



THAI AGRICULTURAL STANDARD

TAS 6702-2010

HEN EGG

**National Bureau of Agricultural Commodity and Food Standards
Ministry of Agriculture and Cooperatives**

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National Bureau of Agricultural Commodity and Food Standards

Ministry of Agriculture and Cooperatives

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(3)

The Thai Agricultural Standard on Hen Egg (TAS. 6702-2005) has been notified by The Ministry of Agriculture and Cooperatives since B.E. 2548 (2005) and it has been widely used as reference in marketing. In view of the fact that the information, relevant regulations as well as the production technology on hen egg have been developed over time. The Agricultural Standards Committee deems it necessary to review this standard to be a guideline for more appropriate egg quality promotion. As such the TAS. 6702-2005 is repealed and replaced by this standard of TAS 6702-2010.

This standard is based on the following documents:

National Bureau of Agricultural Commodity and Food Standards. B.E. 2548 (2005). Thai Agricultural Standard (TAS 6702-2005): Hen Egg.

National Bureau of Agricultural Commodity and Food Standards. B.E. 2549 (2006). Thai Agricultural Standard (TAS 6704-2006): Quail Egg.

The United States Department of Agriculture (USDA). Egg- Grading Manual. Agricultural Handbook Number 75. Rev. July 2000

The United States Department of Agriculture (USDA). United States Standards, Grades, and Weight Classes for Shell Eggs. AMS 56. Effective July 20, 2000



NOTIFICATION OF THE MINISTRY OF AGRICULTURE AND COOPERATIVES
SUBJECT: THAI AGRICULTURAL STANDARD:
HEN EGG
UNDER THE AGRICULTURAL STANDARDS ACT B.E. 2551 (2008)

Whereas the Agricultural Standards Committee deems it necessary to establish an agricultural standard for Hen Egg as a voluntary standard in accordance with the Agricultural Standards Act B.E. 2551 (2008) to promote such agricultural commodity to meet its quality and safety standards.

By virtue of Section 5, Section 15 and Section 16 of the Agricultural Standards Act B.E. 2551 (2008), the Minister of Agriculture and Cooperatives hereby issues this Notification on Establishment of Thai Agricultural Standard: Hen Egg as follows:

1. The Notification of the National Committee on Agricultural Commodity and Food Standards entitled the establishment of Thai Agricultural Commodity and Food Standard: Hen Egg, dated 19 May B.E. 2548 (2005) is repealed.
2. The Thai Agricultural Standard for Hen Egg (TAS 6702-2010) is established as a voluntary standard, details of which are attached herewith.

Notified on 7 October B.E. 2553 (2010)

(Mr. Theera Wongsamut)
Minister of Agriculture and Cooperatives

THAI AGRICULTURAL STANDARD

HEN EGG

1. SCOPE

This agricultural standard applies to eggs for food consumption of the hens of *Gallus gallus domesticus* from the layer farms and not subject to processing.

2. DEFINITIONS

For the purpose of this standard:

2.1 Hen egg means a shell egg produced by layer hen and of the characteristics of the breed.

2.2 Egg yolk means an inner composition of the egg, round, natural color and floating in the middle of the egg white.

2.3 Egg white means an inner composition of the egg consists of both the part of firm and viscous liquid surrounding the egg yolk and the part of clear and transparent liquid which surrounds the inner firm white.

2.4 Check means an individual egg which has a damaged outer shell such as broken or cracked shell but its shell membranes are intact with no leakage of its content.

2.5 Air cell means an air space in the large end of an egg between the outer and the inner shell membranes.

2.6 Egg candling means an initial inspection of the egg shell and its interior quality through visual light.

3. QUALITY

3.1 General quality for all grades shall be as follows:

3.1.1 Exterior quality

3.1.1.1 Oval shape with one large end and a taper end.

3.1.1.2 The shell color shall be of the breed characteristic, clean and smooth surface.

3.1.1.3 The shell shall not be broken or cracked.

3.1.1.4 Free of visible mold,

3.1.2 Interior quality

3.1.2.1 Air cell shall be small, the height not more than 0.8 cm and it does not move when the egg is twirled.

3.1.2.2 For the broken-out egg, the yolk shall not attach to the inner shell. It shall be firm and surrounded by the thick egg white.

