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REVIEW OF UNECE STANDARDS FOR EGGS AND EGG PRODUCTS

Edible Hen Eggs-in-Shell

Note by the secretariat

This draft standard has been prepared following the decision of the Working Group on Agricultural Quality Standards to begin revision of the UNECE standards for eggs and egg products (document ECE/TRADE/C/WP.7/2007/27, para. 35). The text was discussed at the Seminar on Standards for Eggs and Egg Products held in Nizhniy Novgorod, Russian Federation, in September 2008. It takes into consideration comments from Poland, the Russian Federation, the United States of America and the European Commission.

The Specialized Section is invited to finalize the text and to consider submitting it to the Working Party for approval as a revised standard for trial use for a period of one or two years.

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UNECE STANDARD EGG-1
CONCERNING THE MARKETING AND COMMERCIAL QUALITY CONTROL OF
EDIBLE HEN EGGS-IN-SHELL

I. INTRODUCTION

A. UNECE standard for edible hen eggs

1. The purpose of the UNECE standard for edible hen eggs is to facilitate trade by recommending an international language for use between buyer and seller. The language describes eggs traded internationally and defines a coding system for communication and electronic trade.
2. As the standard is updated regularly, egg producers and traders who believe that additional items are needed or that existing items are inaccurate or no longer being traded are encouraged to contact the UNECE secretariat. Changes requiring immediate attention are published on the UNECE website at: <<http://www.unece.org/trade/agr/standards.htm>>.
3. In the UNECE coding system (chapter X), the following code is used for eggs:

Type of egg	UNECE code (data field 1)
Edible hen eggs	80
Industrial eggs	81

B. Scope

4. This standard recommends commercial quality requirements for edible hen eggs; industrial eggs are not covered by the standard. It provides a variety of options to purchasers for grading, packing, labelling and other aspects concerning eggs traded internationally. Countries are advised to establish a quality-control system for eggs.
5. To ensure that items comply with the requirements of this standard, purchasers may choose to use the services of an independent, unbiased third party.
6. To supply eggs across international borders, legislative requirements relating to food hygiene and veterinary control 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.
7. The standard contains references to other international agreements, standards and codes of practice which aim to provide guidance to Governments on upholding quality and food hygiene

rules. The Codex Alimentarius Commission standards, guidelines and codes of practice should be consulted as the international reference on health and hygiene requirements.¹

C. Definitions used in the standard

8. This standard applies to hen eggs-in-shell fit for direct human consumption and for use in the food and/or non-food industries.
9. All eggs must originate from laying hens or laying hens of breeding stock kept on farms regularly operated under the applicable regulations pertaining to food safety and inspection.
10. **Eggs** are eggs-in-shell - other than broken, incubated, or thermally processed eggs - that are produced by hens of the species *Gallus gallus* and are fit for direct human consumption or for the preparation of egg products.
11. **Fresh eggs** are eggs that have not been washed or cleaned, before or after grading, and that have not been treated for preservation or chilled in premises or plants where the temperature is artificially maintained at $< + 5^{\circ}$ C. Fresh eggs are collected on a daily basis.²
12. **Chilled eggs** are eggs that have been refrigerated in premises artificially maintained at a temperature $\geq 0^{\circ}$ C and $< +5^{\circ}$ C.³
13. **Preserved eggs** are eggs which have been preserved, whether refrigerated or not, in a gas mixture, the composition of which differs from that of atmospheric air, or eggs that have undergone any other preservative treatment.
14. **Industrial (non-food) eggs** are eggs not intended for human consumption.
15. **Slightly soiled eggs** are eggs with superficial soiling not exceeding in all 1/8 of the total surface of the eggshell, or accumulations not exceeding 1/16 of the total surface of the eggshell. In both cases the shell is to be free of blood rings and excreta.
16. **Cracked eggs** are eggs with shells that have damage visible to the naked eye but undamaged egg membranes.
17. **Broken eggs** are eggs with cracked shells and damaged membranes, resulting in the exposure of their contents.

¹ In particular the Joint FAO/WHO Codex Alimentarius Commission Code of Hygienic Practice for Eggs and Egg Products, CAC/RCP 15-1976, adopted 1976, amendments 1978, revision 2007. In European Union countries, regulations (EC) No. 852/2004 and (EC) No. 853/2004 on the hygiene of foodstuffs are also applicable to eggs.

