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UNITED STATES STANDARDS for SHELL EGG PACKS



- SHIPPING CONTAINERS
- FILLERS and FLATS
- EGG TRAYS
- CARTONS

UNITED STATES DEPARTMENT OF AGRICULTURE
Agricultural Marketing Service

Agricultural Handbook No. 145

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This publication revises and supersedes Agricultural Handbook No. 86, "United States Standards for Containers, Packing Materials, and Packs for Shell Eggs," which was issued in July 1955.

The title describes the contents as standards instead of recommended specifications because of the general acceptance of the material as standard specifications. They are for voluntary use.

These standards are issued primarily for the use of producers, packers, distributors, and other egg handlers as a guide in making purchases of new shell egg containers and inner packing materials and as a basis for the development of uniform specifications for transportation and purchasing agencies.

As different containers and inner packing materials are found to be satisfactory and practical for use in packing chicken, turkey, and duck eggs, they will be added to these standards in future revisions.

Washington 25, D. C.

Issued June 1958

UNITED STATES STANDARDS FOR SHELL EGG PACKS

Poultry Division Agricultural Marketing Service

Standards for farm commodities are almost as old as commercial agriculture itself, but uniform national standards were not promulgated until after the passage of the U. S. Cotton Futures Act in 1914.

Broadly speaking, standards serve several purposes:

1. They set up a common language of quality, or specification.
2. They remove the need for personal inspection of products by sellers, buyers, and lenders of money.
3. They provide a comparable basis for the quotation of market prices throughout the country.
4. They provide a basis for the settling of disputes over quality or specifications.
5. They provide a buying guide for consumers or purchasers.
6. They provide a sound, logical basis for the physical separation of products into quality or specification groups, so that commercial needs and wants may be filled at a minimum of distribution cost.
7. They aid the seller in obtaining market prices.
8. They improve marketing conditions in many other ways.

National standards are "mandatory," "permissive," or "tentative." In most cases, standards in the United States are permissive; that is, they are for voluntary use by the general public as a quality or specification measure in buying or selling.

PART I - SHIPPING CONTAINERS FOR SHELL EGGS

Fiber Egg Cases

A. Domestic fiber egg cases

Egg cases made of either corrugated or solid fiberboard holding 15 or 30 dozen chicken eggs, or 100 or 200 turkey (or duck) eggs, and meeting the specifications outlined under Section B, below. These cases shall be identified as follows:

- (1) A standard 15-dozen corrugated fiber egg case is made of double-faced corrugated fiberboard.
- (2) A standard 15-dozen solid fiber egg case is made of at least three-ply (3 thicknesses of material) solid fiberboard.
- (3) A truck 15-dozen corrugated fiber egg case is made of double-faced corrugated fiberboard.
- (4) A standard 30-dozen corrugated fiber egg case is made either of double-faced corrugated fiberboard, or partly of double-faced corrugated fiberboard and partly of double-walled fiberboard.
- (5) A standard 30-dozen solid fiber egg case is made of four-ply (4 thicknesses of material) solid fiberboard.
- (6) A truck 30-dozen corrugated fiber egg case is made of double-faced corrugated fiberboard.
- (7) A truck 30-dozen solid fiber egg case is made of at least three-ply (3 thicknesses of material) solid fiberboard.

B. Specifications for domestic fiber egg cases

Two types of fiber egg cases are in common usage. The "standard" case is designed to withstand rigorous handling and shipment and is approved for rail shipment and storage. The "truck" case is of comparatively light construction and is intended for "one trip" use in a truck shipment.

Style of

case: Both the standard and truck cases may be of any style.

Size of

case: The minimum inside dimensions of each 15-dozen fiber egg case and of each compartment in a 30-dozen fiber egg case shall be not less than 11-3/4 inches long by 11-3/4 inches wide by 13 inches deep.

Construc-

tion: The "standard" case, as referred to in this publication, means a case which complies with Package 512 (30-dozen fiber cases) or Package 893 (15-dozen fiber cases) of the Uniform Freight Classification^{1/}, which provides the description of type cases authorized for shipment by the railroads. The National Motor Freight Classification^{2/} does not supply any special requirements but merely requires that the eggs be separated each from the others by pulpboard with contents filling case so as to prevent shifting of contents.

(1) The facings (container board) of corrugated fiberboard shall be firmly glued to the corrugated sheet (corrugating medium) at all points of contact. The outer facings on all corrugated fiber cases shall be waterproofed. All plies of solid fiberboard shall be firmly glued together, with the outer ply waterproofed.

(2) Every standard 30-dozen fiber case is scored and folded so as to provide for double thicknesses of fiberboard for at least two of the four parts (sides, bottom, ends and partition). Some are required to have double thicknesses on more than two of the parts.

(3) The two pieces of board forming the manufacturers' joint on each fiber case shall lap not less than 1-1/4 inches and be fastened with metal stitches not more than 2-1/2 inches apart for corrugated fiber cases, or not more than 3 inches apart for solid fiber cases.

(4) All corrugated cases shall be made either from double-faced corrugated board or partly of double-faced corrugated fiberboard and partly of double-walled fiberboard.

(5) The center partition in the standard 30-dozen cases shall be fastened or held firmly in place.

(6) The corrugating medium shall be made of board not less than 0.009 inches thick of quality sufficient to produce finished board of adequate rigidity and weighing not less than 26 pounds per 1,000 square feet.

(7) The minimum average bursting strength of fiberboard in a standard 30-dozen case is never lower than 200 pounds per square inch. Some cases must test 220 pounds and others are required by the rail regulations to test more than 275 pounds per square inch. The bursting strength of fiber-board in a 30-dozen truck case should be 200 pounds and in a 15-dozen corrugated fiber truck case should be 175 pounds per square inch.

(8) The minimum combined weight of the two facings of corrugated fiberboard in a standard 30-dozen case and in a 15-dozen case is

^{1/} Uniform Freight Classification 4 (Ratings, Rules and Regulations), effective September 10, 1957

^{2/} National Motor Freight Classification No. 14, effective May 21, 1957

never less than 84 pounds per 1,000 square feet. The same weight is recommended for a corrugated fiber truck 30-dozen case. For a truck 15-dozen case, a 75 pound basis weight is satisfactory.

(9) The minimum combined weight of component plies of solid fiberboard (exclusive of adhesive) in a standard or truck 30-dozen case is always at least 190 pounds per 1,000 square feet. Some cases have a basis weight of 237 pounds per 1,000 square feet.

Closure of

fiber cases: A fiber case, unless it is constructed with a "self-locking" closure device, shall be closed with sealing strips, adhesives, or staples.

(1) All sealing strips used to secure egg cases shall be made of sulphate paper having a basis weight, when ungummed, of not less than 60 pounds per 500 sheets, 24 x 36 inches, testing not less than 60 pounds, and being at least 3 inches in width. They shall be applied as follows for each style of fiber case closure:

(a) On each case having a regular slotted cover, the seam formed by closing of the flaps shall be completely covered by a sealing strip which must extend over the ends of the case at least 3 inches.

(b) For each case having end tuck-in or center tuck-in flaps, there shall be at least one sealing strip placed across the center of each compartment cover for a minimum total of two strips, extending down the sides at least 3 inches.

(c) For each case having a "partial telescope" cover or removable lid of other styles, the cover shall have two sealing strips placed across it so as to divide the cover into three equal parts. Each strip shall extend down the sides of the case at least 3 inches.

(2) Closures effected by adhesives shall be secured by an adhesive applied to at least 50 percent of the area of contact in such a manner as to minimize unglued edges.

(3) Closures effected by stapling shall be firmly secured with well clinched staples.

C. The 24 dozen hatchery case

The minimum inside dimensions of each 24-dozen fiber hatchery case shall be not less than 17 inches in length by 13-1/4 inches in width by 13-1/4 inches in depth. This case is specially designed for use with the specially designed egg tray to hold 48 eggs and for use with the specially designed vacuum-tray lifting machine to lift 48 eggs at a time. It accommodates seven 6 x 8 egg trays for a total of 24-dozen eggs. The 24-dozen fiber case is also being used for farm to plant operations.

