

SECTION 6: BASICS OF GRADING

I. Placement of Container

When possible place the case, filler flat, or carton to be graded directly under the candling light so that sufficient light will shine on the eggs being examined. This permits proper observation of shell condition and packaging material.

II. Eggs to Grade

An official sample consists of candling 100-eggs from each sample case in the lot.

A. For 30-dozen cases:

Odd Numbered Sample: Examine odd numbered samples (1, 3, 5, 7, etc.) from the top 100 eggs. The odd numbered samples are to be checked on the USDA Sample Sticker (PY-12) side and initialed end of the case.

Even Numbered Sampled: Examine even numbered samples (2, 4, 6, 8, etc.) from the bottom 100 eggs. The even numbered samples are to be checked on the opposite end of the case that the USDA Sample Sticker and initials are placed.

B. For 15-dozen cases or baskets:

Odd Number Sample: Examine odd numbered samples (1, 3, 5, 7, etc.) from the top 100 eggs.

Even Number Sample: Examine even numbered samples (2, 4, 6, 8, etc.) from the bottom 100 eggs. For racks or bossies, examine the 100-eggs from the designated imaginary half-case position will be examined in the following rotation:

<u>7 High (Shelves 1 & 2)</u>		<u>6 High (Top Shelf)</u>	
Sample #	1 - Layer 1-2-3	Sample #	1 - Layer 1-2-3
	2 - Layer 4-5-6		2 - Layer 4-5-6
	3 - Layer 1-2-7		3 - Layer 1-2-6
	4 - Layer 3-4-5		4 - Layer 3-4-5
	5 - Layer 1-6-7		5 - Layer 1-3-5
	6 - Layer 2-3-4		6 - Layer 2-4-6
	7 - Layer 5-6-7		
	Repeat in same sequence for samples in excess of 7		Repeat in same sequence for samples in excess of 6

When less than a complete flat or carton is graded to complete the 100 egg sample, the grader is to initial the applicable flat or carton and grade the following eggs:

30-Egg Flat

X	X	X	X	X
X	X	X	X	X

18-Egg Carton

LID					
		X	X		
X	X	X	X	X	X
		X	X		

12-Egg Carton

LID					
		X	X		
		X	X		

8-Egg Carton

LID			
	X	X	
	X	X	

36-Egg Carton

LID					
X	X	X	X	X	X
	X	X	X	X	
	X	X	X	X	
	X	X	X	X	
	X	X	X	X	
X	X	X	X	X	X

24-Egg Carton

LID					
		X	X		
		X	X		

6-Egg Carton

LID		
X		X
X		X

III. Items to Observe Continuously

- A. The newness, soundness, and cleanliness of each egg flat tray or carton as they are removed from the case at time of grading and weighing.
- B. The presence and degree of abnormalities, stains, and dirties by examining individual eggs in direct light.
- C. Color of the eggs; i.e., white, cream, brown, or shades thereof.
- D. The number of eggs that are packed small end up (if it is a specification requirement).
- E. Undesirable odors. If a definitive, undesirable odor is detected, retain the lot as "No Grade" and describe the odor on the worksheet, in the comment log.

Interior quality is determined by the firmness of the white as measured by the yolk movement. To maintain grade interpretation, some eggs are to be broken out occasionally to correlate the broken out appearance with the candled appearance. The grader can make any necessary adjustment to the candled grade interpretation. This method can also be used to correlate candled appearance of yolk defects with their broken out appearance.

When describing quality factors, use only the terminology shown in the regulations.

IV. Segregation of Eggs While Grading

As each individual egg is graded, place the eggs of each quality in separate egg flats, or if the lot of eggs is uniform, segregate the undergrades and place them in separate areas of one flat. In addition to segregating the eggs for quality, segregate the underweight eggs. After recording the number of underweight eggs, regrade them for quality and record the results.

V. How to Replace Graded Eggs in the Sample Case

Return the 100 eggs which were graded to the top layers in the end of the case which was graded. When grading loose packed eggs, the undergrades are to be returned to the sample, beginning with the third layer, second layer, etc. When grading eggs packed in consumer packages, return the undergrades to the individual containers in which they were packed. If requested by plant management, all, or certain undergrade eggs; i.e., checks, dirties, leakers, loss, may be removed from the samples and replaced with higher quality eggs after being tabulated on the worksheet. When plant management elects to replace undergrade eggs with higher quality eggs, the product is not eligible for an appeal grading.

