	Conformity assessment	Quality assessment according to specified standard	1

7 Provisions concerning methods of analysis

7.1 Analysis and sampling methods are set forth in Annex A. Other methods and means that ensure accurate results may be used if they meet the requirements of this standard.

7.2 Pasteurization of egg products shall be determined by an appropriate test. Where the alpha-amylase test is used, it should be performed as specified in the Codex Code of Hygienic Practice for Eggs and Egg Product

Annex A

Physical and chemical indicators of conventional egg products

	Product						
	Whole egg		Egg yolk		Albumen		
	Liquid and frozen	Dried	Liquid and frozen	Dried	Liquid and frozen	Dried	
						Pan-drying	Spray-drying
1	2	3	4	5	6	7	8
Minimum solids matter content (%)	22.0	95.0	40.0	95.0	10.5	84.0	92.0
Minimum fat content (%)	9.8	39.0	25.0	55.0	0.05 ⁶	0.5 ⁷	
Minimum protein content (%)	10.5	45.0	15.0	33.0	10.0	71.0	75.0
Extraneous matter	No particles over 1 mm in 100 g and should not exceed 100 mg/kg						
Minimum concentration of hydrogen ions (pH)	7.0	7.5	5.9	6.0	8.5	4.0	
Maximum beta-hydroxybutyric acid ⁷ (mg/kg)	10	10	10	10	10	10	
Maximum lactic acid (mg/kg)	1 000	-	1 000	-	1 000	-	
Maximum succinic acid (mg/kg) ⁸	25		25		25		

NOTE For dried egg products, the weight ratio of fat and egg albumen matter is calculated as solids matter.

⁶ Method: Gerber extraction.

⁷ Lactic acid (used only for processing), succinic and beta-hydroxybutyric acid are considered to be solids matter. Eggshell, membrane and other particles in egg products should not exceed 100 mg/kg of egg product.

[Solids matter content may need to be changed to dry matter content. Solids matter could be interpreted as materials that could be filtered from liquid eggs and the retentate is reported as solids matter. When only moisture is removed from liquid eggs, the dry residue will be the dry matter. Since the liquid eggs are without any solids suspended within, this dried liquid eggs should be reported as dry matter.]

⁸ Limit of succinic acid must be in, to prevent use of hatcheries rejects in food grade egg products for food industry: this is a quality parameter [DELETE THIS FOOTNOTE BEFORE ADOPTION/PUBLICATION].

Annex B

Methods of analysis and sampling

B.1 Preparation of the sample

B.1.1 General

- (a) Samples must be collected in an aseptic manner from homogeneous products. When practical, sealed primary containers should be collected and properly submitted to the laboratory for analyses. Storage of samples awaiting shipment to a laboratory must be under conditions appropriate for the type of product.
- (b) The sample must be made homogeneous prior to analysis and kept in a hermetically sealed jar in a cool place.
- (c) For all frozen samples, the sample is allowed to thaw, or is warmed in a water bath of temperature less than 50 °C, homogenized and treated as for liquid samples in all analyses.
- (d) For all dried samples, the sample is prepared for analysis by being passed three times through a sieve with a mesh of approximately 1 mm² to thoroughly break up any lumps.

B.1.2 Analysis

- (a) Samples must be analyzed for:
 - Dry matter (Total solids)
 - Total fat content
 - Alpha-amylase assay
 - pH (hydrogen ion concentration)
 - Beta-hydroxybutyric acid
- (b) The methods of analysis used must be the latest approved methods by the Association of Official Analytical Chemists or by the Codex Code of Hygienic Practices for Egg Products.
- (c) The precision and accuracy of measurement and analytical equipment/methods must meet the International Standards Organization (ISO) 5725-5:1998.
- (d) Correctness testing (including repeatability of test results, calibration and use of standards) must meet ISO17025:2005.

B.1.3 Expression of results

The result shall not contain more significant figures than are justified by the precision of the method of analysis used.

B.1.4 Test report

The test report shall contain all the information necessary for the complete identification of the sample.

B.1.5 Repeatability

The difference between the results of two determinations carried out simultaneously or in rapid succession by the same analyst on the same sample shall not exceed 0.1 g dry matter per 100 g of sample.