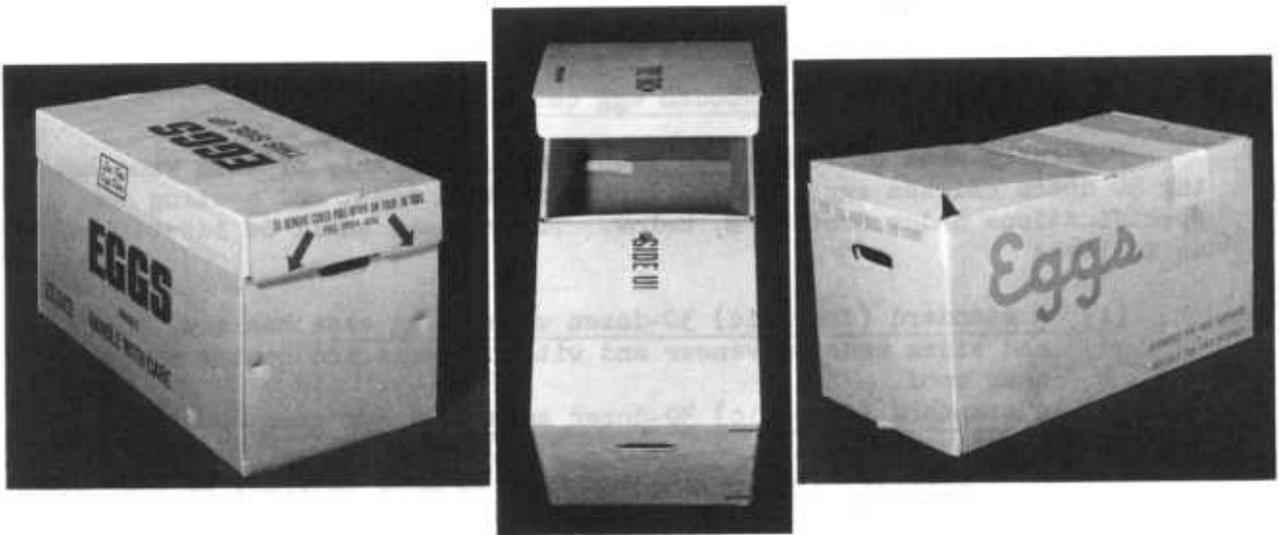
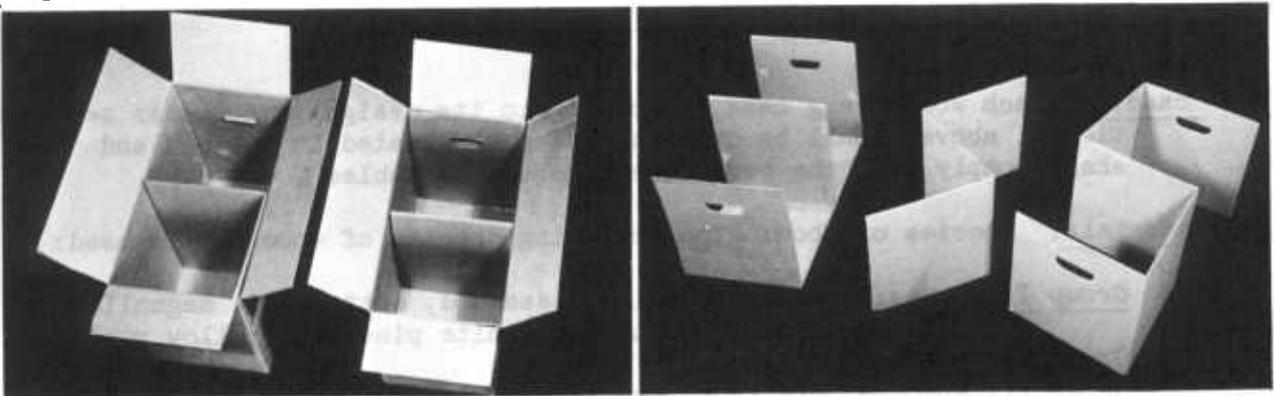


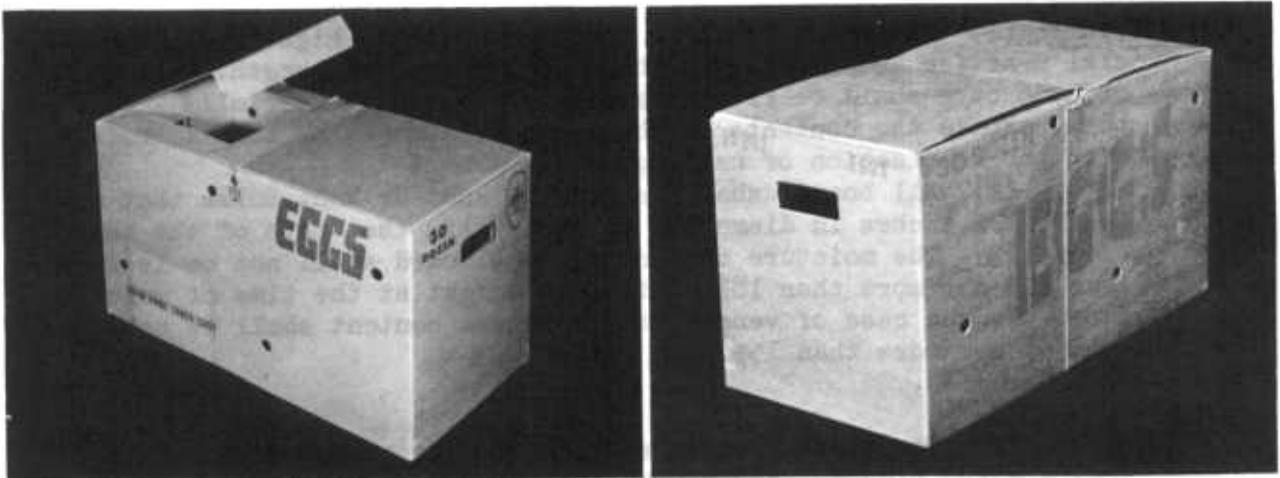
Figure 1.--Several examples of standard fiber cases.



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Figure 2.--Truck 30-dozen fiber cases and illustrations of the case liners.



BN6010

BN1589

Figure 3.--Solid fiber cases. At left, a solid fiber truck case; at right, a solid fiber standard case.

Wooden Egg Cases

A. Standard domestic and export wooden egg cases

Egg cases made of veneer and sawn wood or entirely of sawn wood holding 30 dozen chicken eggs, or 200 turkey or duck eggs, and meeting the specifications under Section B, below. These cases shall be identified as follows:

- (1) A standard (domestic) 30-dozen veneer egg case has top, bottom, and sides made of veneer and with the ends and center made of sawn wood.
- (2) A standard (domestic) 30-dozen sawn wood egg case is made entirely of sawn wood.
- (3) An export 30-dozen wooden egg case is made entirely of sawn wood, or it is a case with sides, top, and bottom made of veneer with the center and ends made of sawn wood.

B. Specifications for domestic and export wooden egg cases

Size of

case: Each wooden egg case, according to its designation, under section A, above, shall be of such size as indicated in table 1 and shall comply with the requirements shown in tables 1 and 2.

Materials: Species of wood: The following species of wood may be used:

Group I species: Aspen (popple), basswood, cottonwood, magnolia, spruce, white fir, white pine, and yellow poplar.

Group II species: Hemlock.

Group III species: Blackgum, sweetgum (Red-gum), sycamore, and tupelo.

Group IV species: Beech, elm, and white ash.

Defects in

material: (1) Each case shall be made according to high-grade commercial practice and all pieces shall be cut true to length. All parts of each case shall be free from all defects that materially weaken them, expose the contents of the cases to damage, or that interfere with the fabrication or nailing.

(2) All boards shall be free of knot or knot-holes that exceed 1-1/2 inches in diameter, or exceed 1/3 the width of the board.

(3) The moisture content of each board shall not be less than 12% nor more than 18% of its dry weight at the time of manufacture. In the case of veneer, the moisture content shall be not less than 9% nor more than 15%.

Construc-

tion: (1) The ends of cases shall be of one or two pieces. If they are two pieces, they may be butt-jointed, ship-lapped, tongue and grooved, or Lindermann jointed.

(2) The centers of all wooden cases shall consist of not more than two pieces. If butt-joint is used, two corrugated fasteners must be employed.

(3) The sides, top, and bottom of any wooden case shall be not more than two pieces. If of two-piece construction, any piece shall be not less than 5-3/4 inches nor more than 6-1/2 inches in width. The opening between the side pieces extending lengthwise at approximately the center of the case shall be not more than 3/4 of an inch. The top and bottom must cover entire areas of top and bottom of the case.

Tolerances: No minus tolerance is permitted on inside compartment dimensions. A plus tolerance of 1/8 of an inch is allowed on outside length and depth of each compartment.

Displacement: Export case about 2.48 cubic feet.

Nailing and

closure: (1) In each domestic wooden case only threepenny (size 1-1/8 inches x 15 gauge) cement-coated, large-headed nails shall be used.

- (a) The cleats shall be attached to the ends with six nails to be staggered and long enough to provide satisfactory clinch.
- (b) There shall be at least 18 nails in each side (6 in each end and 6 in center), 21 nails in the bottom (7 in each end and 7 in the center), and 8 nails in the top (4 in each end). First nails to be placed 3/4 inch from the edges of sides, top, and bottom.
- (c) All nails shall be evenly spaced.

