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Processed
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Branch

Grading Manual for Canned Peas

Effective April 1995

This manual is designed for Processed Products Branch Personnel of the U.S. Department of Agriculture. Its purpose is to give background information and guidelines to assist in the uniform application and interpretation of U.S. grade standards, other similar specifications and special procedures.

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Canned Peas
Grading Manual
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SAMPLING PROCEDURES

Follow the general procedures and instructions as outlined in File Codes 109-A-1 and 120-A-1. **Follow** the procedures in File Code 128-A-20 (Vacuum); File Code 128-A-10 (Net Weight); and File Code 128-A-30 (Drained Weight).

Follow the procedures in Condition of Container File Code series 125 when a formal condition of container is required. **Follow** File Code 172-A-1 (Foreign Material) to evaluate grit and soil found in canned peas and for certifying "off-flavor" sample units.

Follow Table I and Table II Minimum Sampling Rates for Canned Peas when sampling this product.

When additional containers are required in Group 1, **draw and separately identify (mark)** all of the containers. For example, using Table II, if the sampling rate specifies six (6) containers, and the total number of containers needed is 12, **draw** two (2) adjacent containers per sample unit. **Identify** the containers as 1a, 1b; 2a, 2b; etc.

**Table I
Minimum Sampling Rates for Canned Peas**

	Group 1 (up through 303) ^{1/}		Group 2 (no. 1 sq. thru 3 cyl.)		Group 3 (Exceeds 3 cyl.)	
	24 per case	48 per case	12 per case	24 per case	6 per case	12 per case
No. of Sample Units	Cases	Cases	Cases	Cases	Cases	Cases
3	125 or less	63 or less	125 or less	63 or less	125 or less	63 or less
6	126 to 500	64 to 250	126 to 500	64 to 250	126 to 500	64 to 250
13	501 to 1625	251 to 813	501 to 1625	251 to 813	501 to 1625	251 to 813
21	1626 to 3500	814 to 1750	1626 to 3500	814 to 1750	1626 to 3500	814 to 1750
29	3501 to 6042	1751 to 3021	3501 to 6042	1751 to 3021	3501 to 6042	1751 to 3021
	8z Tall	211 X 304	No. 2	307 X 409	No. 10	603 X 700
	No. 1 picnic	211 X 400	No. 2 1/2	401 X 411		
	No. 300	300 X 407	No. 3 cylinder	404 X 700		
	No. 1 Tall	301 X 411				
	No. 303	303 X 406				

^{1/} SEE TABLE II OF THIS MANUAL TO ENSURE THAT SUFFICIENT PRODUCT IS SAMPLED FOR GRADING PURPOSES.

SAMPLING PROCEDURES

NOTE: THE SAMPLING RATES IN THE FOLLOWING TABLE ARE DESIGNED TO ENSURE THAT SUFFICIENT PRODUCT IS DRAWN FOR GRADING PURPOSES.

Table II

Sampling Rates for Small Containers of Canned Peas

Container Size	Sampling Rate	Minimum Units of Product Needed	Total Number of Containers Needed	Action Draw and Separately Identify (Mark) <u>1/</u>
8 oz	3	1200	12	4 adjacent containers per sample unit.
8 oz	6	1200	12	2 adjacent containers per sample unit.
8 oz	13	1200	21	8 extra containers throughout the lot.
8 oz	21	1200	29	8 extra containers throughout the lot.
8 oz	29	1200	29	N/A
No. 300 & 303	3	1200	7	4 extra containers throughout the lot.
No. 300 & 303	6	1200	7	1 extra container throughout the lot.
No. 300 & 303	13	1200	14	1 extra container throughout the lot.
No. 300 & 303	21	1200	21	N/A
No. 300 & 303	29	1200	29	N/A

1/ Identify the containers as 1a, 1b, 1c, 1d; 2a, 2b, 2c, 2d; etc.

The minimum number of units of product used to evaluate seriously blemished, blemished, spotted and discolored, and pieces of peas is 400 units. **For larger can sizes more product should be examined.** For example: If the lot size for No. 10 cans requires 13 sample units, the minimum sample size is 13 x 400. You should examine more product by selecting more peas based upon the next higher sample size which is 21 x 400 or 8400 units. By dividing 13 into 8400, you will be required to randomly draw 646 peas from each of the 13 containers. Apply the acceptance numbers for the 8400 sample size to this lot.