² Depending on the national legislation, the collection frequency may be different, but not less than once a week. In the EU countries fresh eggs must be packed and graded not later than the first working day after arrival at the packing station. Fresh eggs have limited “sell-by” and “best before” (“minimum durability”) dates.

³ Chilled eggs are not allowed in the EU market.

18. **Incubated eggs** are eggs from the time of insertion in the incubator onwards.
19. **Foreign matter** consists of organic or inorganic substances of internal or external origin within the contents.
20. **Commodity lot** is a batch of eggs from the same production site or packing centre, situated in one place, laid on the same day or with the same minimum durability or packing date, packed in uniform containers, produced using the same type of farming and, if graded, of one quality class, transported together and presented once for inspection purposes.
21. **Laying date or period** is the day on which the eggs were laid. When the period is used, it is counted from the first day of the week.
22. **Sell-by date** is the maximum time limit for sale of the egg to the final consumer.
23. **Best-before (minimum durability)** is the date until which the egg retains its specific properties when properly stored.
24. **Consumer pack** is a wrapping containing Class A eggs, excluding transport packaging.
25. **Transport packaging** is a shipping container used for the transport and distribution of eggs.
26. **Final consumer** is the ultimate consumer of eggs who will not use them as part of any food-business operation or activity.
27. **Food industry** is any establishment that produces food products intended for human consumption, excluding mass caterers.
28. **Non-food industry** is any business producing products containing eggs not intended for human consumption.
29. **Producer code** is the distinguishing number of the production site.
30. **Traceability** is the ability to trace and follow eggs through all stages of production, processing and distribution.

II. QUALITY REQUIREMENTS

A. Minimum requirements

31. Eggs shall not:
 - (a) Be damaged (cracked or broken) at candling; cracked eggs are allowed in Class B
 - (b) Have a soiled shell, except in Class B
 - (c) Contain visible foreign matter at candling

- (d) Have an odour (except that Class B chilled eggs may have a slight odour of cold storage and Class B preserved eggs may have a slight odour resulting from the method of preservation)
- (e) Have surface moisture.

32. The following sections set out the requirements that can be specified by the purchaser of edible eggs, together with the UNECE codes to be used.

33. Additional requirements not accounted for in the code (e.g. if code 9 “other” is used) or that provide additional clarification of the product or packing description shall be agreed on between buyer and seller and documented appropriately.

B. Classification

34. Eggs are divided into two classes:

Class A or “fresh” eggs are for direct human consumption and for use in food or non-food industries.

Class B eggs are for use in food or non-food industries.

C. Class A

35. Class A is divided into two quality categories:

Class A, Extra fresh. Products in this category should be of superior quality, be graded, marked and packed within four days of laying, and have the following characteristics:

- (a) Shell and cuticle - normal shape, clean and undamaged
- (b) Air space - not more than 4 mm in height at the time of packing, immobile
- (c) Yolk - visible on candling as a shadow only, without clearly discernible outline, slightly mobile upon turning the egg, and returning to a central position
- (d) White - clear, clean and translucent
- (e) Germ - imperceptible development
- (f) Sell-by date - no more than nine days after the egg is laid.

Class A, category I. Products in this category should be of good quality, be graded, marked and packed within 10 days of laying, and have the following characteristics:

- (a) Shell and cuticle - normal shape, clean and undamaged
- (b) Air space - not more than 6 mm in height, immobile or allowing only slight movement

- (c) Yolk - visible on candling as a shadow only, without clearly discernible outline, slightly mobile upon turning the egg, and returning to a central position
- (d) White - clear, clean and translucent
- (e) Germ - imperceptible development
- (f) Sell-by date - no more than 21 days after the egg is laid.
- (g) Best-before (minimum durability) date – no more than 28 days from the day of laying.

36. Class A eggs should be kept and transported at a constant temperature and not refrigerated in premises artificially maintained at a temperature $< + 5^{\circ}\text{C}$ before their sale to the final consumer. Refrigeration does not include eggs stored at temperatures $< + 5^{\circ}\text{C}$ for not more than 24 hours during transport or in distribution premises for not more than 72 hours.