(2) In each export wooden case, only fourpenny (size 1-3/8 inches long x 15-1/2 gauge) cement-coated box nails shall be used.

- (a) The cleats shall be attached to the ends with 6 nails to be staggered and long enough to provide a satisfactory clinch.
- (b) There shall be at least 21 nails in each side (7 in each end and 7 in the center), 21 nails in the bottom (7 in each end and 7 in the center), and 8 nails in the top (4 in each end). First nails to be placed 3/4 inch from the edges of the sides, top, and bottom. Nails in end of cover shall be evenly spaced and driven into the case end only.

Strapping: On all export cases, two flat straps 3/8 of an inch by 0.015 of an inch or two 16 gauge round wire straps shall be applied. One strap around each end of the case not more than 1-1/2 inches in from the end.



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Figure 4.--A standard 30-dozen wooden case.



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Figure 5.--A standard egg tray pack (30-dozen) in wooden egg case.

Wirebound Egg Cases

This revision of the specifications for standard packages and packs for shell eggs omits the specifications for wooden wirebound egg cases because they are not presently in use. Wirebound egg cases were practical during the War period when material shortages created a need for them.

Table 1.--Dimensions ^{1/} of 30-dozen wooden egg cases

30-dozen wooden egg cases	Size of cases								
	Inside dimensions			Inside compartment dimensions			Outside dimensions		
	Length	Width	Depth	Length	Width	Depth	Length	Width	Depth
Standard (domestic) veneer-----	24-1/8	11-3/4	13	11-3/4	11-3/4	13	25-7/8	12-1/8	13-3/8
Sawn wood-----	24-1/8	11-3/4	13	11-3/4	11-3/4	13	25-7/8	12-3/16	13-7/16
Export sawn wood or veneer-----	24-1/8	11-3/4	13	11-3/4	11-3/4	13	26-1/8	12-3/16	13-7/16

Table 2.--Dimensions ^{1/} of parts and type of materials of 30-dozen wooden egg cases

30-dozen wooden egg cases	Ends ^{2/}			Cleats ^{3/}			Centers ^{4/}		
	Length	Width	Min. caliper:	Length	Width	Min. caliper:	Length	Width	Min. caliper:
			or thick-ness			or thick-ness			or thick-ness
Standard (domestic) veneer-----	13	11-3/4	7/16 wood	12	1-1/4	7/16 wood	11-3/4	13	7/16 wood
Sawn wood-----	13	11-3/4	7/16 wood	12-1/16	1-1/4	7/16 wood	11-3/4	13	7/16 wood
Export sawn wood or veneer-----	13	11-3/4	1/2 wood	12-1/16	1-1/4	1/2 wood	11-3/4	13	1/2 wood

Table 2.--Continued

30-dozen wooden egg cases	Sides ^{5/}			Top and bottom		
	Length	Width	Min. caliper:	Length	Width	Min. caliper:
			or thick-ness			or thick-ness
Standard (domestic) veneer-----	25	12-1/2	3/16 Veneer	25-7/8	12-1/8	3/16 Veneer
Sawn wood-----	25	12-1/2	7/32 wood	25-7/8	12-3/16	7/32 wood
Export sawn wood or veneer-----	25-1/8	12-1/2	7/32 or veneer	26-1/8	12-3/16	7/32 or veneer

^{1/} Dimensions given in inches.

^{2/} Ends vertical grain.

^{3/} Cleats nailed to ends.

^{4/} Centers horizontal grain.

^{5/} If two-piece construction, a piece shall be not less than 5-3/4 inches nor more than 6-1/2 inches in width.

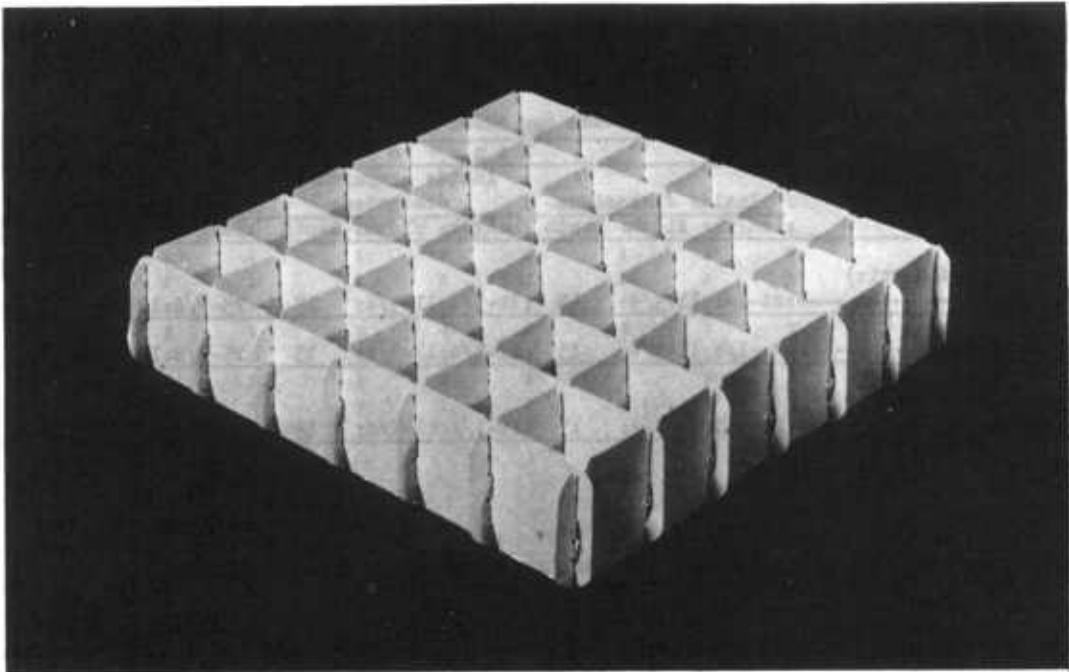
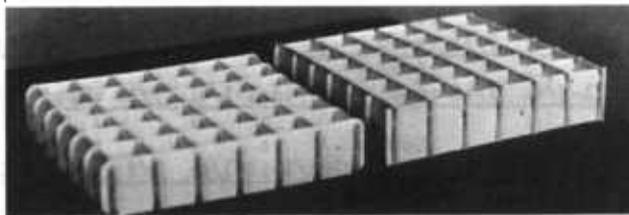


Figure 6.--Example of standard egg case filler.

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BN-6232

Figure 7.--Standard filler at left; jumbo filler at right



N-24731

Figure 8.--A standard filler and flat pack (30-dozen) in fiber case illustrating two types of standard flats.

PART II - INNER PACKING MATERIALS FOR SHELL EGGS

Fillers for Egg Cases

A. Fillers

Strips of paperboard fastened in such a manner as to permit folding when not in use and as they rest on flats in an egg case, form individual square cells (honeycomb effect) in which eggs are held in place.

- (1) A standard egg filler has 36 individual cells arranged in 6 rows of 6 cells each and holds 36 chicken eggs. Ten such fillers are used with 12 standard flats in egg cases to hold 360 eggs.
- (2) A turkey or duck egg filler has 25 individual cells arranged in 5 rows of 5 cells each and holds 25 turkey or duck eggs. Eight such fillers are used with 10 turkey or duck egg flats in cases to hold 200 eggs.

B. Specifications for fillers

Style of fillers: Each filler shall be of honeycomb style.

Type of board: Each filler shall be made of solid (entirely) news board or of vat-lined board (usually 2 liners of news board with a center of chip-board layer between) and shall meet the requirements shown in table 3.

Table 3.--The size^{1/} and weight^{2/} of fillers

Filler designations	: Minimum outside dimensions	: Minimum weight of 10 fillers	: Filler cells			
			: Total No.:	: No. in row:	: No. of rows:	: Inside dimensions
(1) A standard egg filler-----	: 11-1/2 square by 2-5/16	: 38	: 36	: 6	: 6	: 1-25/32 square by 2-5/16
(2) A turkey or duck egg filler:	: 11-1/2 square by 2-1/2	: 38	: 25	: 5	: 5	: 2 square by 2-1/2

^{1/} Size given in inches.

^{2/} Weight given in ounces.

Flats for Egg Cases

A. Flats

Square pieces of molded pulp on top of which are raised cups in which the small ends of the eggs rest as they are held in place by fillers in an egg case. On the bottoms of the flats are extended posts which rest on the filler below. These flats shall meet the specifications under B, below.