SUGGESTED ORDER OF GRADING

A. Non-quality Factors.

1. **Record** the following applicable information on the tally sheet.
 - a. Name and address of applicant.
 - b. Size and kind of container.
 - c. No. of cases in lot (page 1 only).
 - d. Contract (Cont. No.) or Purchase Order (P.O. No.).
 - e. Label -- or attach a copy -- (page 1 only).
2. **Select** the containers to be used for non-quality and prerequisite evaluation.
Note: For small containers (8 oz), select 1a, 2a, 3a, etc.
3. **Arrange** the containers on the grading table in chronological order by code.
4. **Record** the codes, on the tally sheet, including case codes if available.

NOTE: THE FINAL/AVG COLUMN (COLUMN 9) ON PAGE 1 OF THE TALLY SHEET SHALL BE USED FOR THE SUMMATION OF THE GRADING RESULTS OF THE LOT. COLUMN 9 MAY BE USED ON SUCCEEDING PAGES FOR RECORDING INDIVIDUAL CONTAINER DATA.

IF THERE IS INSUFFICIENT SPACE IN THE CODE SECTION OF THE TALLY SHEET FOR SINGLE LINE INK JET CODES, RECORD THEM AS DOUBLE LINE CODES. REFER TO THE BACK OF THE TALLY SHEET AND SHOW AN EXAMPLE OF THE ACTUAL CODE THERE.

5. **Determine and record** the net weight of each container using Branch procedures for determination of tares and reading of scales.
6. **Determine and record** the vacuum reading for each container.

NOTE: TO GET A PROPER VACUUM READING, SLIGHTLY ELEVATE ONE SIDE OF THE CAN AND TAKE THE VACUUM READING FROM THE HIGH SIDE.

SUGGESTED ORDER OF GRADING

7. **Open** each container, and for cans, **leave** the lid remaining on top of the product.

NOTE: THE METHOD OF DETERMINING THE FILL OF CONTAINER IS DIFFERENT FOR CANNED PEAS THAN FOR OTHER CANNED PRODUCTS. THE METHOD IS PRESCRIBED BY THE FDA STANDARD OF IDENTITY FOR CANNED PEAS (21 CFR 155.170).

The standard is as follows: If the container is so filled that, when the peas and liquid are removed from the container and returned thereto (pour-back method), the leveled peas (irrespective of the quantity of the liquid), 15 seconds after they are so returned completely fill the container.

A container with lid attached by double seam shall be considered to be completely filled when it is filled to the level 5 mm (3/16 in) vertical distance below the top of the double seam; and a glass container shall be considered to be completely filled when it is filled to the level 13 mm (1/2 in) vertical distance below the top of the container. Canned peas that do not meet this requirement are "Below Standard in Fill."

CONSIDER CANNED PEAS AS MEETING REQUIREMENTS WHEN:

**AT LEAST TWO-THIRDS OF THE SAMPLE UNITS MEET REQUIREMENTS;
AND, OF THE REMAINING SAMPLE UNITS THAT FAIL:**

THE LEVELED PEAS SHALL NOT BE IN EXCESS OF 5/16-INCH FOR No. 300 OR No. 303 CANS (BELOW TOP OF THE DOUBLE SEAM);

OR, 1/2-INCH FOR No. 10 CANS (BELOW THE TOP OF THE DOUBLE SEAM).

Note: It is advisable at this point to save sufficient liquor from all the containers for later evaluation.

8. Using the lid to stem the flow of product, carefully **empty** the contents container by container into tared draining screens that have been placed on a 17 to 20 degree incline in individual grading trays. Determination of the drained weight of peas is essential to properly determine the grade for extraneous vegetable material (EVM).

SUGGESTED ORDER OF GRADING

9. **Drain (undisturbed)** for 2 minutes, using a U.S. Standard No. 8 circular sieve, **weigh** and **record** the drained weights on the tally sheet. A sieve, 8 inches (20.3 centimeters) in diameter, is used for 8 oz, No. 300, and No. 303 containers, and a sieve 12 inches (30.5 centimeters) in diameter, is used for larger containers such as No. 10's. The temperature of the packing medium at time of drained weight determination shall be 20 degrees Celsius (68° Fahrenheit).

NOTE: **WHILE THE PRODUCT IS DRAINING EXAMINE THE INTERIOR CONDITION OF THE CONTAINER(S), MAKING NOTE OF ANY UNUSUAL CONDITIONS UNDER "REMARKS" OR ON BACK OF THE TALLY SHEET.**

WHEN MULTIPLE SMALL CONTAINERS (8 OZ) ARE DRAWN TO PROVIDE SUFFICIENT PRODUCT TO GRADE, DETERMINE THE DRAINED WEIGHTS FOR EACH CONTAINER USED FOR GRADING.