When a completed sample is returned to a movable rack or "bossie", rather than to a case or basket, each primary unit in the sample (flat, carton, etc.) is to be identified; i.e., small letter "s", grader's initials, etc.

VI. Weighing

The assignment of a weight class to a lot of eggs is part of the service normally requested by the applicant. Either weighing or grading may be omitted at the request of the applicant. If so requested, make appropriate statement in the "Remarks" section of the certificate (refer to Section 10).

Determine the average net weight on all lots of eggs graded, based on 30-dozen eggs. Record the number of individual eggs which are below the minimum weight required for the weight class.

When weighing shipping containers of eggs and the scale reads between two graduation marks, the correct net weight is read to the lower graduation mark. When establishing tare weights for empty consumer containers, shipping containers, and other packing material, the correct tare weight is read to the higher graduation mark.

Prior to each grading, graders are to level, balance, and check the scales for accuracy with test weights sufficient in number and size to check the weight of product being weighed. The accuracy of test weights or scales must be periodically verified (at least yearly) by certified State or County weights and measures personnel or other qualified individuals licensed by the State or County to perform test certifications. All scales must zero at no load before testing with a test weight.

The following acceptance tolerance values apply only to digital type scales regardless of the increment of calibration. These tolerance values do not apply to dial-type scales which must be adjusted to reflect the actual weight of the test weight. Digital scales registering beyond the allotted tolerance value must be adjusted accordingly. Additionally, the tolerance value is to be determined

once for each scale and does not have to be recalculated unless the scale or test weights are replaced. When verifying scales for accuracy, graders are to use established tolerance values based on the formula listed below:

$$\frac{\text{TEST WEIGHT}}{\text{SCALE DIVISION}} = \text{TEST LOAD}$$

Once the test load is determined, the grader is to use the following chart to determine whether the scale meets maintenance tolerance values.

The scale must meet the below listed tolerances in order to be utilized for weighing procedures.

The tolerance is the maximum number of scale divisions allowed for a scale to be acceptable for official weighing without further adjustment.

TEST LOAD (Scale Divisions)	TOLERANCE (Scale Divisions)
0 – 500	1
501 – 2000	2
2001 – 4000	3
4001 - +	5

Once the tolerance (scale division) is determined; the information is to be stored in file folder 2 in the grader’s official files of each resident and temporary plant as applicable; and posted near the scales or in the candling booth.

Example: A 2-ounce test weight used on a scale graduated in tenths of an ounce. Two ounces divided by .1 ounces = a test load of 20 scale divisions. A tolerance of ± 1 scale division or .10 ounce is allowed.

Example: A 50-pound test weight used on a scale graduated in .05 pound increments. Fifty pounds divided by .05 lbs = a test load of 1,000 scale divisions. A tolerance of ± 2 scale divisions or .10 pound is allowed.

- A. The following procedures are to be used to determine the net weight of packed and packaged eggs:

1. The net weight of eggs packed in uniform (one-type construction) fiber cases may be determined by weighing at least two empty cases and the flats to obtain the average tare weight (case and packing material) per case. Gross weigh each sample case and obtain the net weight by subtracting the average case tare from the gross weight. Net weights are to be reported on worksheets to the lowest $\frac{1}{4}$ -pound graduations, except when using the weight conversion chart for eggs packed in other than 30-dozen cases.
2. Cartons often vary in weight; therefore, prior to weighing product, graders are to establish a tare weight for each size container. The tare weight is determined by weighing 5 empty individual containers of each size. Using these weights, find the average packaging tare by adding the individual weights and dividing by the number of packages weighed. The package that is nearest without being lower than the average weight will represent the tare. Zero the scale with the representative container prior to weighing product.

NOTE: These tare weights shall be re-established quarterly, at a minimum; or, when the manufacturer or the materials change.

