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EAST AFRICAN STANDARD

Code of practice for cold storage of shell eggs

EAST AFRICAN COMMUNITY

Draft for comments only — Not to be cited as East African Standard

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

With the recent development of the poultry industry, the production of eggs has registered a significant increase in the region. With a view to preserving the surplus production of eggs during the lean season of consumption for use during the peak season, proper storage assumes paramount importance. It is hoped that this standard would help in minimizing the loss of eggs due to deterioration in the quality during preservation.

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

IS 6558:1972(R2000), *Code of Practice for Cold Storage of Shell Eggs*

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.

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Code of practice for cold storage of shell eggs

1 Scope

This code covers the guidelines for cold storage of shell eggs.

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)*

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 4833, *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:

3.1

grading

sorting of eggs, according to quality, size, weight and other factors that determine their relative value

3.2

candling

process of holding the egg before a beam of light in such a way that the light rays penetrate and illuminate the interior of the egg for inspection

3.3

yolk faults

3.3.1

sided

yolk displaced to an appreciable extent from its normal central position

3.3.2

stuck

yolk stuck to the inner shell membrane

3.3.3

patchy

yolk uneven in colour including defects sometimes described as 'heated' or 'heat spots'

3.3.4

abnormal shape

yolk flattened or irregular, which in extreme cases, may be broken and dispersed in albumen

3.3.5

discoloured

yolk of a dark or greyish appearance often with a very distinct outline

3.3.6

embryonic development

thin blood vessels and bright blood ring may be seen

3.4

specific faults

such as blood spots; blood egg; meat spots; staleness; mould growth; rot; taint; thin-shelled eggs; yolkless eggs; and double-yolked eggs

4 Grades

Eggs, prior to cold storage, shall be sorted out according to the grades given in Table 1.

Table 1 — Grades of shell eggs

S/No.	Grade designation	Weight of individual eggs, g	Weight of per dozen, g	Weight per unit of ten eggs, g	Shell	Air cell	white	Yolk
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
i)	A-Extra large	60 and above	715 and above	596 and above	Clean, unbroken and sound shape and normal	Up to 4 mm in depth practically regular or better	Clear, reasonably firm	Fairly well centered practically free from defects, out-line indistinct
ii)	A-Large	53-59	631-714	526-595				
iii)	A-Medium	45-52	535-630	446-525				
iv)	A-Small	38-44	456-534	380-445				
v)	B-Extra large	60 and above	715 and above	596 and above	Clean to moderately stained, sound and slightly abnormal	8 mm in depth, may be free and slightly bubbly	Clear, may be slightly weak	May be slightly off-centered, out-line slightly visible
vi)	B-Large	53-59	631-714	526-595				
vii)	B-Medium	45-52	535-630	446-525				
viii)	B-Small	38-44	456-534	380-445				

NOTE Eggs which do not qualify under the above two Grades A and B, may be debarred from entering trade channels as fresh shell eggs.

5 Sorting and cleaning of eggs prior to storage

5.1 Prior to cold storage, clean shell eggs, shall be separated from the soiled ones.

5.2 Cracked and unsound eggs or those with yolk faults and/or specific faults shall be removed through the process of candling. These eggs shall not be stored.

6 Arrangement of eggs for cold storage

6.1 Eggs for storage shall be arranged with pointed end down and broad end up, in the filler flats. Each filler flat may contain about 30 eggs.

6.2 It is recommended that collapsible card-board boxes, to contain either 360 eggs (12 filler flats) or 210 eggs (7 filler flats), may be used for arranging eggs.

6.3 While arranging the eggs in the collapsible boxes care shall be taken to place an empty filler flat on the top before closing the top sides of the egg boxes.

7 Method of cold storage

7.1 Eggs meant for cold storage shall be treated before storage by the process given in 7.1.1, to reduce the weight loss during storage, prevent fungal contamination and maintain proper quality.

7.1.1 The eggs shall be placed in filler flats and sprayed with a suitable mineral oil, such as liquid paraffin which shall be odourless, colourless and non-toxic. Oils of vegetable or animal origin shall not be used for spraying as they undergo oxidative rancidity during storage. The oil may be re-used.

7.2 The eggs intended for storage of about one month at farm level and at egg packing stations shall be stored at a temperature of 10 °C to 13 °C and relative humidity of 75 to 80 percent.

7.3 The eggs intended for storage of about 3 months shall be stored at a temperature of 4 °C to 7 °C and relative humidity of 75 to 80 percent.

7.4 In case fertile eggs are required to be stored, they shall be stored at a temperature of 13 °C to 15.5 °C at relative humidity of 75 percent. The eggs may be stored at this temperature for about 7 days.

7.5 The eggs shall be properly graded before storage, and different grades shall be stored separately.

7.6 The boxes containing eggs may be stocked in shelves provided in a cold store.

7.7 The eggs once brought out of the cold store shall not be sent to the cold store again.

8 Post-storage care

8.1 Eggs stored at 4 °C to 7 °C (see 7.3) shall be placed in an ante-room having a temperature of 15.5 °C to 21 °C for about 8 to 10 h before release for retail market.

8.2 These eggs should preferably be marketed within three days from the date of release.

9 Storage life

9.1 It is necessary in every case that the storage should not be prolonged beyond limits suggested in 7.2, 7.3 and 7.4.

9.2 It is essential to draw samples of the eggs periodically so as to detect spoilage, if any, and to ensure efficient working of the cold store.

10 Assessment of quality of eggs in cold storage

10.1 External

10.1.1 Egg shell should be free from fungal contamination.

10.1.2 Loss in egg weight should not be more than 2 percent.

10.2 Candling

10.2.1 Air cell depth should not exceed 9 mm.

10.2.2 Yolk should be at the centre and not stuck to the egg shell.

10.3 On opening

10.3.1 On opening the eggs, the vitellin membrane should not rupture.

10.3.2 Minimum height of the thick albumen should be 2.5 mm.

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