10. **Empty** the product from each draining screen into the individual grading trays.
11. **Randomly select** 25 peas to determine the **Type** and **Sieve size**. A random selecting device may be used, if available. Another method is to gently mix the peas with a spoon and segregate a random portion of 25 peas.
12. **Record**, if applicable:
 - a. **Type** - **check** the applicable Block for Type of peas on the tally sheet.
 - b. **Sieve size(s)** - indicate the sieve size and order of predominance of each.

NOTE: **USING A SIEVE SIZER SUCH AS INSPECTION AID NO. 102, DETERMINE THE SMALLEST OPENING (SIEVE SIZE) THROUGH WHICH EACH PEA WILL PASS WITH NO RESISTANCE.**

Sizes of peas are not a factor of quality for these grade standards. Typically Nos. 1, 2, and sometimes No. 3 sieve size peas are separated out and run for premium pack and Nos. 3, 4, and 5's are packed as another pack. Sometimes a buyer specification will specify a single sieve size. When a buyer specification refers to a single pea size, the grade standards require that 50% of the peas be of the specified size and 85% of the peas be of the specified size or the next smaller size. Consider peas that fail the single size requirement as "mixed sizes." When a buyer specifies several sieve sizes, over 50% of the peas should be the predominant sizes.

SUGGESTED ORDER OF GRADING

B. Prerequisite Quality Factors.

1. **Evaluate and grade** the prerequisite quality factors on a container-by-container basis. **Record** the letter grade, as applicable, in the appropriate place on the tally sheet.
 - a. **Varietal characteristics.**
 - (1) **Grade A** should be assigned to those sample units containing peas of similar varietal characteristics.
 - (2) **Sstd** should be assigned to those sample units containing peas of dissimilar varietal characteristics.
 - b. **Appearance** - use the following guidelines in assigning a grade for appearance:
 - (1) **Good "Grade A" and "Grade B"** means the peas are reasonably uniform in color for the variety, and reasonably free from areas of insignificant blemishes.
 - (2) **Reasonably good "Grade C"** means the peas are fairly uniform in color for the variety and fairly free from areas of insignificant blemishes. Sample unit(s) that are Grade C for color limit the "Lot Grade" to Grade B.
 - (3) **Poor "Substandard" (Sstd)** means the sample unit fails the requirements for Grade C appearance.
 - c. **Blond peas** - **separate** and **count** the blond (cream-colored or yellow) peas. **Calculate** the percent by count of blond peas by comparing the count of the blond peas found to the total count of peas in the container. You may establish a count-to-weight relationship as shown on page 10 of this manual.
 - (1) **Grade A** - Not more than one percent, by count, blond peas.
 - (2) **Grade B** - Not more than one and one-half percent, by count, blond peas.

SUGGESTED ORDER OF GRADING

- (3) **Grade C** - Not more than two percent, by count, blond peas.
 - (4) **Sstd** - The sample unit fails the requirements for Grade C.
- d. **Liquor - Evaluate** the clearness of liquor, using a standard glass cylinder (approx. 2 in I.D.). Consider the color, cloudiness, and sediment in the cylinder. **Record** the letter grade (A, C, or Sstd) on the tally sheet. A lot cannot fail for the prerequisite of liquor alone.
- (1) **"Grade A" Liquor** or good liquor means the color is typical, may have slight cloudiness or tint of green, only a slight to moderate amount of suspended material or sediment may be present, and the liquor is not viscous. A moderate amount of sediment is allowed in Grade A.
 - (2) **"Grade C" Liquor** or reasonably good liquor means the liquor is cloudy or slightly green, may have a pronounced accumulation of sediment, may be dull but not off color, and may be viscous but not so viscous that the liquor will not separate from the peas. A range of more than a moderate amount of sediment to very viscous is permitted in Grade C.
 - (3) **"Sstd" Liquor** means the liquor fails to meet the requirements for Grade C liquor.
- e. **Flavor and odor.** A few units and the accompanying liquor should be evaluated from each grading tray.
- (1) **Good "Grade A"** should be assigned to sample units that have a "good" (or normal) flavor and odor.
 - (2) **Reasonably good "Grade C"** should be assigned to sample units that have "reasonably good" flavor and odor (no off flavor or odor).
 - (3) **Poor "SStd"** should be assigned to those sample units containing product that has an off flavor or odor.