B.2 Methods

B.2.1 Method 1: Determination of fat content

B.2.1.1 Field of application

The method allows the determination of fat in:

- (a) Liquid whole egg product
- (b) Liquid yolk product
- (c) Frozen whole egg product
- (d) Frozen yolk product
- (e) Dried whole egg product
- (f) Dried yolk product
- (g) Liquid blended/concentrated egg product
- (h) Frozen blended/concentrated egg product
- (i) Dried blended/concentrated egg product.

B.2.1.2 Definition

Fat content of egg products: the fat content as determined by the method specified below.

B.2.1.3 Principle

- (a) The sample is hydrolysed by hydrochloric acid and the fat released is extracted by petroleum ether, recovered and calculated as a percentage by weight of the original sample.
- (b) Samples containing added salt and sugar are further extracted using a Soxhlet extraction of the acid hydrolysis residues.

B.2.1.4 Reagents

- (a) Hydrochloric acid, concentrated (assay 36.5-38% HCl)
- (b) Diethyl ether
- (c) Petroleum ether, with any boiling range between 30 °C and 60 °C.

B.2.1.5 Apparatus

- (a) Mojonnier extraction tube
- (b) Water bath capable of being thermostatically controlled over the range 70-100 °C
- (c) Oven capable of being thermostatically controlled at 100 ± 1 °C
- (d) Soxhlet apparatus with suitable thimbles
- (e) Analytical balance.

B.2.1.6 Procedure

- (a) Accurately weigh approximately 2 g liquid or frozen yolk product, 3 g of liquid or frozen whole egg product or 1 g dried yolk or whole egg product into a Mojonnier fat-extraction tube. Slowly add while vigorously shaking 10 ml of hydrochloric acid and, in the case of dried products, about 2 ml water, washing down any egg particles adhering to the sides of the tube.

- (b) Put the tube with sample in water bath set at 70° C, bring to a boil and continue heating at boiling point for 30 minutes. Carefully shake the tube every 5 minutes during this time. After 30 minutes remove the tube, add water to nearly fill the lower bulb of the tube and cool to room temperature.
- (c) Add 25 ml of diethyl ether to the tube containing the sample and mix. Then add 25 ml of petroleum ether, mix and allow to stand until the solvent layer has cleared.
- (d) Draw off as much as possible of the ether-fat solution into a previously weighed flask containing anti-bumping granules. Before weighing the flask, dry it and a similar flask as counterpoise in an oven at 100° C and allow to stand in air until constant weight is obtained.
- (e) Re-extract the liquid remaining in the tube twice, using 15 ml of ether each time. Thoroughly shake on each addition of ether. Allow solutions to clear and draw off ether-fat solution into flask as previously.
- (f) Slowly evaporate the ether from the flask by carefully placing on a boiling water bath. Dry the fat by placing the flask in the oven at 100° C until constant weight is reached (probably after about 90 min.). Remove flask and counterpoise from the oven and allow to cool to constant weight at ambient temperature (note: owing to the size of the flask and the nature of the material under test, there is less error by cooling in air than by cooling in a desiccator). Correct the weight obtained by a blank determination on the reagents used.

B.2.1.7 Expression of results

(a) Formula and method of calculation

Fat content, as a percentage by mass of the sample, is given by:

$$m_1/m_o \times 100,$$

where:

m_o is the mass, in g, of the fat obtained after extraction and blank correction,
 m_1 is the mass, in g, of the test portion of the egg product sample.

(b) Repeatability

The difference between the results of two determinations carried out simultaneously or in rapid succession by the same analyst on the same sample shall not exceed 0.3 g fat per 100 g of sample.

B.2.1.8 Notes

- (a) The fat content of an egg product containing salt and sugar is obtained using the above procedure, except that the fat is further extracted from the acid solution obtained after the third extraction by the following procedure:
 - (i) Filter the aqueous layer remaining after extraction through a filter paper and wash filter paper with hot water until the washings do not affect the colour of blue litmus paper. Place the filter paper on a watch glass or Petri dish and dry for 1 hour in an oven at 100° C. Allow to cool and then insert into an extraction thimble of a Soxhlet apparatus using tongs to handle the filter paper. Remove any traces of fat from the watch glass or Petri dish with cotton wool moistened with petroleum ether extraction solvent and then place cotton wool in the thimble. Place the thimble in the extraction tube;
 - (ii) Add extraction solvent to the Soxhlet apparatus and extract for 4 hours by placing the extraction flask in a sand bath or water bath or some such similar apparatus. After extraction, remove the solvent from the extraction flask and treat as in paragraph 21;

- (iii) Add the weight of fat obtained by the method described in subparagraph (b) to the weight obtained by the method described in paragraph 21 to give a corrected weight m_o , which is the mass, in g, of the fat obtained after extraction.
- (b) This method is the same in principle as that described in the eighteenth edition of the Official Methods of Analysis of the Association of Official Analytical Chemists, section 31.4.02.
- (c) The further Soxhlet extraction procedure is the same in principle as that described in the Codex Recommended Methods of Analysis and Sampling, CODEX STAN 234-1999, as amended in 2007.