- (1) A standard egg flat has 36 individual cups arranged in 6 rows of 6 cups each, to accommodate 36 chicken eggs. Twelve such flats are used with 10 standard egg fillers in egg cases to hold 360 eggs.
- (2) A turkey or duck egg flat has 25 individual cups arranged in 5 rows of 5 cups each, to accommodate 25 turkey or duck eggs. Ten such flats are used with 8 turkey or duck fillers in egg cases to hold 200 eggs.

B. Specifications for flats

Style of flat: Flats shall be one of the following styles:

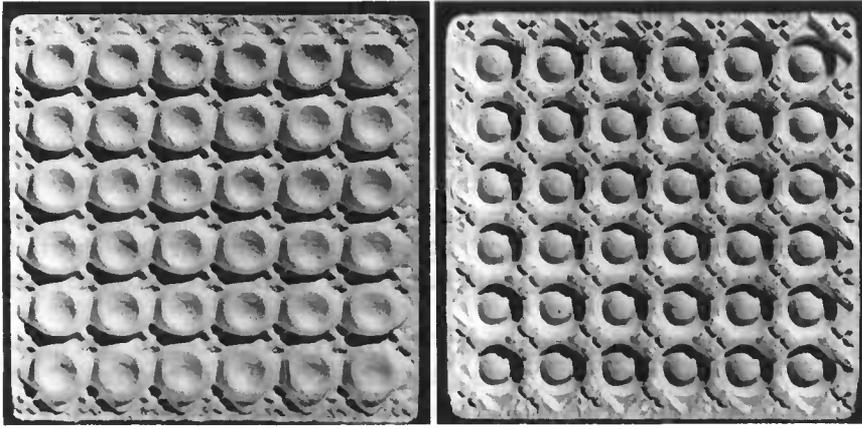
- (a) Round cups and square posts, or
- (b) Octagonal cups and square posts.

Material: Each flat shall be made of molded news pulp and meet the requirements shown in table 4.

Table 4.--The ^{1/}size, ^{2/}weight, number, and dimensions of cups and posts of egg flats

Flat designations	Outside dimensions		Minimum weight of 12 flats	Cups on flats			Diameter at top of cup	Length of posts
	Minimum	Maximum		Total No. of flats	No. in row	No. of rows		
(1) A standard egg flat---	11-7/16 square	11-11/16 square	15	36	6	6	1	3/16
(2) A turkey or duck egg flat---	11-7/16 square	11-11/16 square	15	25	5	5	1-3/16	1/4

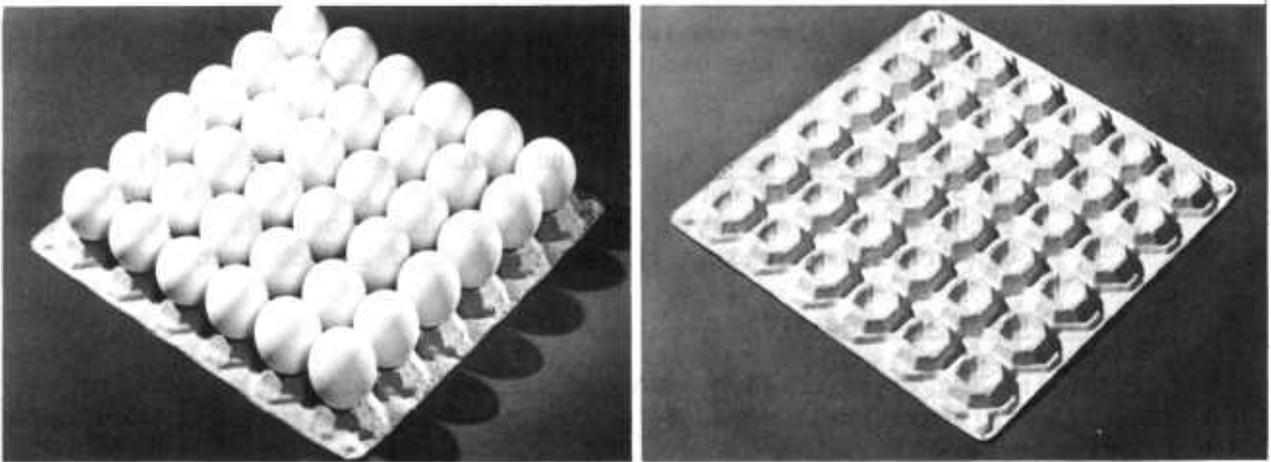
^{1/} Dimensions given in inches.
^{2/} Weight given in ounces.



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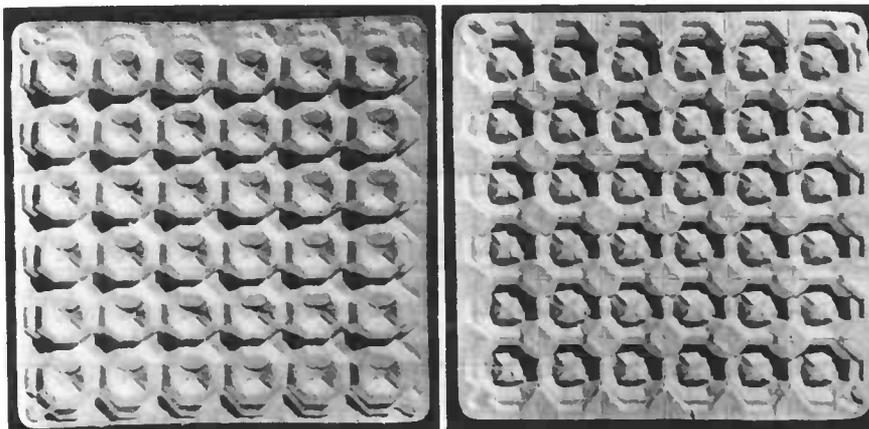
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Figure 9.--One style of egg case flat. At left, the round cups on top of flat; at right, the posts on the bottom of the flat.



BN6217

Figure 10.--At left, eggs upright in flat cups, filler removed; at right, the top of a molded pulp flat.



BN6215

BN6216

Figure 11.--A style of egg case flat. At left, octagonal cups on top of flat; at right, the posts on the bottom of the flat.

A. Egg Trays

Standard egg trays are square and have posts or prongs on the tops and bottoms. The prongs on the top of the egg tray form the lower half of a cell by which the eggs are held. The prongs on the bottom complete the cells by providing room for the large ends of eggs as the egg trays rest in an egg case. These egg trays shall meet the specifications under section B, below.

- (1) A standard egg tray has 30 individual cells arranged in 6 rows of 5 cells each, formed by the posts or prongs. The bottom of such an egg tray consists of the same number of cells. Fourteen such egg trays are used in egg cases to hold 360 chicken eggs.
- (2) A turkey or duck egg tray has 20 individual cells arranged in 5 rows of 4 cells each, formed by the posts or prongs. The bottom of each egg tray consists of the same number of cells. Twelve such egg trays are used in egg cases to hold 200 turkey or duck eggs.
- (3) A hatchery egg tray has 48 individual cells arranged in 8 rows of 6 cells each, formed by the posts or prongs. The bottom of each egg tray consists of the same number of cells. Seven such egg trays are used in egg cases to hold 288 chicken eggs.

B. Specifications for egg trays

Material: Egg trays shall be made of spruce ground wood or news pulp.

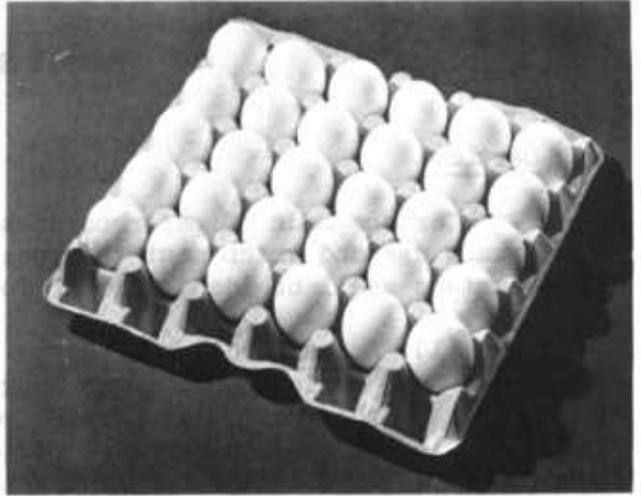
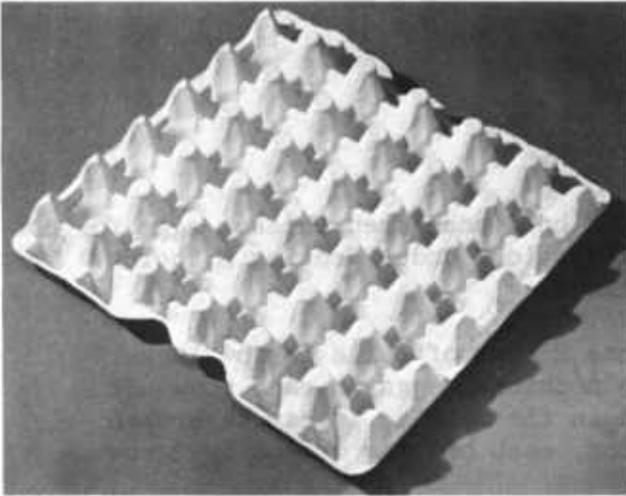
All egg trays shall meet, according to their designation, the requirements shown in table 5.