SUGGESTED ORDER OF GRADING

When canned peas are packed in water but without salt, the salt and sugar balance may be affected. A sample unit that is typically expected to contain salt, but does not, may be graded Grade C if the flavor is neither typical nor off-flavor. Since flavor is a prerequisite, a Grade C sample unit would cause the lot grade to be Grade C. When canned peas are packed in the absence of water and salt, the cans are slack in fill. The initial temperature and entire cooking process may affect the canned peas. The flavor may be Grade C or Substandard. For instructions for certifying off-flavor, see File Code 172-A-1, B., 2., "Flavor" and C., 2., "Flavor."

Set aside a representative sample of about 150 peas to be used later to determine maturity. This completes the portion of grading for prerequisite quality factors.

Foreign Material

Occasionally silt, sand, or soil is found embedded in cracked peas. Silt that is very fine and cannot be tasted is considered insignificant. When the silt is found and its presence affects the eating quality, follow File Code 172-A-1. Consider such silt as Class 1 foreign material. Consider sand or grit as Class 2 foreign material and consider soil, mud balls, or clods as Class 3 foreign material. Follow the allowances for these classes. Product that doesn't meet the allowances in the File Code is "Grade Not Certified" (GNC).

Grading of Specified Defects Other Than Maturity

Except for EVM, specified defects are evaluated based on one of the composite sample sizes provided in the grade standards. EVM is based on the lot average of each 1700 grams (60 oz) of drained product. **Examine all the drained product for EVM.**

1. **Separate the Extraneous Vegetable Material (EVM)** - flat pieces such as leaves, pieces of pod, cylindrical pieces such as pieces of vine or stems, and spherical such as thistle buds, other berries, or pieces of berries.
2. **Count, measure (if applicable), and record** the pieces, or aggregate areas of EVM found in each sample unit on the tally sheet.

SUGGESTED ORDER OF GRADING

For example: You find two pieces of stem material (cylindrical) 6mm and 9 mm in length and one thistle bud (spherical) in a No. 10 can sample unit. Record "15 mm" (9 mm + 6 mm) for the cylindrical measurement and "1" for the spherical EVM as shown:

SPECIFIED DEFECTS EVM: Each 1700 grams (60 oz) of drained product (1.7 kg, 3.4 kg, 5.1 kg, etc.) _____									
EVM (DEFECT INCREMENTS):									
Flat (each 1.5 cm ²):	0								
Cylindrical (each 13 mm):	15 mm								
Spherical (each piece):	1								
Total Weight of EVM in grams:									

Be sure to keep all EVM together, it will be necessary to weigh all EVM to see if the total weight meets the FDA Standard of Identity tolerance for EVM.

3. **Weigh** all of the EVM found and **record** the weight on the tally sheet in the column for "Total Weight of EVM in grams:".

Later in the grading process, you will determine the total number of EVM units and the total weight of the EVM, and compare what was found with what is allowed, to determine the grade based on the acceptance number per 1700 grams (60 oz) and the total drained weight (Table IV, U.S. grade standards).

4. **Determine** the total units of product available in the non-quality/prerequisite samples.
 - a. **Total** the drained weights and **enter** this sum on page 1 of the tally sheet. Under on-line in-plant inspection, this step would be performed later, after the last sample unit was graded off the line.

NOTE: THE AVERAGE DRAINED WEIGHT MAY ALSO BE FIGURED AND RECORDED AT THIS TIME.

- b. **Count** the number of peas or **establish** a weight to count relationship for the various sieve sizes. To establish a weight to count relationship:

SUGGESTED ORDER OF GRADING

- (1) **Determine** the average count of 3 random one ounce (1 oz) sub-samples selected from different grading trays.

Example: 82, 80, and 84 peas total 246 peas. The average is 82 peas per oz.

Weigh one ounce (1 oz) of randomly selected peas. The following guide is an approximation of count to weight by the sieve size:

No. 1 sieve size - Approximately 110 peas per ounce.
No. 2 sieve size - Approximately 102 peas per ounce.
No. 3 sieve size - Approximately 80 peas per ounce.
No. 4 sieve size - Approximately 72 peas per ounce.
No. 5 sieve size - Approximately 55 peas per ounce.
Mixed (field run) - Approximately 82 peas per ounce.

- (2) **Use** the following formula to determine the number of units available on a weight basis.

The average number of peas per one ounce divided into 400 equals the number ounces of product that represent 400 peas. For example, the average number of peas from three one-ounce sub-samples equals 82.