3.1.2.3 The egg shall not be spoiled and free from abnormal odor.

3.1.2.4 The yolk shall have normal and consistent color. The egg white shall not be cloudy.

3.1.2.5 Free of visible mold.

3.2 Grading

Eggs shall be graded into 3 classes namely Grade AA, A and B (see Table1).

Grading of the eggs shall be as the following requirements:

Table 1 Grading
(Section 3.2)

Items	Requirements		
	Grade AA	Grade A	Grade B
1. Shell - Outer shell	- Free from check - Clean, without stain - Smooth surface, free from ridges or rough areas.	The same as grade AA.	- Free from check - Clean or may have slightly stained area. Total scattered stains shall not be more than 1/16 of the shell surface. Localized stain shall be found less than 1/32 of the shell surface and it shall be loosely attached. - The shell surface may have ridges or rough areas.
2. Candling			
2.1 Shell	- Clean and free from inner cracks	The same as grade AA.	- Free from inner cracks.
2.2 Air cell	It shall be in the large end of egg, the height not more than 0.3 cm and it does not move following the twirl.	It shall be in the large end of egg, the height not more than 0.5 cm and it does not move following the twirl.	It shall be in the large end of egg, the height not more than 0.8 cm and it does not move following the twirl.
2.3 Egg white	Blood spots or meat spots are not present.	Blood spots or meat spots are not present.	Blood spots or meat spots may be present.*

Items	Requirements		
	Grade AA	Grade A	Grade B
2.4 Egg Yolk	The yolk outline is slightly defined and floats in the middle of the egg. Blood spots or meat spots are not present.	The yolk outline is fairly well defined and approaches the shell more closely. Blood spots or meat spots are not present.	The yolk outline is plainly visible and approaches the shell closely. Blood spots or meat spots may be present.*
3. Broken-out egg** 3.1 Egg yolk	It is round and bulging shape located in the middle of the thick egg white. Blood spots or meat spots are not present.	It is round and bulging shape. Blood spots or meat spots are not present.	The yolk is flattened. Blood spots and meat spots may be present.*
3.2 Egg white	The thick white is firm and round. The thin white is not enlarged. Blood spots or meat spots are not present.	The same as grade AA. The thick white is reasonably firm.	The thick egg white and the thin egg white are not firm, being weak and watery, enlarged and flattened. Blood spots and meat spots may be present.*

Note: * The aggregating blood spots and meat spots which may be present and shall not be more than 0.3 cm in diameter.

** Grading of broken-out egg to determine the egg freshness based on the egg white and the yolk appearances is illustrated in Fig.A.3.

4. SIZING

The size of egg shall be considered by weight of an individual egg (Table 2). Unless otherwise specified for the commercial purpose, the size of eggs shall be as follows:

Table 2 Size of egg based on weight

(Section 4)

No.	Size	Minimum weight (g)
0	Jumbo	>70
1	Extra large	>65-70
2	Large	>60-65
3	Medium	>55-60
4	Small	>50-55
5	Peewee	>45-50

5. TOLERANCES

Tolerances for each package shall be as follows:

5.1 Quality tolerances

5.1.1 For grade AA, the minimum number of grade AA shall be 85%. Grade A can be included but not more than 15% of the total number of eggs.

5.1.2 For grade A, the minimum number of grade A shall be 85%. Grade B can be included but not more than 15% of the total number of eggs.

5.1.3 For grade B, only the eggs conforming to the requirement for eggs of grade B are allowed.

5.2 Size tolerances

Eggs of all sizes may include the immediate smaller size not more than 3.4% of the total number of eggs.

5.3 Eggs of all grades and sizes shall be free from check except for the one caused by transportation but shall not be more than 5% of the total number of eggs.

6. PESTICIDE RESIDUES

Pesticide residues shall be in compliance with the provisions of the relevant laws and requirements of TAS 9002: Thai Agricultural Standard on Pesticide Residue: Maximum Residue Limits and TAS 9003: Thai Agricultural Standard on Extraneous Maximum Residue Limits.

7. CONTAMINANTS

Contaminants shall be in compliance with the provisions of the relevant laws and requirements.