Table 5.--The size^{1/} and weight^{2/} of egg trays and number and dimensions of cells

Egg tray designations	Maximum outside dimensions	Minimum weight of			Cells			Average center distance between posts
		Egg trays	Egg trays	Egg trays	Total No.	No. of cells in a row	No. of rows	
(1) A standard egg tray-----	11-3/4 square by 1-7/8	24	12	7	30	5	6	1-13/16
(2) A turkey or duck egg tray--	11-3/4 square by 2	20			20	4	5	2-1/16
(3) A hatchery egg tray-----	17 by 13-1/4 by 1-7/8			20	48	6	8	1-7/8

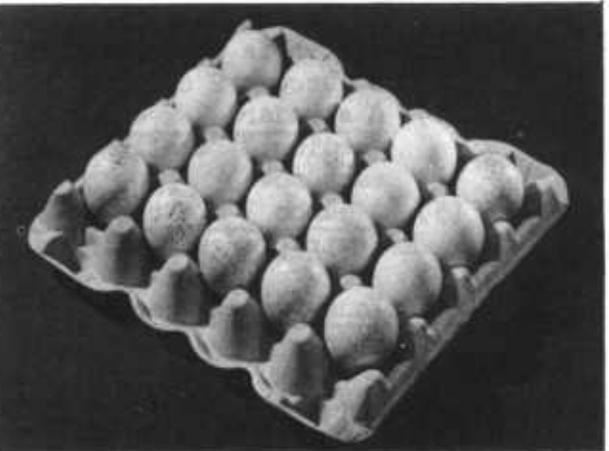
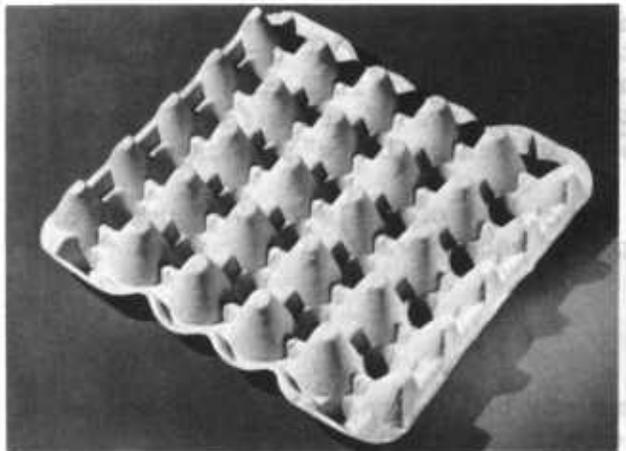
^{1/} Dimensions given in inches

^{2/} Weight given in ounces



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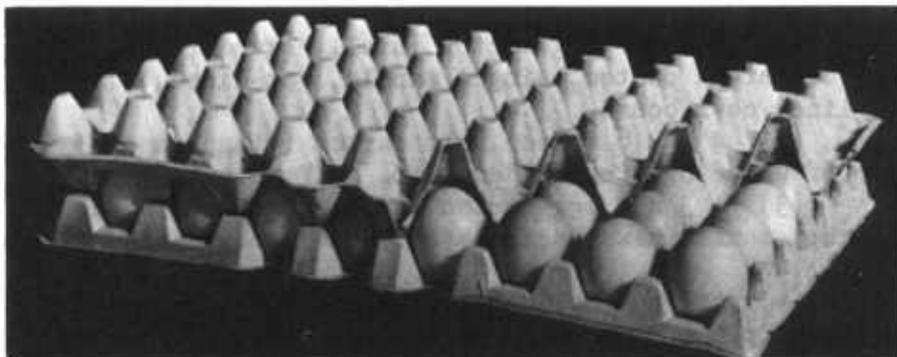
Figure 12.--Egg tray. At left, the top of egg tray; at right, egg tray with eggs.



BN6240x

BN-6241x

Figure 13.--Turkey or duck egg tray. At left, the top of egg tray; at right, egg tray with turkey eggs.



BN6242x

Figure 14.--Hatchery egg tray holding 48 eggs.

PART III - CARTONS FOR SHELL EGGS

Retail Egg Cartons

A. Cartons

Cartons made of paperboard which hold one dozen chicken eggs for consumer use and which meet the specifications under Section B, below. These cartons shall be identified as follows:

- (1) A standard 2 x 6 carton has 2 rows of cells for 6 "large," "medium," or "extra large"^{1/} chicken eggs in each row. If this carton is perforated in the middle, it can be broken in half to become 2 cartons, each holding 6 eggs in 2 rows of 3 each.
- (2) A small 2 x 6 egg carton has 2 rows of cells for 6 "small," or "peewee"^{1/} chicken eggs in each row.
- (3) A jumbo 2 x 6 egg carton has 2 rows of cells for 6 "jumbo" or "extra large"^{1/} chicken eggs in each row. If such a carton is perforated in the middle, it can be broken in half to become 2 cartons, each holding 6 eggs in 2 rows of 3 each.
- (4) A standard 3 x 4 egg carton has 3 rows of cells for 4 "large," "medium," "small," "peewee," or "extra large"^{1/} chicken eggs in each row.
- (5) A jumbo 3 x 4 egg carton has 3 rows of cells for 4 "jumbo" or "extra large"^{1/} chicken eggs in each row.

B. Specifications for egg cartons

Style of

carton: The 2 x 6 and 3 x 4 cartons may be of any style. The top cover may have windows covered with or without cellophane.

Size and con-

struction: Each carton, according to its designation (under Section A, above), shall be of such size as indicated in table 6 or 7.

Material: (1) A 2 x 6 egg carton (small, standard, and jumbo) shall be made of patent coated, single manila, vat-lined, bleached board or vat-lined news board.

(2) A 2 x 6 molded pulp carton (standard and jumbo) shall be made of white or grey molded pulp.

(3) A 3 x 4 egg carton shall be made of bending chipboard, bleached manila news back, patent coated news back, or egg carton stock.

(4) A 3 x 4 molded pulp carton shall be made of white or grey molded pulp.

^{1/} U. S. Weight Classes for Consumer Grades of Eggs (see Appendix, page 29)

Table 6.--Chipboard egg cartons with respect to size

Carton designations	Size of carton <u>1/</u>					
	Minimum			Maximum		
	outside dimensions			outside dimensions		
	Length	Width	Height	Length	Width	Height
Standard 2 x 6-----	11-1/2	3-13/16	2-7/16	11-5/8	3-7/8	2-1/2
Small 2 x 6-----	10-7/16	3-7/16	2-3/16	11-5/8	3-7/8	2-5/16
Jumbo 2 x 6-----	11-1/2	3-7/8	2-11/16	11-5/8	3-15/16	3-1/4
Standard 3 x 4-----	7	5-1/4	2-1/4			

1/ Dimensions given in inches.

Table 7.--Molded pulp cartons with respect to size

Carton designations	Size of cartons <u>1/</u> (outside dimensions)		
	Length	Width	Height
Standard 2 x 6 Regular-----	11-11/16	4	2-11/16
Standard 2 x 6 "Tri-fold"-----	11-11/16	4-1/2	2-3/4
Standard 3 x 4-----	8	6	2-5/8
Jumbo 3 x 4-----	8-3/16	6-1/4	2-11/16

1/ Dimensions given in inches.

Egg cartons as inner packing material

Egg cartons holding one dozen chicken eggs in 2 rows with 6 eggs in each row identified on page 16 as small and standard cartons meeting the specifications as given on this page are inner packing material when used to pack 15 cartons (180 chicken eggs) in a 15-dozen fiber egg case or 30 cartons (360 chicken eggs) in a 30-dozen fiber, or wooden egg case.

Carton Flat

The carton flat is a molded pulp flat with parallel V-shaped knotted ridges arranged to hold one of the styles of chipboard cartons (Fig. 15, left illustration).