B.3 Method 2: Alpha-amylase test

B.3.1 Field of application

The efficiency of pasteurization is determined in:

- (a) Liquid whole egg product
- (b) Liquid yolk product
- (c) Frozen whole egg product
- (d) Frozen yolk product
- (e) Dried whole egg product
- (f) Dried yolk product
- (g) Liquid blended/concentrated egg product
- (h) Frozen blended/concentrated egg product
- (i) Dried blended/concentrated egg product

B.3.2 Definition

Efficiency of pasteurization: the absence/presence of active alpha-amylase by the method specified below.

B.3.3 Principle

The presence of any active alpha-amylase (present in unpasteurized or insufficiently pasteurized egg product) is indicated by its ability to break down added starch, thereby preventing the formation of a starch-iodide complex on subsequent addition of an iodine solution.

B.3.4 Reagents, apparatus, procedure and interpretation

The method to be employed should be from the most recent edition of the *Official Methods of Analysis* of the Association of Official Analytical Chemists.

B.4 Method 3: Determination of extraneous matter⁹

B.4.1 In order to determine the presence of shell residues or other extraneous matter, place 100 g of the substance under examination in a graduated cylinder of 1,000-ml capacity, add distilled water up to the 1,000-ml mark, mix carefully and pass through a sieve with perforations 1 mm in diameter. After sieving there should be no residue on the sieve.

⁹ This method has been tentatively accepted by the Specialized Section pending the development of a method which will detect particles of a size smaller than 1 mm.

B.4.2 For dried egg products, the test should be carried out on the reconstituted product.

B.5 Method 4: Determination of lactic acid

AOAC Official Method 944.05, Lactic Acid in Eggs, Colorimetric Method. Association of Official Analytical Chemists, *Official Methods of Analysis* (17th ed., Rev. 2, Official Method 944.05).

B.6 Method 5: Determination of succinic acid

AOAC Official Method 948.14, Succinic Acid in Eggs, Ether Extraction Method. Association of Official Analytical Chemists, *Official Methods of Analysis* (17th ed., Rev. 2, Official Method 948.14).

B.7 Method 6: Determination of beta-hydroxybutyric, lactic and succinic acid

AOAC Official Method 970.31, Beta-Hydroxybutyric, Lactic and Succinic Acid in Eggs, Gas Chromatographic Method. Association of Official Analytical Chemists, *Official Methods of Analysis* (17th ed., Rev. 2, Official Method 970.31).

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Annex C
(informative)

Requirements for operation and maintenance of premises for processing egg products

C.1 Registration of processing premises

C.1.1 An application for the registration of a processed egg station shall be made to the relevant Regulatory Authority Having Jurisdiction (hereafter Regulatory Authority).

C.1.2 An application referred to in C.1.1 shall have annexed thereto

- (a) detailed plans and specifications for the processed egg station, including
 - (i) the dimensions and intended uses of the rooms and the positions of doors, windows, stairways and drains,
 - (ii) descriptions of the lighting, refrigeration, ventilation and plumbing systems,
 - (iii) descriptions of the types and location of equipment to be used in the processed egg station,
 - (iv) descriptions of the materials used in the construction of equipment, floors, walls, ceilings and openings, and
 - (v) descriptions of the location of the processed egg station in relation to adjacent buildings, roads, railways, waterways and public utilities;
- (b) a copy of a sanitation program for the processed egg station, including
 - (i) the name of the person responsible for carrying out the program,
 - (ii) the equipment and chemical agents to be used to bring about and maintain clean and sanitary conditions, and
 - (iii) the measures proposed to be taken to ensure clean and sanitary conditions; and
- (c) a copy of a quality assurance program for the processed egg station, including
 - (i) the name of the person responsible for carrying out the program,
 - (ii) the name and address of the laboratory to be used for the analysis of processed egg samples,
 - (iii) the number of processed egg samples to be taken and analyzed, and the frequency of sampling, to ensure that the processed egg meets the requirements and standards set out in Clause 4, and
 - (iv) the recall procedures for processed egg that does not meet the requirements and standards set out in Clause 4.