8. VETERINARY DRUG RESIDUES

Veterinary drugs residues shall be in compliance with the provisions of the relevant laws and requirements of TAS 9032: Thai Agricultural Standard on Code of Practice for Control of the Use of Veterinary Drug.

9. HYGIENE

9.1 Production, packaging, storage and transportation of hen egg shall be under hygienic conditions and in compliance with TAS 9023: Code of Practice: General Principles of Food Hygiene so as to prevent any contamination which can be harmful to consumers.

9.2 Microbiological criteria:

Salmonella spp. shall not be found in 25 g of sample.

10. PACKING

10.1 Uniformity

Hen eggs of each package shall be uniform by grade and size. The visible part of hen eggs of the package shall represent the entire contents.

10.2 Packaging

The packaging shall meet the quality grades, hygiene and free of any foreign matter and smell. They shall be durable against handling, transporting and maintaining egg's quality to the final destination. Eggs shall be packed in new and clean packaging.

11. MARKING AND LABELLING

11.1 Retail package for direct consumers.

Labeling shall be in compliance with the relevant laws. They shall be easily and clearly visible without false or deceptive information:

11.1.1 Type of produce

Name of the produce "hen eggs" together with their grade and size.

11.1.2 Number of eggs in a package or its net weight in g or kg

11.1.3 Name and address of producer, importer and distributor

Indicate name and address of the producers or repackers or distributors. Name and address of head office of producer or repacker may be provided. For imported produce, the importer's name and address and country of origin shall be indicated.

11.1.4 Date of packaging and/or best -before date

11.1.5 Lot number

11.1.6 Instruction for storage and transportation

The packages should be labeled as "fragile".

11.1.7 Language

Label for domestic market shall be in Thai. Label of exported produce can be in foreign language.

11.2 Non-retail package .

The following information shall be specified in the accompanied documents, on the label or package. They shall be legible, indelible and not be false or deceptive information:

11.2.1 Type of produce

Name of the produce "hen eggs" together with their grade and size.

11.2.2 Number of eggs in a package or its net weight in g or kg

11.2.3 Name and address of producer, importer and distributor

Indicate name and address of the producers or repackers or distributors. Name and address of head office of producer or repacker may be provided. For imported produce, the importer's name and address and country of origin shall be indicated.

11.2.4 Date of packaging and/or best before date

11.2.5 Lot number

11.2.6 Instruction for storage and transportation

The packages should be labeled as "fragile".

11.2.7 Language

Label for domestic market shall be in Thai. Label of exported produce can be in foreign language.

11.3 Certification mark

The use of certification mark shall be complied with the provisions under the Agricultural Standards Act B.E. 2551 (2008) and its amendment.

12. STORAGE

12.1 The packed eggs shall be marked, labeled and stored in a clean and ventilated area which is free from foreign odor.

12.2 Eggs stored more than one week shall be kept in a refrigerator or a room with controlled temperature between 10°C - 13°C (50°F -55°F) and relative humidity of 70%-80%.

13. TRANSPORTATION

13.1 Transport vehicle shall be provided with a hygienic ventilation system and shall be able to prevent the access of pest, insect and water in the loading section. The transport vehicle shall be able to prevent the eggs shells from contamination and shall permit easy and efficient cleaning and disinfection.

13.2 For a long distance transport, the loading section of the transport vehicle should be provided with a cooling system or an increased ventilating measure. If the cooling system is not used, the eggs shall be prevented from direct sunlight. In case where the cooling system is used, care should be taken to prevent egg sweating when they are moved to high temperature.

13.3. Prior to or after transportation, the transport vehicle shall be cleaned immediately with water and the disinfectant and dried. The disinfectant used shall be registered with the responsible authority. The transport vehicle shall be free from abnormal odor.

14. METHOD OF ANALYSIS AND SAMPLING

14.1 Sampling methods shall be in compliance with the provisions of the relevant laws and requirements under the Thai Agricultural Standard pertaining to Sampling Method.

14.2 Methods of analysis of egg quality shall be indicated in Table 3 (by referencing to the latest edition) or any equivalent methods validated according to the international standards.