Report all weights on the basis of 30-dozen units. When eggs are packed less than 30-dozen to a case, convert the net weight of the eggs to a 30-dozen case equivalent on the Form PY-210S. See Exhibit I for information on individual egg weights and Exhibit II for the minimum net weights for various egg containers.

VII. Assignment of Grades

Each lot of eggs is to be assigned a specific grade. If the lot shows extreme variations, no grade is to be assigned and the statement "No U.S. Grade Assigned" is used in place of the official grade.

When a lot of eggs have absorbed smoke, chemical, or other foreign odors which affect the appearance or flavor, the lot is to be classed as "No Grade." Retain the lot immediately and notify your supervisor in order to contact the applicable FDA official.

A. Examples of Correct Grade Terminology:

- | | |
|-------------|--|
| 1. Consumer | U.S. Grade AA Large
U.S. Grade A Medium
U.S. Grade B Extra Large |
| 2. Nest-Run | U.S. Nest-Run 85% AA Quality Class I |

B. Assigning a Consumer Grade

A lot may be considered for a U.S. Consumer Grade:

1. When the lot does not exceed 0.50 percent leakers, dirties, or loss at origin. The loss is limited to meat or blood spots and may not exceed 0.30 percent.
2. When the lot does not exceed 1.00 percent leakers, dirties, or loss at destination. The loss is limited to meat or blood spots and may not exceed 0.30 percent.

For origin and destination gradings of Grades AA, A, and B, no lot shall be rejected or downgraded due to the quality of a single egg except for loss other than leakers, and blood or meat spots.

Note: A full-size sample is required for a lot to be eligible for a U.S. Consumer Grade designation.

Origin Gradings –

Grade AA: 87 % AA quality, no more than 5% checks (7% for Jumbos), no more than 1% B quality due to air cells, small blood spots or serious yolk defects.

Grade A: 87% A quality, no more than 5% checks (7% for Jumbos), no more than 1% B quality due to air cells, small blood spots or serious yolk defects.

Grade B: 90% B quality, no more than 10% checks

Destination Gradings –

Grade AA: 72% AA quality, 10% A quality, 7% checks (9% for Jumbo) no more than 1% B quality due to air cells, small blood spots or serious yolk defects.

Grade A: 82% A quality or better, 7% checks (9% for Jumbo) no more than 1% B quality due to air cells, small blood spots or serious yolk defects.

Grade B: 90% B quality or better, 10% checks.

C. Assigning a Nest-Run Class

Since loss is a factor which cannot be compensated for, the first step in assigning a nest-run grade is to compare the loss on the worksheet with the chart for nest-run grades.

Note: Unused tolerances of eggs with adhering dirt in excess of one-half inch may not be substituted for other tolerances.

When assigning a nest-run grade, it may be possible to substitute unused percentages of loss tolerance for the tolerance qualities of 6 percent checks, or 10 percent B quality as shown in Table 1

of AMS 56.231. If only 1 percent loss is found, the tolerances specified for either checks or B quality can be increased, if necessary, by 2 percent provided that a minimum of 85 percent A quality or better is maintained. Excess loss cannot be offset by unused percentages of other qualities. Next, compare the percentages of AA quality eggs with the required minimum of 20 percent. Additionally, no individual case may contain less than 10 percent AA quality eggs.

Once it has been determined that the lot meets the grade requirements, the appropriate weight class is to be assigned. Determine the lot average net weight and compare it to the weight classes shown in Table 1, AMS 56.232. For example: If the lot average net weight is 46.5 pounds, the correct weight class would be Class 2.

After the correct weight class has been determined, examine the net weight of each individual case in the sample to see that it does not vary more than 2 pounds (plus or minus) from the lot average. If the lot average net weight does not figure out to an even one-fourth pound, round off the lot average net weight to the nearest one-fourth pound for determining compliance with the 2 pounds (plus or minus) variation allowed. Do not round off the average net weight shown on the worksheet.

When eggs that were offered for nest-run grading fail to meet grade requirements, enter under "Official Grade and Size", the statement: "*No grade or size assigned.*" Under the "Remarks" section, enter the statement:

"Product offered for nest-run grading failed to meet grade requirements for (list reasons the product did not make grade requirements)."