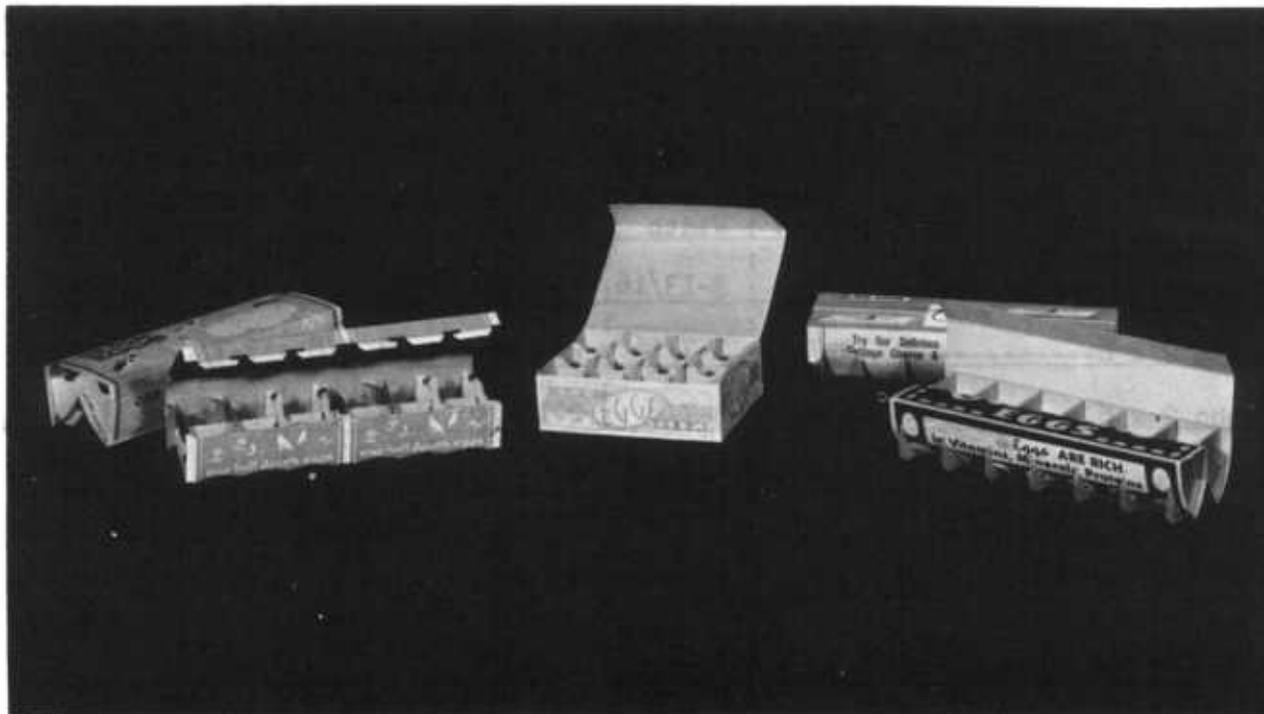


Figure 15.--Several examples of chipboard cartons.

BN1592



Figure 16.--Examples of molded pulp Cartons.

BN1593



Figure 17.--Example of 3-dozen chipboard carton.

BN-6243x

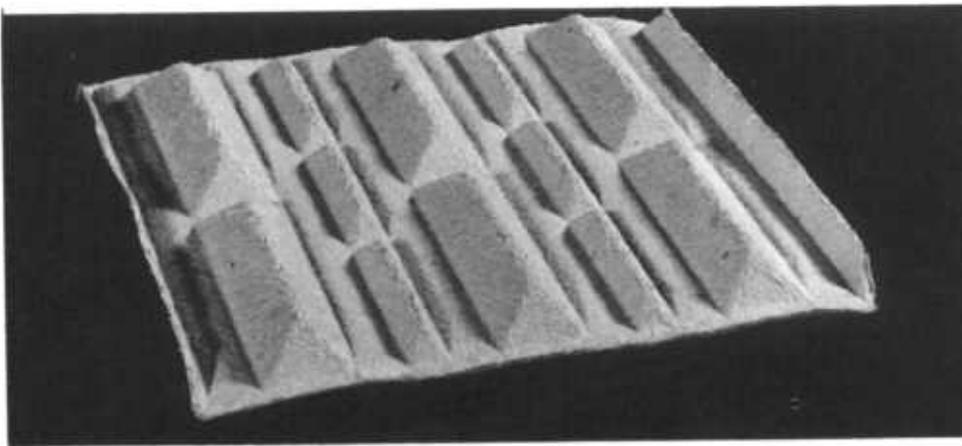
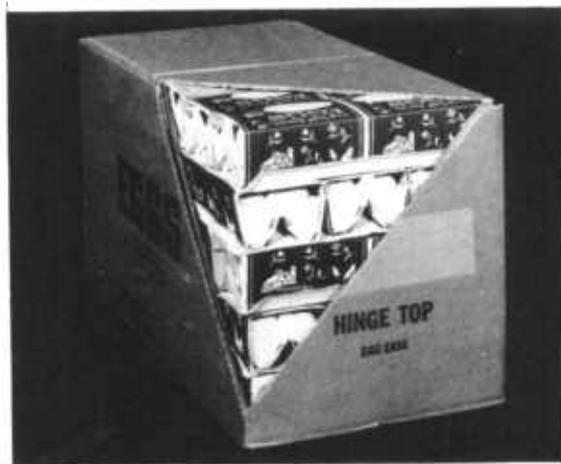


Figure 18.--Molded pulp carton flat.

BN-1591



BN-1594

Figure 19.--A carton pack, each layer reversed with carton flat in place.



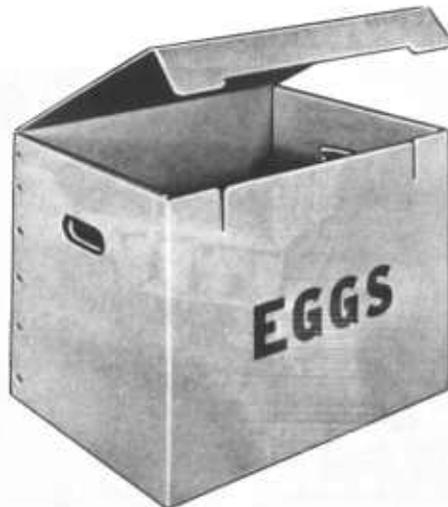
BN-6244x

Figure 20.--A fiber case for 15-dozen cartoned eggs.



BN-6249x

Figure 21.--A fiber case for 15-dozen hatching eggs.



BN-6245x

Figure 22.--A fiber case for 24-dozen hatching eggs.



Figure 23.--A fiber case for 24-dozen hatching eggs. BN-6250

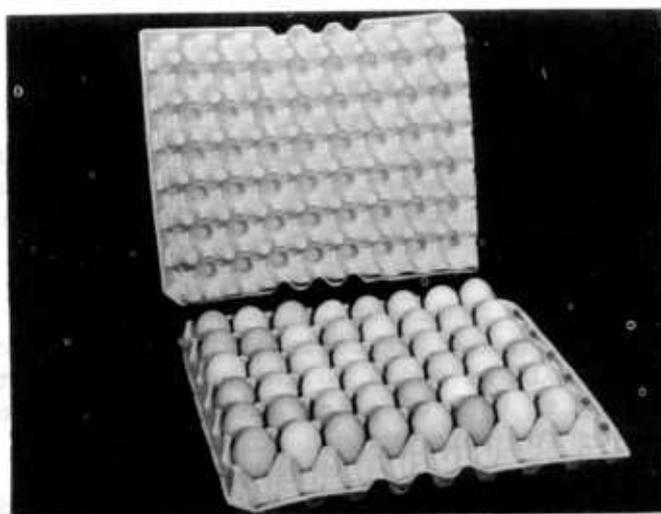


Figure 24.--A 6 x 8 hatchery egg tray with eggs. BN-6246



Figure 25.-- A 6 x 8 vacuum-tray lifter designed for a hatchery egg tray. BN-6247x