Table 3 Methods of analysis
(Section 14.2)

Requirements	Methods	Principles
1. General quality (Sections 3.1.1-3.1.2)	Inspection of the general appearance	Visual inspection
2. Outer shell (Section 3. 2)	Inspection of the outer shell	Visual inspection
3. Candling (Section 3. 2)	Agricultural Handbook No.75, Egg-grading manual, United States Department of Agriculture (USDA), pp 31-32	Lighting through the object
4. Broken-out eggs (Section 3. 2)	Agricultural Handbook No.75, Egg-grading manual, United States Department of Agriculture (USDA), pp 34-35	Visual inspection
5. Size (Section 4)	Weighing	Gravimetry
6. Microorganisms (Section 9. 2) - Salmonella	Bacteriological Analytical Manual ¹ , U.S Food and Drug Administration, Chapter 5	Pour Plate

¹ U.S Food and Drug Administration, 2011. Bacteriological Analytical Manual, *Chapter 5 Salmonella*, [online] Available at: <<http://www.fda.gov/Food/FoodScienceResearch/LaboratoryMethods/default.htm> > [Accessed 26 June 2013]. - See more at: <http://www.fda.gov/Food/FoodScienceResearch/LaboratoryMethods/ucm070149.htm>

APPENDIX A

ILLUSTRATION OF HEN EGG

A.1 the parts of an egg

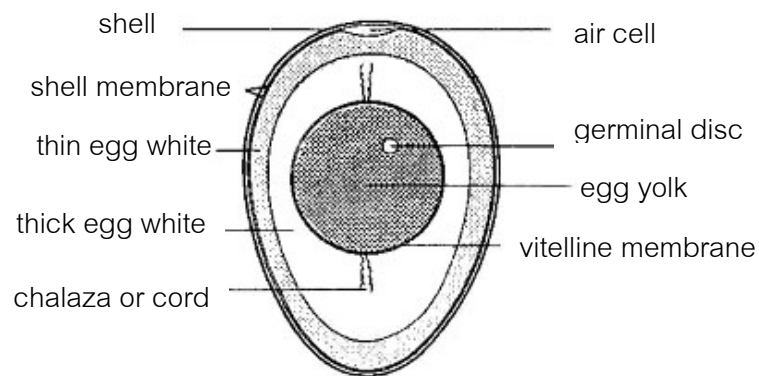


Figure A.1. Egg parts

A.2 Haugh units (H.U.)

The Haugh unit (H.U.) is given as additional information only and is not part of the requirements in Table 3 (Section 4) of this standard.

According to USDA standard, quality regarding freshness of eggs should be determined by the Haugh unit value. When the eggs are measured at the temperature of 45°F – 60°F (approx 7°C - 15°C), the H.U. value shall be as follows:

Grade AA	≥ 72
Grade A	= 60 – 71
Grade B	< 60

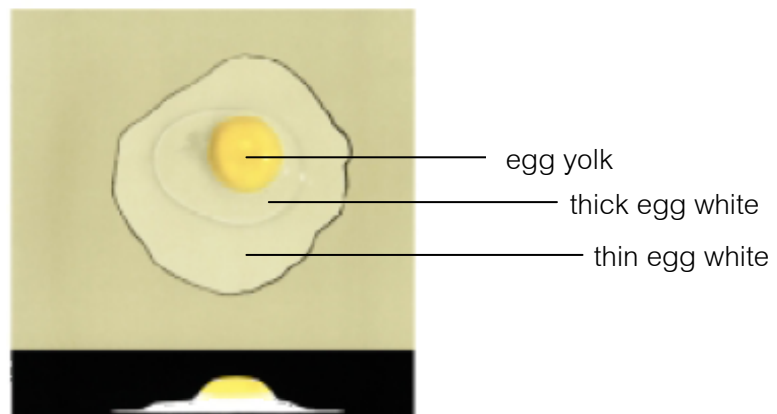
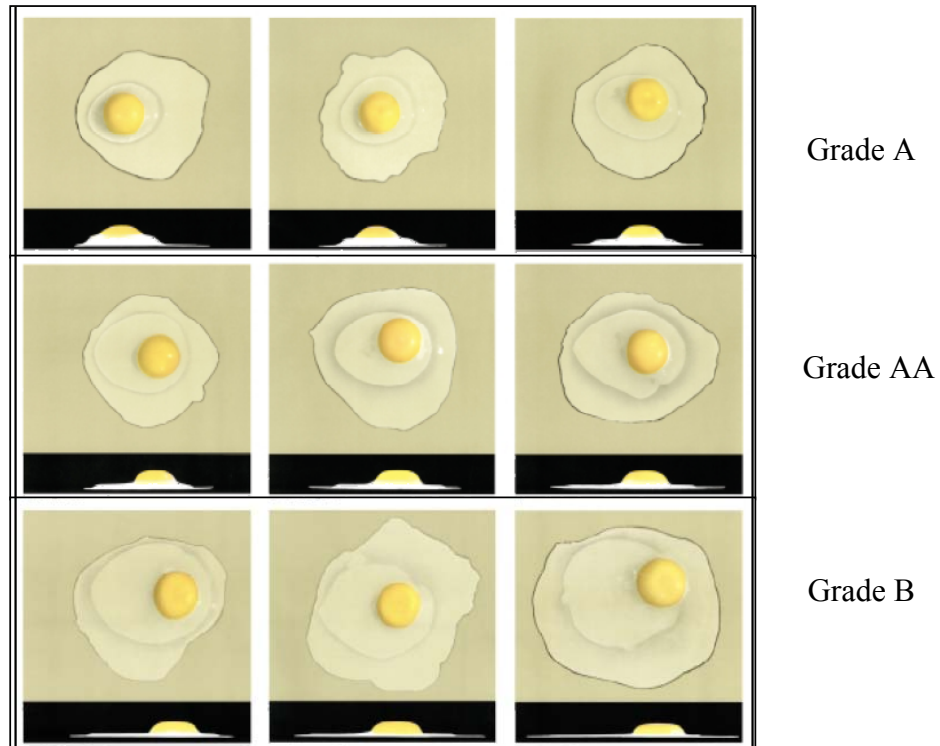


Fig A.2 Egg Yolk, thick egg white and thin egg white



Note: modified from the Egg Grading Manual, the United States Department of Agriculture (USDA)

Fig A.3 Interior quality of broken-out eggs



Fig A. 4 Different appearances of eggs

ANNEX B

CONTAMINANTS AND VETERINARY DRUG RESIDUES

This annex provides additional information on contaminants and veterinary drug residues which are specified in the relevant laws and standards and not considered as a part of the requirements of Sections 7 and 8 of this standard. As this information can be subject to change, only the latest edition shall be used.

B.1 Contaminants

The specified amount of contaminant for hen eggs shall be as follows:

Contaminant	Maximum residue limit (mg per kg of egg)
Lead	0.1

Source: Codex Alimentarius. Maximum Level for Lead. Codex Stan 230-2001, Rev. 1-2003

B.2 Veterinary drug residues

B.2.1 Hen eggs shall not be contaminated with the following veterinary drugs:

B.2.1.1 Chloramphenical and its salts

B.2.1.2 Nitrofurazone and its salts

B.2.1.3 Nitrofurantoin and its salts

B.2.1.4 Furazolidone and its salts

B.2.1.5 Furaltadone and its salts

B.2.1.6 Malachite green and its salts

Source: Notification of the Ministry of Public Health No. 268 (2003) on Standard for Food Contaminated with some Chemicals

B.2.2 Maximum residue limits of veterinary drugs for eggs shall be as follows:

Type of veterinary drug	Maximum residue limits (mg per kg of egg)
Chlortetracycline/ Oxytetracycline/tetracycline, single or in combination	0.4
Colistin	0.3
Erythromycin	0.05
Flubendazole	0.4
Neomycin	0.5
Spectinomycin	2.0
Tylosin	0.3

Sources:

- Codex Alimentarius. Veterinary Drug Residues in Food, Codex Alimentarius, Maximum Residue Limits. 15 December 2009
- Notification of the Ministry of Public Health No. 303 (2007) on Veterinary Drug Residues in Food

ANNEX C**UNIT**

The units and symbols used in this standard and the units recognized by the International System of Units or (*Le Système International d'Unités*) or SI are as follows:

Measurement	Unit	Symbol
Mass	gram	g
	kilogram	kg
Length	meter	m
	centimeter	cm
Temperature	degree Celsius	°C
	degree Fahrenheit	°F