$400 \div (\text{number of peas in one ounce}) = \text{number of ounces.}$

$(400 \div 82 = 4.88)$ means 400 peas are represented by each 4.88 oz of drained product.

1200 peas are represented by: $1200 \div 82 = 14.63$ oz,

2400 peas are represented by $2400 \div 82 = 29.27$ oz, etc.

SUGGESTED ORDER OF GRADING

5. **Refer** to the applicable acceptance numbers table in the standards or this manual, and **select** the Units of Product (sample size) that will use the maximum amount of product available.

NOTE: **FOR SMALLER THAN No. 300 CONTAINER SIZES, REFER TO THE TABLES IN THIS MANUAL.**

FOR OTHER CONTAINER SIZES AND SAMPLING RATES, REFER TO THE TABLES IN THE STANDARDS.

6. **Count or weigh out** a uniform amount of product from each grading tray to arrive at the sample size selected for the lot as a whole.

WHEN THERE IS INSUFFICIENT PRODUCT FOR EVALUATING SPECIFIED DEFECTS FROM ONE CONTAINER, ADD THE PRODUCT FROM SAMPLE 1b, THEN 2b, ETC. UNTIL SUFFICIENT PRODUCT IS OBTAINED.

FOR THESE EXTRA CONTAINERS, YOU NEED NOT EVALUATE THE NON-QUALITY OR PREREQUISITE QUALITY FACTORS. HOWEVER, IF IT IS OBVIOUS THAT SOME OF THESE ADDITIONAL CONTAINERS DEVIATE EXCESSIVELY FROM THE SAMPLE AS A WHOLE, YOU SHOULD: RECONSIDER THE EXAMINATION (E.G., ONE OF THE CONTAINERS NOT IN THE PREDETERMINED NUMBER TO CHECK FOR NON-QUALITY FACTORS IS OBVIOUSLY "SLACK FILLED".) FOLLOW BRANCH GUIDELINES AND OTHER INSTRUCTIONS THAT COVER THE DEVIATION IN QUESTION IF YOU RECONSIDER THE EXAMINATION.

7. **Record** both the total Units of Product that comprise the sample size as well as the number of units used from each container on the tally sheet. Acceptance numbers in the Tables are based on **count**. If using a weight/count conversion, indicate it on the tally sheet. For example:

2400 or 2400/29.27 oz; 400 or 400/4.88 oz.

8. **Count** the number of blemished, spotted, or discolored peas found in the sample unit **and record** on the tally sheet .

SUGGESTED ORDER OF GRADING

Blemished means a unit that is spotted or otherwise discolored (other than blond), such as vivid-green or brown, to the extent that its appearance or eating quality is materially affected.

9. **Count** the number of seriously blemished peas **and record** on the tally sheet.

Seriously blemished means a unit that is seriously discolored or spotted, such as a dark discolored pea, to the extent that the appearance or eating quality is seriously affected.

10. **Count** the number of pieces **and record** on the tally sheet.

A **piece of pea (broken pea)** means a pea from which a cotyledon or a large portion thereof has become separated; two detached whole cotyledons; pieces of detached cotyledons aggregating the equivalent of an average size cotyledon; and, a whole detached skin or portions of detached skin aggregating the equivalent of an average size whole skin.

Grading of Maturity

Indicate the number of peas (multiples of 50, 150, 300, 650, etc.) used to determine maturity for each brine solution on the tally sheet. Check the percent salt solutions frequently enough to ensure that the tests are accurate. Grading maturity of canned peas **requires two different brine solutions** for each sample unit indicated in Table III of the grade standards and shown on page 13 of this manual. For example, grading for **Grade A canned sweet peas** requires that 50 peas are "brined" in the 11 percent brine and another 50 peas are brined in the 13 percent brine to determine the number of sinkers. Later, you will need to compare the total number of sinkers for each of the two brines to determine the lot grade for maturity for the specific sample size.

1. **Obtain 50 peas for each percent salt solution to be tested** from previously set-aside representative samples (See page 8).
2. **Start** with the weakest brine (percent salt solution) first. **Use** two 250 mL beakers for each multiple of 50 peas and for each percent brine. **Place 25 peas** at a time in each beaker containing two inches of the specified brine solution. **After 10 seconds, count and record** the peas that sink to the bottoms of both beakers. **Remove** the peas promptly by pouring the brine into another beaker, and catch the peas in a tea strainer.