37. Class A eggs are not preserved; they are not washed or dry cleaned in order to avoid damaging the shell and cuticle.

38. Class A eggs which have lost the above-mentioned characteristics may be downgraded to Class B.

D. Class B

39. Class B eggs are those that do not meet the requirements for Class A. Class B eggs have the following characteristics:

- (a) Shell - normal shape, undamaged, slight soiling and may show slight deformations. The shell must be free of blood rings and the contents must not be soiled. Where appropriate national regulations exist and there is agreement between buyer and seller, soiled eggs may be washed and sanitized by special methods so long as this does not affect their quality
- (b) Air space - not more than 9 mm in height; a mobile cavity up to $\frac{1}{2}$ of the length of the egg is permissible
- (c) Yolk - visible on candling, slightly flattened and mobile
- (d) White - half-translucent
- (e) Germ - imperceptible development.

40. Class B cracked eggs can be used for food and non-food industry purposes within one day of delivery at the processing plant and shall be kept chilled at a temperature ≥ 0 and $< +5\text{C}$.

41. The quality grade code is as follows:

Quality code (data field 3)	Class/Category	Description
0	Not specified	
1	Class A, Extra fresh	High-quality product for direct human consumption, for food or non-food industries
2	Class A, Category I	Good-quality product for direct human consumption, for food or non-food industries
3	Class B	Product for use in food or non-food industries
4-8	Codes not used	
9	Other	Other quality level or system agreed between buyer and seller

42. The quality level should conform to the legislation of the importing country. If such legislation does not exist, the definition of the quality level should be agreed between buyer and seller.

III. WEIGHT

43. Class A eggs are graded according to weight into categories XL, L, M or S, as indicated below:

Weight code (data field 4)	Category	Description		
		Weight of egg, g	Minimum weight per 100 eggs, kg	Minimum weight per 360 eggs, kg
0	Not specified			
1	XL - Extra large	≥ 73	7.4	26.64
2	L - Large	≥ 63 and < 73	6.4	23.04
3	M - Medium	≥ 53 and < 63	5.4	19.44
4	S - Small	Less than 53	No minimum	No minimum
5-9	Not used			

44. Class B eggs do not have to be graded according to weight.

IV. PROCESSING

45. Class B eggs may be artificially refrigerated or preserved by various methods, as categorized below:

Processing code (data field 5)	Category	Description
0	Not specified	
1	Not processed	Not processed
2	Chilled	Product refrigerated and stored at a temperature $\geq 0^{\circ}\text{C}$ and $< +5^{\circ}\text{C}$
3	Preserved method	Specific preservation method agreed between buyer and seller
4-9	Codes not used	

V. PRODUCTION HISTORY

A. Traceability

46. To meet the purchaser requirements concerning production history, a traceability system must be in place, based on a verifiable method for identifying products or commodity lots at all stages of production. Traceability records should 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 in chapter IX.

B. Production system

47. The purchaser may specify a production system:

Production system code (data field 6)	Category ⁴	Description
0	Not specified	
1	Free-range	Hens kept in free-range
2	Barn-housed	Hens kept in barns
3	Cage-housed	Hens kept in cages
4	Organic ⁵	Hens kept in accordance with the organic farming regulations in force in the importing country
5-8	Codes not used	
9	Other	Can be used to describe any other production system agreed between buyer and seller

⁴ The production system indicated on the labelling should conform to legislation of the importing country.

⁵ Organic production systems include specific feeding systems. The option "organic" is therefore not repeated under feeding system.

C. Feeding system

48. The purchaser may specify a feeding system, which must be in conformity with the regulations in force in the importing country. If no such regulations exist, the feeding system shall be agreed between buyer and seller.

Feeding system code (data field 7)	Description
00	Not specified
01	Conventional
02-09	Codes not used
10	FM free
11	FM & IAO free
12	FM, IAO & GP free
13	FM, IAO, GP & GMO free
14	FM & GP free
15	FM, GP & GMO free
16	FM & GMO free
17-29	Codes not used
30	IAO free
31	IAO & GP free
32	IAO & GMO free
33	IAO, GP & GMO free
34-49	Codes not used
50	GP free
51	GP & GMO free
52-59	Codes not used
60	GMO free
61-98	Codes not used
99	Can be used to describe any other feeding system agreed between buyer and seller

FM free Free from fish meal.