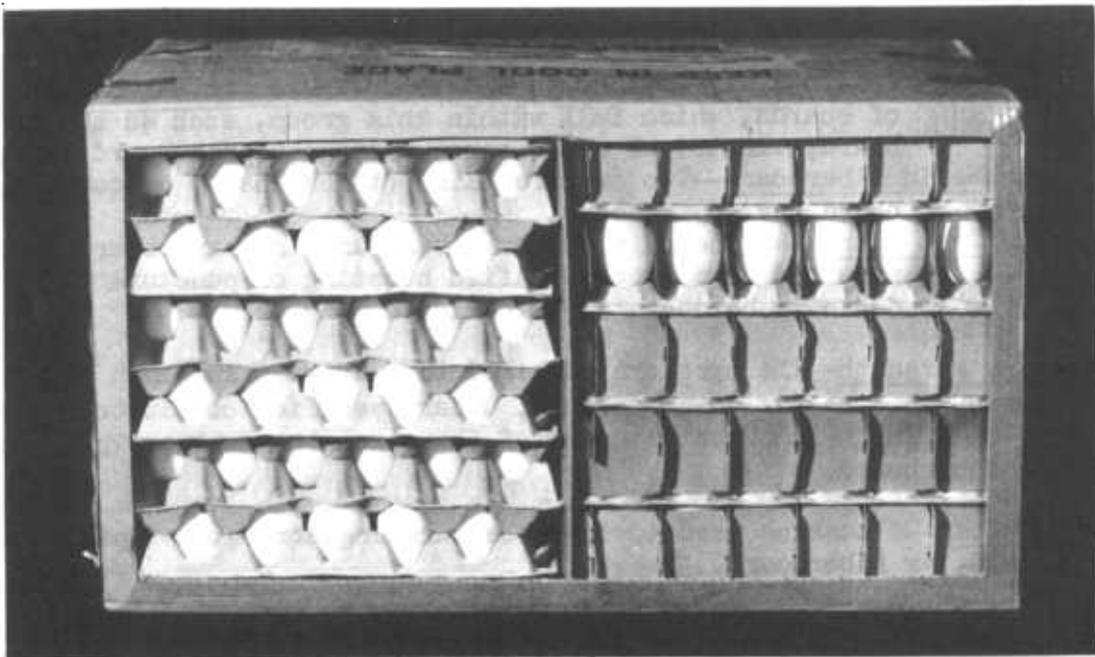
PART IV - PACKS FOR SHELL EGGS

Only new cases and packing materials will be considered in the packs specified in this part. Standard fiber, standard, and export wood cases shall be used for domestic or North American rail shipments. For domestic truck shipments, the aforementioned cases or truck fiber cases may be used.

Pack Identification

- A. A 15-dozen egg pack shall consist of a standard or truck 15-dozen fiber egg case in which 5 standard egg fillers and 6 standard egg flats are used to accommodate 180 chicken eggs.
- B. A 15-dozen egg tray pack shall consist of a standard or truck 15-dozen fiber egg case in which 7 standard egg trays are used to pack 180 chicken eggs.
- C. A 15-dozen carton pack shall consist of a standard or truck 15-dozen fiber egg case in which 15 small or standard 2 x 6 egg cartons are used to accommodate 180 chicken eggs. An egg flat shall be used on the bottom and/or top of the case whenever necessary to take up slack space, or a carton flat may be used between each layer for this purpose for certain style chipboard cartons.
- D. A 12-dozen carton pack shall consist of a standard or truck 15-dozen fiber egg case in which 12 jumbo egg cartons are used to accommodate 144 chicken eggs. Egg flats shall be added to the bottom and/or the top of the case whenever necessary to take up slack space, or a carton flat may be used between each layer for this purpose for certain style chipboard cartons.
- E. A 100 turkey or duck egg pack shall consist of a standard or truck 15-dozen fiber egg case in which 4 turkey or duck egg fillers and 5 turkey or duck egg flats are used to accommodate 100 turkey or duck eggs. Extra flats shall be added to the bottom and/or top of each case, when necessary to take up slack space.
- F. A 100 turkey or duck egg tray pack shall consist of a standard or truck 15-dozen fiber egg case in which 6 turkey or duck egg trays are used to pack 100 turkey or duck eggs. Extra flats shall be added to the bottom and/or top of each case, when necessary to take up slack space.
- G. A 30-dozen egg pack shall consist of a standard 30-dozen wooden, fiber, or a truck 30-dozen corrugated fiber egg case in which 10 standard egg fillers and 12 standard egg flats are used to pack 360 chicken eggs.
- H. A 30-dozen egg tray pack shall consist of a standard 30-dozen wooden, fiber, or a truck 30-dozen corrugated fiber egg case in which 14 standard egg trays are used to pack 360 chicken eggs.

- I. A 30-dozen carton pack shall consist of a standard 30-dozen wooden, fiber, or a truck 30-dozen corrugated fiber egg case in which 30 small or standard 2 x 6 egg cartons are used to accommodate 360 chicken eggs. An egg flat shall be used on the bottom and/or top of each compartment of the case when necessary to take up slack space, or a carton flat may be used between each layer for this purpose for certain style chipboard cartons.
- J. A 24-dozen carton pack shall consist of a standard 30-dozen wooden, fiber, or a truck 30-dozen corrugated fiber egg case in which 24 jumbo egg cartons are used to accommodate 288 chicken eggs. Egg flats shall be added to the bottom and/or top of each case when necessary to take up slack space, or a carton flat may be used between each layer for this purpose for certain style chipboard cartons.
- K. A 200 turkey or duck egg pack shall consist of a standard 30-dozen wooden, fiber, or a truck 30-dozen corrugated fiber egg case in which 8 turkey or duck egg fillers and 10 turkey or duck egg flats are used to accommodate 200 turkey or duck eggs. Extra flats shall be used on the bottom and/or top of each compartment when necessary to take up any slack space.
- L. A 200 turkey or duck egg tray pack shall consist of a standard 30-dozen wooden, fiber, or a truck 30-dozen corrugated fiber egg case, in which 12 turkey or duck egg trays are used to pack 200 turkey or duck eggs. Egg flats shall be used on the bottom and/or top of each compartment in the case when necessary to take up any slack space.



DN-1359

Figure 26.--A standard 30-dozen fiber case, side removed. Left side, an example of eggs packed in egg trays; right side, an example of eggs packed in flats and fillers.

STANDARD TERMINOLOGY

1. Board--An abbreviated term for fiberboard, paperboard, container board, etc., which are used in making shipping containers, folding boxes, and cartons.
 - a. Container board--Sheets of fibrous materials, usually in rolls, for use of manufacturers in making solid or corrugated fiber shipping containers.
 - b. Corrugated board--A sheet of container board that has passed through a corrugating machine, receiving a number of corrugations (flutes).
 - c. Fiberboard--Two or more plies (thicknesses) of container board, pasted together, or one or more sheets of container board pasted to a corrugated sheet to make solid or corrugated fiberboard.
 - d. Liner board--A term used to designate container board that is used as an inner or outer facing in the manufacture of corrugated or solid fiberboard.
 - e. Paperboard--A general term descriptive of a sheet made of fibrous material on a paper machine or a wet machine, 0.012 of an inch or more in thickness. Also included under this term are certain grades 0.009 of an inch or over in thickness, such as corrugating material, light weight chip, etc. It is commonly made from wood pulp, straw, waste papers, or any combination of these. The general classifications are container boards (usually shipped in rolls) and box boards (customarily shipped in sheets). There are also other types of boards, which fall within this group, such as binder board, electrical pressboard, imitation pressboard, etc.
 - f. Solid fiberboard--Two or more plies (thicknesses) of container board pasted together.
 - g. Test board--A general term for fiberboard, or paperboard that is required to meet a specified bursting or puncture test, a definite caliper, and a definite weight.
2. Bursting strength--The pressure required to rupture a specimen when it is tested in a specified instrument, under specified conditions; commonly used as an important measure of the strength of paper, paperboard, or fiberboard.
3. Gady-Tester--A machine used to test the bursting strength of paper, paperboard, or fiberboard.
4. Cleat--A wooden, metal, or fiberboard strip attached along the edge of a wooden, wirebound, or fiberboard container, used to connect an adjacent panel, or to fasten to the panel between the edges for reinforcement and stiffening.

5. Corrugated fiberboard--A sheet of corrugated board on one or both sides of which a sheet of container board has been pasted.
- a. Single-faced corrugated fiberboard--A sheet of corrugated board, on one side of which is pasted a sheet of container board.
 - b. Double-faced corrugated fiberboard--A sheet of corrugated board, on both sides of which a sheet of container board has been pasted.
 - c. Double-walled corrugated fiberboard--A combination of single- and double-faced corrugated fiberboard pasted together to form a combination of three sheets of container board with two sheets of corrugated board between.
6. Flute (or corrugation)--Refers to one of the undulations (corrugations) on a corrugated board.
- a. A-Flute--Approximately 36 flutes or corrugations per foot, approximately 0.180 of an inch high.
 - b. B-Flute--Approximately 51 flutes or corrugations per foot, approximately 0.097 of an inch high.
 - c. C-Flute--Approximately 42 flutes or corrugations per foot, approximately 0.140 of an inch high.
7. Joint--The point where two parts of a container are joined or put together.
- a. Butt-joint--A type of lumber joint in which two squared surfaces are brought together and fastened with two or more corrugated fasteners.



- b. Lindermann joint--Consists of a projection along the edge of one piece of board extending into a corresponding recess in the edge of the adjoining part, the projection and the recess extending the length of the pieces.



- c. Manufacturers' joint--Usually refers to the point where the two parts of a box are joined by the manufacturer. This term is usually used in connection with the manufacture of fiber-board boxes.
- d. Ship-lap joint--Consists of a groove or slot made in the edge of one piece of board to receive another piece of board having an identical groove or slot which when inverted and placed together forms a smooth surface.