SUGGESTED ORDER OF GRADING

3. Take another 50 peas and repeat step 2, using the stronger brine (higher percent salt solution) indicated in Table III below.
4. Repeat steps 2 and 3 for each sample unit, recording the number of sinkers for both brine solutions.
5. If the number of sinkers exceeds the acceptance number for either brine for a specified grade, you must perform the test in the brine specified for the next lower grade, or compare the number of sinkers to the acceptance numbers for the two brines of the next lower grade.

**TABLE III
LOT ACCEPTANCE NUMBERS (SINKERS) FOR BRINE FLOATATION**

Sample Units x Sample Unit Size				1x50 ^{1/}	3x50	6x50	13x50	21x50	29x50
Units of Product				50	150	300	650	1050	1450
TOL	AQL ^{2/}	Type of Peas	% Salt Sol.						
Grade A				Acceptance Numbers (maximum allowable sinkers)					
12.0	10.1	Sweet	11.0	8	21	39	78	122	165
2.0	1.3		13.0	2	4	7	13	20	26
20.0	17.6	Early	11.0	13	34	63	130	205	279
2.0	1.3		13.5	2	4	7	13	20	26
Grade B									
15.0	13.0	Sweet	13.0	10	26	48	98	154	209
4.0	2.9		15.0	3	8	13	26	39	53
30.0	27.2	Early	13.5	18	50	94	195	309	422
8.0	6.4		15.0	6	15	26	52	80	108
Grade C									
10.0	8.2	Sweet	15.0	7	18	33	65	101	137
10.0	8.2	Early	16.0	7	18	33	65	101	137

^{1/} For unofficial samples.

^{2/} AQL calculated from tolerance (TOL) at 650.

SUGGESTED ORDER OF GRADING

Assigning the Grade for a Lot

1. **Determine** the total amount of defects found in each category of specified defects and enter these figures in the "Final/Average" column on page 1 of the tally sheet. **For EVM: determine the total number of EVM units and weight of EVM and compare with what is allowed based on the acceptance numbers per 1700 grams (60 oz) for the total drained weight.**

For example: In 3 - No. 10 cans with a total drained weight of 190 oz, you found:

SPECIFIED DEFECTS EVM: Each 1700 grams (60 oz) of drained product (1.7 kg, 3.4 kg, 5.1 kg, etc.)								
EVM (DEFECT INCREMENTS):								Final/Avg
Flat (each 1.5 cm ²):	0	1.2 cm ²	0					1.2 cm ²
Cylindrical (each 13 mm):	15mm	0	0					15 mm
Spherical (each piece):	1	0	0					1
Total Weight of EVM in grams:	.35	.05	0					0.40

Three (3) defect increments were found. In Grade A, one defect increment per 60 oz is allowed. Total drained weight, 190 oz ÷ 60 oz = 3.16 EVM defect increments are allowed in Grade A. Therefore, the lot grade for EVM is Grade A.

2. **Compare** the number of specified defects found with the acceptance numbers from the applicable tables in the standards or this grading manual.

NOTE: SEE "PROCEDURES FOR MIXED QUALITY LOTS" -- THIS MANUAL -- ON LOTS THAT MEET THE ACCEPTANCE NUMBERS BUT YET HAVE POCKETS OF OBVIOUSLY LOWER QUALITY.

3. **Enter** the "Lot Grade" on the tally sheet based on the lowest grade assigned to any prerequisite (except liquor) or specified quality factor. A sample unit assigned Grade C Appearance due to fairly uniform color shall limit the "Lot Grade" to Grade B, if it is the lowest grade assigned of all quality factors. For maturity, **Record the total number of sinkers** for each percent salt solution **found**. **Compare** the number found with the corresponding acceptance number for each grade, and **enter** the applicable letter grade on the tally sheet.

PROCEDURES FOR GRADING MIXED QUALITY LOTS

If an inspection lot is encountered with individual (suspect) sample units in the sample which seem to be of lower quality than the sample as a whole, take the following action:

1. **Assemble** 400 units of product from the "suspect" container(s) regardless of code.
2. **Compare** the number or weight of defects found, as applicable to the style, with the acceptance numbers from the applicable table in this manual and determine the grade of the suspect sample units.
3. **Compare** the grade of the suspect sample units to the grade of the sample as a whole. If the grade of the suspect sample is **more than one grade below** the grade of the sample as a whole, **certify** to the lowest grade. Otherwise **certify** to the grade of the original inspection results.

NOTE: IF THE APPLICANT REQUESTS CERTIFICATION OF THE "NONSUSPECT" PORTION OF THE SAMPLE, RESAMPLE THE LOT IN ACCORDANCE WITH TABLE II OF THIS MANUAL.