C.1.3 Where a processed egg station in respect of which an application referred to in C.1.1 is made meets the conditions set out in C.4, the Regulatory Authority shall

- (a) register the processed egg station by entering its name in the register of registered processed egg stations of the Regulatory Authority and by assigning it a registration number; and

(b) issue to the operator of the processed egg station a Certificate of Registration.

C.1.4 The operator shall post and keep posted the Certificate of Registration issued to the operator under C.1.3 in a conspicuous place in the registered processed egg station for the period during which the Certificate remains in force.

C.1.5 The operator shall not assign or transfer the Certificate of Registration issued in respect of that processed egg station.

C.1.6 The registration of a registered processed egg station shall lapse if no eggs are processed therein for a period of 12 consecutive months.

C.2 Suspension of registration

C.2.1 The Regulatory Authority may suspend the registration of a registered processed egg station

(a) where

- (i) the processed egg station does not meet the requirements of this standard or other public health regulations,
- (ii) the operator does not comply with the provisions of the relevant legislation(s), or
- (iii) it is reasonable to believe that public health will be endangered if the processed egg station is allowed to continue operating; and

(b) where the operator has failed or is unable to take immediate corrective measures to remedy any situation referred to in (a) above.

C.2.2 No registration shall be suspended under C.2.1 unless

- (a) an inspector has, at the time of the inspection, notified the operator of the existence of grounds for suspension under C.2.1;
- (b) an inspector has prepared an inspection report setting out the reasons for the suspension, the length of the suspension and the corrective measures required, and has forwarded a copy of that report to the operator; and
- (c) a notice of suspension of registration is delivered to the operator.

C.2.3 A suspension of registration under C.2.1 shall remain in effect

- (a) until the required corrective measures have been taken and have been verified by an inspector;
- (b) where a cancellation procedure has been commenced under C.3, until the resolution of the cancellation issue; or
- (c) where a cancellation procedure has not been commenced under C.3, until a period of 90 days has elapsed.

C.3 Cancellation of registration

C.3.1 The Regulatory Authority may cancel the registration of a registered processed egg station where

- (a) the processed egg station does not meet the provisions of this standard or relevant legislation(s); or
- (b) the operator does not comply with the provisions of this standard or relevant legislation(s).

C.3.2 No registration shall be cancelled under C.3.1 unless

- (a) an inspector has, at the time of the inspection, notified the operator of the existence of grounds for cancellation under C.3.1;
- (b) a copy of the inspection report is delivered to the operator
 - (i) identifying the provision of this standard or relevant legislation(s) that has not been complied with,
 - (ii) specifying the period for compliance with that provision of this standard or relevant legislation(s) in order to prevent the cancellation of the registration, and
 - (iii) stating that the operator may be given an opportunity to be heard in respect of the cancellation;
- (c) the operator has been given an opportunity to be heard in respect of the cancellation; and
- (d) a notice of cancellation of registration is delivered to the operator.

C.4 Conditions respecting registered processed egg stations

C.4.1 Every registered processed egg station shall be situated on land that

- (a) is free from debris and refuse;
- (b) provides or permits good drainage; and
- (c) is not in such proximity to any source of pollution or any place that harbours insects, birds, rodents or other vermin that are likely to contaminate processed egg in the processed egg station.

C.4.2 Every registered processed egg station shall

- (a) be of sound construction and in good repair;
- (b) be constructed of material that is durable and free from any noxious constituent;
- (c) be separate from and have no direct access to living quarters, retail outlets and areas in which operations are incompatible with the handling of processed egg;
- (d) be protected against the entry of insects, birds, rodents or other vermin or anything that is likely to contaminate processed egg;
- (e) have no room that opens onto premises used for the manufacture or storage of anything likely to emit an odour that could affect the flavour of processed egg;
- (f) have, where processed egg is prepared, floors, walls and ceilings that are
 - (i) of a hard finish that is suitable for cleaning,
 - (ii) smooth,
 - (iii) impervious to moisture,
 - (iv) free from pitting, indentations, cracks, crevices and ledges, and
 - (v) in the case of floors, sloped for adequate drainage;