When product that is offered for a nest-run grading fails to meet weight class requirements due to variation in weight, (exceeding plus or minus 2 pounds from the average net weight), enter under "Official Grade and Size" the words "*See Remarks.*" In the "Remarks" section, enter the statement:

"No weight class assigned due to individual case(s) exceeding maximum variation permitted in each weight class."

In Weight Class 4, because of the small size of the eggs, there can be a quality problem due to a large percentage of the eggs packed small end up; therefore, special attention needs to be given to grading for yolk defects.

Example: A 380-case lot of "U.S. Nest-Run 35.08 percent.

AA quality, Class 2" eggs:

	<u>1/</u>	<u>2/</u>	<u>3/</u>	<u>4/</u>	<u>5/</u>	<u>6/</u>	<u>7/</u>
	Net Weight	AA	A	B's*	Checks	Loss	Dirty**
	45.50	44	31	10	9	1-LS	5
	47.75	15	70	5	10	---	-
	47.00	18	74	2	2	1-BW	3
	45.25	64	12	2	22	---	-
	46.25	51	32	2	5	2-MR/1-LS	7
	46.00	15	77	4	2	2-LS	-
	47.25	17	67	0	16	---	-
	45.50	24	65	3	6	2-LS	-
	47.25	70	14	10	4	1-LK	-
	46.75	20	70	3	2	---	5
	46.50	15	74	4	4	1-LK	2
	48.00	68	25	4	1	---	2
	48.00	35	58	4	-	1-LK	2
Total	607.00	456	669	53	83	13	26
Average	46.69	35.08	51.46	4.08	6.38	1.0	2.0

*B Quality for shell shape, pronounced ridges or thin spots, interior quality (including small blood or meat spots), or cage marks and blood stains.

**Dirties - only adhering dirt or foreign material one-half inch or larger in diameter is to be counted.

- 1/ Lot averages 46.69 and would therefore meet Class 2 weight classification. Weight rounded to the nearest one-fourth pound would be 46.75. No case can be less than 44.75 or more than 48.75.
- 2/ Minimum lot average must be 20 percent with no case less than 10 percent.
- 3/ No individual case may contain less than 75 percent A and AA quality eggs in any combination. Lot average must be a minimum of 85 percent A quality or better.
- 4/ Maximum of 10 percent permitted. Unused loss or check tolerance may be used for B tolerance.
- 5/ Checks exceed the 6-percent permitted tolerance. The 2-percent unused loss tolerance may be used for tolerance on checks or B qualities.
- 6/ Maximum of 3 percent permitted.
- 7/ Maximum of 5 percent permitted (unused tolerance for dirties may not be substituted).

Exhibit I

INDIVIDUAL EGG WEIGHT TABLE										
SIZE	OUNCES PER DOZEN	OUNCES PER EGG				GRAMS PER EGG				
		Tenths	Hundreths	Thousandths	Ten Thousandths	Whole Number	Tenths	Hundreths	Thousandths	Ten Thousandths
PEE WEE										
SMALL	17	1.5	1.42	1.417	1.4167	41	40.2	40.17	40.162	40.1618
MEDIUM	20	1.7	1.67	1.667	1.6667	48	47.3	47.25	47.250	47.2492
LARGE	23	2.0	1.92	1.917	1.9167	55	54.4	54.34	54.337	54.3365
EXTRA LARGE	26	2.2	2.17	2.167	2.1667	62	61.5	61.43	61.424	61.4239
JUMBO	29	2.5	2.42	2.417	2.4167	69	68.6	68.52	68.512	68.5113

Minimum Net Weight for Various Egg Containers

Size	6 Egg Pack - Minimum Net. Weight					
	Ounces/Pack	Whole Grams	Tenths	Hundreths	Thousandths	Ten Thousandths
Pee Wee	7.5	213	212.7	212.63	212.622	212.6213
Small	9	256	255.2	255.15	255.146	255.1455
Medium	10.5	300	297.7	297.67	297.670	297.6698
Large	12	341	340.2	340.20	340.194	340.1940
Extra Large	13.5	383	382.8	382.72	382.719	382.7183
Jumbo	15	426	425.3	415.25	425.243	425.2425