PROCEDURES FOR SINGLE SAMPLE UNITS (UNOFFICIAL SAMPLES)

Branch regulations provide for grading of samples submitted by an applicant. These samples are "unofficial samples" and do not represent a lot. When requested to perform grading on unofficial samples, use the following guidelines:

1. Each unofficial sample must stand on its own;
2. Each unofficial sample must contain 60 oz of drained product to determine EVM (**additional containers may be needed to meet this requirement**); 400 peas for other specified defects; 50 peas per brine floatation test.
3. **Grade** the sample as outlined in this manual.
4. **Apply** the applicable acceptance numbers found in the U.S. grade standards.

TIME SAMPLING AND SEGREGATION PROCEDURES

AUTHORIZATION TO USE TIME SAMPLING

The Officer-in-Charge or area supervisor shall determine whether a plant can qualify to use the time sampling procedures outlined below. This determination shall be based on a review of the plant's quality control records and the ability of the plant to pack product consistently within a desired quality level. The supervisor shall not authorize time sampling for a plant which historically produces product which is determined to have erratic quality levels during a production period.

SOURCE OF SAMPLES

All sample units must be officially drawn from "finished product." Finished product means product that has been processed, cooled, and taken from the container(s) to be graded. Line checks shall not be used in lieu of finished product.

TIME SAMPLING RATES PER INSPECTION PERIOD

Sample units are to be selected on a random time basis averaging within the parameters outlined below so that each sample unit has an equal chance of being selected.

The sampling rate for each product graded is to be **predetermined**, based on knowledge of **previous** production volume for the product per basic inspection period and the **on-line** sampling plans in the "Regulations."

Sampling rates and frequencies for canned peas are based on the following table:

Predetermined Production Rate	Sampling Frequency	Deviants Allowed
Low Volume (3)	400 units per 60 min. (per 90 min., optional)	0
Medium Volume (6 or 13)	400 units per 45 min.	0
High Volume (21 or more)	400 units per 30 min. (per 15 min., optional)	0

MINIMUM SAMPLE SIZE TO CERTIFY A PORTION OF PRODUCTION

For specified defects, 1200 units of product from **three (3) sample units** is the minimum sample size under time sampling. For grading small portions of production or small containers, inspectors may need to draw a few extra containers to assure that 1200 units are available.

PROCEDURES FOR GRADING MIXED QUALITY WITHIN THE PRODUCTION PERIOD

As provided for lot inspection under individual attributes, there is a similar provision to address pockets of low quality within a production period under time sampling. If during the production period, a sample unit(s) is encountered for one or more specified defects that falls **more than one grade below the indicated grade** for the production period, **certify the production period to the lowest grade**. For the next period of production, the inspector **must** use the lot inspection rate in the Regulations. After grading one production period at the lot inspection rate and finding no pockets of low quality, the inspector may again use time sampling procedures and make note of each occurrence in the Daily Inspection Report under "Remarks".

SEGREGATION PROCEDURES

If at any time during production, a portion of production falls into **the next lower grade**, the entire production fails at that point unless the offending portion can be segregated by codes. Plant management has two options--one, to request segregation of the offending portion or two, to continue production without segregation anticipating better quality product will offset the offending portion. If plant management requests that a portion of failing production be segregated, all defects found that are associated with the failing portion shall be excluded from the tally of the remaining portion. The failing portion may be re-inspected as a new lot only under appeal inspection or after the product has been reworked in an effort to eliminate or reduce the defects from the failing portion.

OTHER REQUIREMENTS

The following are separate but equally important requirements that must be followed when using time sampling for canned peas:

Inspectors cannot switch back and forth between on-line single sampling rates and time sampling **unless it is due to mixed quality sample units within a production period** .

The inspector must indicate that "time sampling" is being used on each tally sheet.

Attached are the acceptance numbers for 3 to 29 (and 38) sample units of canned peas using the 400 and 50 (Maturity) Plans.