IAO free Free from ingredients of animal origin.

GP free Free from growth promoters. Growth promoters include antibiotics other than those prescribed for veterinary purposes and for which a period of suspension must be provided by the exporting and the importing country regulations.

GMO free Free of products derived from genetically modified organisms.

VI. PRODUCT MARKING

49. Product marking should be in conformity with the Codex Alimentarius codes and standards⁶.

A. Marking of eggs

50. Importing-country regulations shall be used to define the marking and traceability requirements by the exporting country.

51. The marking on eggs shall be clear, indelible and resistant to heat. The products used shall comply with the national regulations of the importing country in respect of colouring matter that may be used in foodstuffs intended for human consumption.

52. Class A eggs shall be marked, before leaving the production site or in the first packing station, with the producer code,⁷ which includes: the production system code (see chapter V, section B), the ISO 3166 two-letter code of the country of origin⁸ and the national code of the production site.

53. Markings for Class A eggs may also include information on:

(a) Quality class and category

(b) Weight grade.

54. The distinguishing mark for Class A eggs may consist of the Roman letter “A” at least 5 mm high. The weight grade of Class A eggs may be indicated by the corresponding letters, between 2 and 3 mm high, of the weight categories. It may be supplemented by the corresponding weight ranges.

55. The following is an example of a marking of a Class A egg with “XL” weight grade

A_{XL}

56. For Class B eggs the marking is made on shipping packs.

⁶ Joint FAO/WHO Codex Alimentarius Commission Code of Hygienic Practice for Eggs and Egg Products, CAC/RCP 15-1976, adopted 1976, amendments 1978, revision 2007. Codex General Standard for the Labelling of Prepacked Foods, CODEX STAN 1-1985 (Rev. 1-1991).

⁷ In European Union Member States, the content of the producer code is regulated by Commission Directive 2002/4/EC.

⁸ In this standard, the term “country of origin” is reserved to indicate that production, grading and packing have taken place in the same country.

B. Information on transport packaging

57. Without prejudice to the national requirements of importing countries, transport packaging must bear on the outer surface in easily visible and clearly legible type the following particulars, which should remain on the transport packaging until removal of eggs for immediate grading, marking, packing or further processing:

- (a) Country of origin, producer's name and physical address (e.g. street/city/region/postal code and, if different from the country of origin, the country)
- (b) Producer code and packing-centre code
- (c) Number of eggs, weight category and/or their weight
- (d) Laying date or period
- (e) Date of dispatch
- (f) The wording "chilled eggs" for chilled eggs
- (g) The wording "preserved eggs" for preserved eggs
- (h) The wording "industrial eggs" for eggs not intended for human consumption nor for food industry.

58. For Class B, including chilled, preserved and industrial eggs, it is recommended that a band or label be affixed to the packaging so as to make it immediately obvious that the eggs are not fit for direct human consumption.

C. Information on consumer packs

59. Without prejudice to the national requirements of importing countries, consumer packs must bear on the outer surface in easily visible and clearly legible type the following particulars:

- (a) Country of origin
- (b) Producer code
- (c) Packing centre code
- (d) Quality grade; packs should be identified either by the words "Class A" or the letter "A", whether alone or in combination with the word "fresh"
- (e) Number of eggs packed
- (f) Weight grade
- (g) Laying date or period

- (h) Sell-by date
- (i) Best-before date (minimum durability) shall be marked at the time of packing
- (j) Farming method
- (k) Special storage conditions, e.g. an indication advising consumers to keep eggs chilled after purchase.

60. The words “Extra” or “Extra fresh” may be used as an additional quality indication on packs containing Class A eggs until the ninth day after laying. The packaging must be sealed with a band bearing the words “Extra” or “Extra fresh”. The band must be removed nine days after the date on which the eggs were laid and must not obscure any of the marking or damage it when the pack is opened. Optional methods for sealing the container may be approved by the importer to maintain the integrity of the sealed package.