Size	8 Egg Pack - Minimum Net. Weight					
	Ounces/Pack	Whole Grams	Tenths	Hundreths	Thousandths	Ten Thousandths
Pee Wee	10	284	283.5	283.50	283.495	283.4950
Small	12	341	340.2	340.20	340.194	340.1940
Medium	14	397	396.9	396.90	396.893	396.8930
Large	16	454	453.6	453.60	453.592	453.5920
Extra Large	18	511	510.3	510.30	510.291	510.2910
Jumbo	20	567	567.0	566.99	566.990	566.9900

Size	12 Egg Pack - Minimum Net. Weight					
	Ounces/Pack	Whole Grams	Tenths	Hundreths	Thousandths	Ten Thousandths
Pee Wee	15	426	425.3	425.25	425.243	425.2425
Small	18	511	510.3	510.30	510.291	510.2910
Medium	21	596	595.4	595.34	595.340	595.3395
Large	24	681	680.4	680.39	680.388	680.3880
Extra Large	27	766	765.5	765.44	765.437	765.4365
Jumbo	30	851	850.5	850.49	850.485	850.4850

Size	18 Egg Pack - Minimum Net. Weight					
	Ounces/Pack	Whole Grams	Tenths	Hundreths	Thousandths	Ten Thousandths
Pee Wee	22.5	638	637.9	637.87	637.864	637.8638
Small	27	766	765.5	765.44	765.437	765.4365
Medium	31.5	894	893.1	893.01	893.010	893.0093
Large	36	1021	1020.6	1020.59	1020.582	1020.5820
Extra Large	40.5	1149	1148.2	1148.16	1148.155	1148.1548
Jumbo	45	1276	1275.8	1275.73	1275.728	1275.7275

Size	20 Egg Pack - Minimum Net. Weight					
	Ounces/Pack	Whole Grams	Tenths	Hundreths	Thousandths	Ten Thousandths
Pee Wee	25	709	708.8	708.74	708.738	708.7375
Small	30	851	850.5	850.49	850.485	850.4850
Medium	35	993	992.3	992.24	992.233	992.2325
Large	40	1134	1134.0	1133.98	1133.980	1133.9800
Extra Large	45	1276	1275.8	1275.73	1275.728	1275.7275
Jumbo	50	1418	1417.5	1417.48	1417.475	1417.4750

Size	24 Egg Pack - Minimum Net. Weight					
	Ounces/Pack	Whole Grams	Tenths	Hundreths	Thousandths	Ten Thousandths
Pee Wee	30	851	850.5	850.49	850.485	850.4850
Small	36	1021	1020.6	1020.59	1020.582	1020.5820
Medium	42	1191	1190.7	1190.68	1190.679	1190.6790
Large	48	1361	1360.8	1360.78	1360.776	1360.7760
Extra Large	54	1531	1530.9	1530.88	1530.873	1530.8730
Jumbo	60	1701	1701.0	1700.97	1700.970	1700.9700

Size	30 Egg Pack - Minimum Net. Weight					
	Ounces/Pack	Whole Grams	Tenths	Hundreths	Thousandths	Ten Thousandths
Pee Wee	37.5	1064	1063.2	1063.11	1063.107	1063.1063
Small	45	1276	1275.8	1275.73	1275.728	1275.7275
Medium	52.5	1489	1488.4	1488.35	1488.349	1488.3488
Large	60	1701	1701.0	1700.97	1700.970	1700.9700
Extra Large	67.5	1914	1913.6	1913.60	1913.592	1913.5913
Jumbo	75	2127	2126.3	2126.22	2126.213	2126.2125

Size	36 Egg Pack - Minimum Net. Weight					
	Ounces/Pack	Whole Grams	Tenths	Hundreths	Thousandths	Ten Thousandths
Pee Wee	45	1276	1275.8	1275.73	1275.728	1275.7275
Small	54	1531	1530.9	1530.88	1530.873	1530.8730
Medium	63	1787	1786.1	1786.02	1786.019	1786.0185
Large	72	2042	2041.2	2041.17	2041.164	2041.1640
Extra Large	81	2297	2296.4	2296.31	2296.310	2296.3095
Jumbo	90	2552	2551.5	2551.46	2551.455	2551.4550