Time Sampling Acceptance Numbers for Canned Peas -- 400 Plan

UNITS OF PROD	BLEMS	SER BLEMS	PIECES > NO 2	PIECES NO 1 & NO 2	BLEMS	SER BLEMS	PIECES > NO 2	PIECES NO 1 & NO 2	BLEMS	SER BLEMS	PIECES > NO 2	PIECES NO 1 & NO 2
	GRADE A				GRADE B				GRADE C			
(AQL)	0.80	0.37	4.5	6.4	2.6	0.58	9.3	9.3	4.5	0.80	11.8	11.3
1200	15	8	66	91	40	11	129	129	66	15	160	153
1600	18	10	86	119	52	14	169	169	86	18	210	201
2000	22	12	105	146	64	17	208	208	105	22	259	249
2400	26	14	125	174	75	20	248	248	125	26	309	296
2800	30	15	144	201	87	23	287	287	144	30	358	344
3200	34	17	164	228	98	25	326	326	164	34	407	391
3600	38	19	183	255	109	28	365	365	183	38	456	438
4000	41	21	202	282	121	31	404	404	202	41	506	485
4400	45	23	221	309	132	34	443	443	221	45	555	532
4800	48	25	240	336	143	36	481	481	240	48	603	579
5200	52	26	259	363	154	39	520	520	259	52	652	625
5600	56	28	278	389	165	42	559	559	278	56	701	672
6000	59	30	297	416	176	44	597	597	297	59	749	718
6400	63	32	316	443	187	47	636	636	316	63	798	765
6800	66	33	335	470	198	50	674	674	335	66	846	811
7200	70	35	353	496	209	52	712	712	353	70	895	858
7600	73	37	373	523	221	55	751	751	373	73	943	904
8000	77	38	391	549	232	57	789	789	391	77	991	951
8400	80	40	410	576	242	60	827	827	410	80	1040	997
8800	84	42	429	602	253	63	866	866	429	84	1088	1043
9200	88	44	448	629	264	65	904	904	448	88	1137	1090
9600	91	45	466	655	275	68	942	942	466	91	1185	1136
10000	95	45	485	682	286	70	980	980	485	95	1233	1182
10400	98	48	504	708	297	73	1018	1018	504	98	1281	1228
10800	101	50	522	735	308	75	1057	1057	522	101	1329	1274
11200	105	52	541	761	319	78	1095	1095	541	105	1378	1321
11600	108	53	560	787	330	81	1133	1133	560	108	1426	1367
15200 1/	140	68	727	1024	428	103	1475	1475	727	140	1570	1505

1/ 15200 (38 x 400) Used for reinspection for next higher rate from 29.

Time Sampling Acceptance Numbers for Maturity of Canned Peas -- 50 Plan

M U L T I P L E P E A S	11 %	13 %	13 %	15 %	15 %	11 %	13.5 %	13.5 %	15 %	16 %
	B R I N E	B R I N E	B R I N E	B R I N E	B R I N E	B R I N E	B R I N E	B R I N E	B R I N E	B R I N E
	SWEET PEAS					EARLY PEAS				
	GRADE A	GRADE B		GRADE C	GRADE A	GRADE B		GRADE C		
(AQL)	10.1	1.3	13.0	2.9	8.2	17.6	1.3	27.2	6.4	8.2
150	21	4	26	8	18	34	4	50	15	18
200	27	5	34	10	23	44	5	64	18	23
250	33	6	41	11	28	54	6	79	22	28
300	39	7	48	13	33	63	7	94	26	33
350	45	8	56	15	37	73	8	109	30	37
400	50	9	63	17	42	83	9	123	34	42
450	56	10	70	19	47	92	10	138	38	47
500	61	11	77	21	51	102	11	152	41	51
550	67	11	84	22	56	111	11	166	45	56
600	72	12	91	24	61	121	12	181	48	61
650	78	13	98	26	65	130	13	195	52	65
700	84	14	105	28	70	139	14	209	56	70
750	89	15	112	29	74	149	15	224	59	74
800	95	16	119	31	79	158	16	238	63	79
850	100	16	126	33	83	168	16	252	66	83
900	106	17	133	34	88	177	17	266	70	88
950	111	18	140	36	92	186	18	281	73	92
1000	116	19	147	38	97	196	19	295	77	97
1050	122	20	154	39	101	205	20	309	80	101
1100	127	20	161	41	106	214	20	323	84	106
1150	133	21	168	43	110	223	21	337	88	110
1200	138	22	175	44	115	233	22	351	91	115
1250	144	23	182	46	119	242	23	366	95	119
1300	149	23	189	48	123	251	23	380	98	123
1350	154	24	196	49	128	260	24	394	101	128
1400	160	25	202	51	132	270	25	408	105	132
1450	165	26	209	53	137	279	26	422	108	137
1900 1/	213	33	271	67	176	361	33	548	140	176

1/ 1900 (38 x 50) Used for reinspection for next higher rate from 29.