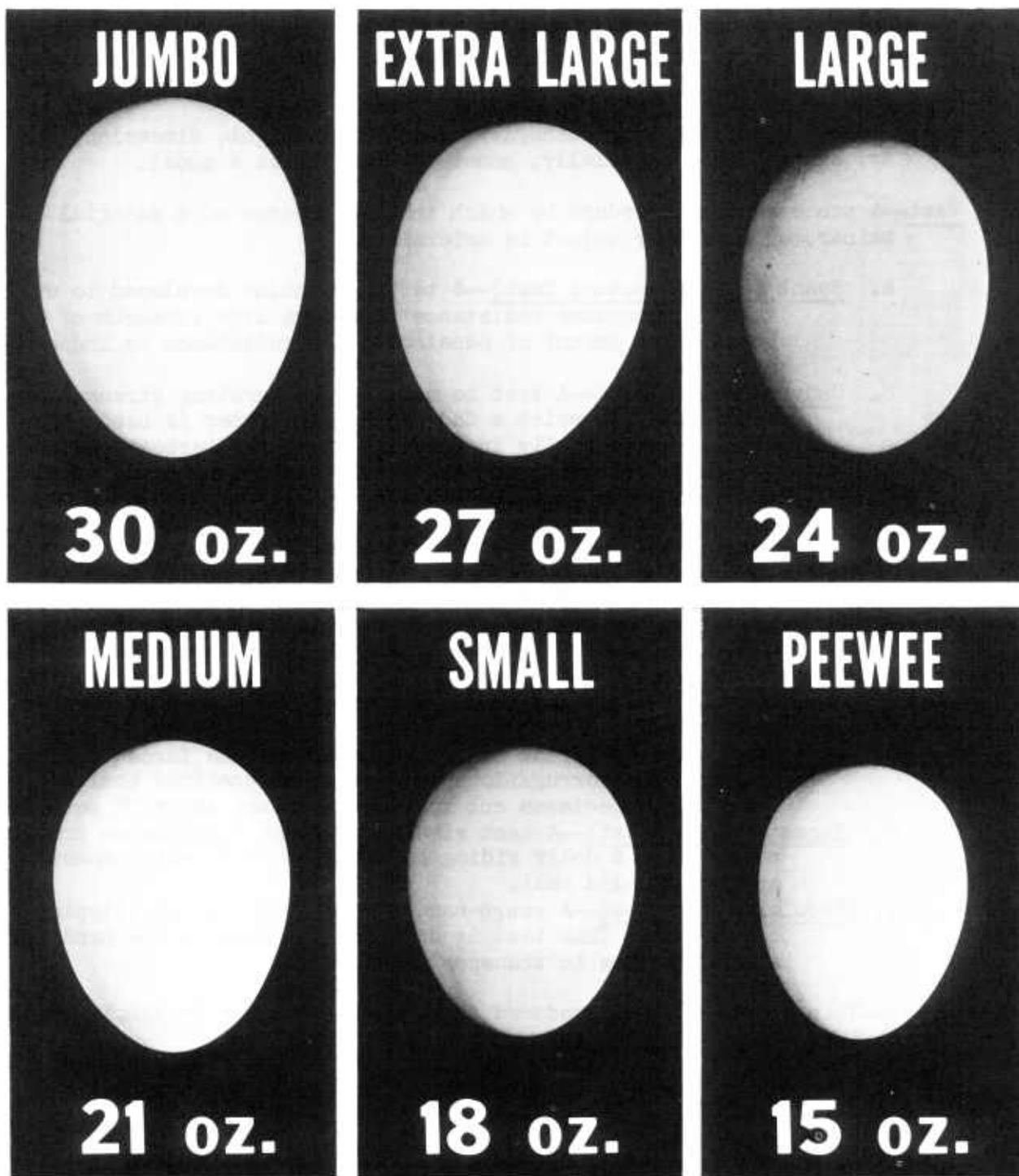
- e. Tongue and grooved--A type of lumber joint consisting of a tongue and groove on opposite edges to provide close fitting into an adjacent grooved or tongued piece.



- 8. Lamination--To overlay or build up in thin sheets or layers.
 - a. Laminated wood--A piece of wood made up of plies that have been joined together with glue or mechanical fastenings. The grain of all plies is parallel.
 - b. Laminated fiberboard--Two or more pieces of container board pasted together.
- 9. Liner--A fiber sheet corrugated or solid inserted in the container next to the sides, ends, top, bottom, or in the center of a box to provide additional protection and rigidity to fiber boxes.
- 10. Moisture content of wood--Weight of the water contained in the wood usually expressed in percentage of the weight of the oven dried woods.
- 11. Mullen Tester--A machine to test the bursting strength of paper or fiberboard. See also Cady Tester - definition 3.
- 12. Pack--A completely packaged product, ready for shipment.
- 13. Point--A term used to describe one unit of thickness of paper, paperboard, or container board, the actual unit being one thousandth of an inch (a point is 0.001). (The term is sometimes used to designate Mullen or Cady test units.)

14. Sawn wood--Rough or surfaced lumber that has been divided into two or more thicknesses by sawing.
15. Shook--The unassembled but completely fabricated parts of a box, crate, or barrel.
16. Standard--An established or authorized measure of weight, dimension, quality, or the like; especially, something serving as a model.
17. Test--A process or a procedure by which the performance of a material container, or any other object is determined.
 - a. Beach (G. E. Puncture Test)--A testing machine developed to evaluate the puncture resistance and score line strength of boxes. The amount of penetration or resistance is indicated on a scale.
 - b. Cady or Mullen test--A test to measure the bursting strength of fiberboard, in which a Cady or Mullen Tester is used. It consists essentially in clamping the dry fiberboard between two surfaces having concentric circular openings of about 1.25 inches in diameter and then applying hydraulic pressure through a rubber diaphragm secured to one of the circular openings so as to burst a hole through the board exposed to the opening. The pressure required to burst the board is recorded by means of a pressure gage calibrated to read in pounds per square inch. This test is fully described in Rule 41 of the Uniform Railroads Freight Classification.
 - c. Compression Test--Test simulating heavy stacking of packaged materials. Registers poundage exerted and amount of compression or yield.
 - d. Flat crush test--The flat crush test measures the force required to crush the corrugations in a sheet of combined board. Generally, specimens cut for this test are about 3" square.
 - e. Impact (Conbur Test)--A test simulating rough handling on freight cars. Uses a dolly riding on inclined rails with impact against a solid wall.
 - f. Revolving drum test--A rough-handling test for packed shipping containers. This test is designed to simulate the handling a box receives in transportation.
18. Veneer--Thin sheets of wood produced on a rotary lathe or by slicing or sawing.
 - a. Rotary-Cut Veneer--Veneer cut in a continuous strip by rotating a log against the edge of a knife in a lathe.
 - b. Sawn Veneer--Veneer produced by sawing.
 - c. Sliced Veneer--Veneer that is sliced off by moving a log bolt or filch against a large knife.

U. S. WEIGHT CLASSES
(Illustrations - Actual Size)



DN-893

Figure 27.--The six U. S. Weight Classes, and the minimum weight for each in ounces per dozen.

APPENDIX

Table 8.--Minimum weights of consumer and wholesale grades of eggs in the U. S. Weight Classes for Shell Eggs, by size or weight class.

CONSUMER GRADES				
Size or Weight class	Minimum net weight per dozen	Minimum net weight per 30-dozen	Minimum weight for individual eggs at rate per dozen ^{1/}	
	Ounces	Pounds	Ounces	
Jumbo-----	30	56	29	
Extra large-----	27	50-1/2	26	
Large-----	24	45	23	
Medium-----	21	39-1/2	20	
Small-----	18	34	17	
Peewee-----	15	28	--	

^{1/} Minimum weights listed for individual eggs at the rate per dozen are permitted in various size classes only to the extent that they will not reduce the net weight per dozen below the required minimum, consideration being given to variable weight of individual eggs and variable efficiency of graders and scales which should be maintained on a uniform and accurate basis.

WHOLESALE GRADES				
Weight classes	Per 30 dozen eggs	Weights for individual eggs at rate per dozen		
	Average net weight on a lot ^{1/} basis	Minimum net weight individual case ^{2/} basis	Minimum weight	Weight variation tolerance for not more than 10 percent, by count, of individual eggs.
	Pounds	Pounds	Ounces	
Extra large--	50-1/2	50	26	Under 26 but not under 24 ounces
Large-----	45	44	23	Under 23 but not under 21 ounces
Medium-----	39-1/2	39	20	Under 20 but not under 18 ounces
Small-----	34	none	none	none

^{1/} Lot means any quantity of 30 dozen or more eggs.

^{2/} Case means standard 30 dozen egg case as used in commercial practice in the United States.