61. The meaning of the producer code must be explained in or inside the transport packaging and the consumer pack.

VII. TOLERANCES

A. Quality tolerances

62. For Class A eggs, not more than 5 per cent of eggs in the commodity lot at the packing stage, and not more than 7% at later stages, which do not meet the requirements for this class are permissible. No allowance shall be made for the height of the air space in “Extra” or “Extra fresh” eggs at the time of packing or import.

B. Weight tolerances

63. For each weight grade indicated when packing a commodity lot, not more than 10 per cent of eggs of weight grades adjacent to that marked on the packing are permissible, provided that not more than 5 per cent of eggs from the grade below the lower adjoining grade are included.

C. Marking tolerances

64. Not more than 20 per cent of the eggs with marks that are illegible is allowed in the checking of commodity lots.

VIII. PROVISIONS CONCERNING PACKING, STORING AND TRANSPORT

65. Packaging, including consumer packs, must be made from impact-resistant material, must be dry, clean and undamaged, and should protect the eggs from foreign odours and reduce the risk of deterioration of various quality parameters. They shall not be used more than once.

66. Fresh eggs shall be stored in clean, dry premises free from foreign odours, at a temperature of $\geq + 5^{\circ}\text{C}$ and $< + 20^{\circ}\text{C}$ and relative humidity of between 85 and 88 per cent.

67. Chilled eggs must be stored in premises with an artificially maintained temperature of $\geq 0^{\circ}$ C and $< +5^{\circ}$ C. The minimum durability of 60 days from the day of laying should correspond to the relative humidity of 70 per cent. The minimum durability of 90 days should correspond to the relative humidity of 85-88 per cent.

68. Best-before (minimum durability) dates and storage conditions for preserved eggs shall be agreed between the buyer and the seller.

69. Eggs in transport should be protected from soiling and extraneous odours and should be well protected from physical shocks, weather conditions and light.

70. Eggs should be protected from changes in temperature during transport and storage.

71. Storage conditions prior to dispatch and the equipment used for transportation shall be appropriate to the physical and, in particular, the thermal condition of the eggs and shall be in accordance with the requirements of the importing country. Attention is drawn to the provisions of the UNECE Agreement on the International Carriage of Perishable Foodstuffs and on the Special Equipment to be Used for Such Carriage (<www.unece.org/trans/main/wp11/atp.html>).

IX. PROVISIONS CONCERNING CONFORMITY-ASSESSMENT REQUIREMENTS

72. 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.

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

74. 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 18)	Category
0	Not specified
1	Specified standard
2	Specified standard element(s)
3	Specified combined standard elements
4-8	Codes not used
9	Other

X. UNECE CODE FOR PURCHASER REQUIREMENTS FOR EGGS

A. Definition of the Code

75. The UNECE Code for Purchaser Requirements for Edible Eggs has seven fields and 20 digits (11 digits unused) and is a combination of the codes defined in chapters I-IX.

No.	Name	Chapter	Range of values
1	Type of egg	I	00-99
2	Quality grade	II	0-9
3	Weight grade	III	0-9
4	Processing	IV	0-9
5	Production system	V, section B	0-9
6	Feeding system	V, section C	00-99
7	Conformity assessment	IX	0-9

B. Example

76. In the table below, a description is given of edible size L Class A “Extra” eggs which are unprocessed, obtained from hens kept in cages and not fed on fish meal or ingredients of animal origin. The eggs should be of only superior quality, and conformity with the specified standard should be certified by the company nominated by the purchaser.

77. This item has the following UNECE egg code: 80012131100000000001.

Data field	Name	Requirement	Value
1	Type of egg	Edible eggs	80
2	Field not used	-	0
3	Quality grade	Class A, Extra fresh	1
4	Weight grade	L - Large	2
5	Processing	Not processed	1
6	Production system	Cage-housed	3
7	Feeding system	FM and IAO free	11
8	Field not used	-	0
9	Field not used	-	0
10	Field not used	-	0
11	Field not used	-	0
12	Field not used	-	0
13	Field not used	-	0
14	Field not used	-	0
15	Field not used	-	0
16	Field not used	-	0
17	Field not used	-	0
18	Conformity assessment	Quality and trade description conformity assessment	1
