7520.2Procs forCond ofCannedProd5/12/88

OPI: TS/PPID
PART 1 OF 2

PROCEDURES FOR CONDITION OF CANNED PRODUCT CONTAINER EXAMINATION

I. PURPOSE

This directive describes the procedures for examining the condition of canned product containers. FSIS inspectors conduct routine examinations to determine the integrity of canned product containers, special examinations to investigate suspect lots of canned product containers, and additional examinations to evaluate sorted/reconditioned lots of canned product containers. This directive does not apply to examinations of imported canned product containers.

II. (RESERVED)

III. (RESERVED)

IV. REFERENCES

MPI Regulations, sections 318.309 and 381.309.

V. INDEX

G. Random Numbers Worksheet for Example 2.0

VI. DEFINITIONS

A. General

Acceptance Number (Ac). The maximum number of defects allowed in a sample to accept a lot based on a sampling plan.

Canned Product. A food product with a water activity above 0.85 which receives a thermal process either before or after being packed in a hermetically sealed container.

Defect classifications.

1. Critical defect (I). An abnormality which indicates that the container is not hermetically sealed (such as, holes, fractures, leakage) or shows evidence that there may be spoilage of the container's contents.

2. Major defect (II). An abnormality that may affect container integrity.

Destination Examination. An examination made at any location other than at the producing establishment.

Hermetically Sealed. Air-tight containers which protect the contents against the entry of microorganisms during and after thermal processing.
Lot. A collection of hermetically sealed containers of the same size, type, and style. Lots should be distinguishable by product name, code, formulation and date of production.

Origin examination. An examination made prior to shipment from the producing establishment.

Random sampling. A process of selection whereby each container has an equal chance of being chosen.

Related defects. Defects on a single container that may have resulted from a single cause. Rejection number (Re). The number of defects in a sample that will cause the lot to be rejected as specified in a sampling plan.

Sample. A collection of sample units.

Sample size. The number of sample units which are to be included in the sample.

Sample unit. An individual hermetically sealed container.

Shelf stable. The condition achieved by the application of heat,

sufficient alone or in combination with other ingredients and or treatments, to render the product free of microorganisms capable of growing in the product at nonrefrigerated conditions (over 50 F. or 1O C.) at which the product is intended to be held during distribution and storage.

Stationary lot sampling. The process of randomly selecting sample units from a lot that has been warehoused or prepared for shipment.
Unrelated defects. Defects on a single container that may have resulted from separate causes.

B. External Container Defects

Buckle or Peak. A distortion of the container where the ends exhibit one or more permanent ridges extending into the countersink.

Corrosion. A chemical deterioration of the container. Rusting is one form of corrosion.

Cut Seam. A cut through a layer of the double seam.

Cutover or Sharp Seam. A sharp lip formed at the top inside edge of the double seam where no fracture of the seam is evident.

Deadhead, Spinner, Skidder or Skip Seam. A double seam which has not been completed.

Droop. A smooth crescent-like projection at the bottom of the bottom seam.

Incomplete Seam. A portion of the double seam where the body and cover hooks are not engaged.

Knocked Down Cover. A cover hook is not engaged with the body hook resulting in the cover curl extending below the double seam.
Knocked Down Flange. The flange is bent resulting in no engagement of the body and cover hooks.
Leakage. Loss of hermetic seal.

Paneled. The container side(s) is drawn excessively inward.
Swollen. A bulging of the container which may be due to the formation of gas.

1. Burst. A rupture of the container caused by excessive internal pressure.

2. Flipper. A slight distention of one end of the container where outside pressure will return the end to normal position but will cause the other end to "flip" out.

3. Hard Swell. A severe and permanent outward bulge on the container.

4. Loose Tin. A metal can which does not appear swollen, but slight pressure reveals a looseness.

5. Soft Swell. A slight distention of the container which will yield when pressure is applied, but cannot be forced back to a normal condition.

6. Springer. A slight distention of the container end where pressure will return the end to a normal position until the pressure is released.

Note: Overfilled, overstuffed or short vacuum may result in swelling and must be confirmed by laboratory analysis.

Vee or Spur. A projection at the bottom of the double seam which is shaped like the letter V.

VII. CONDITION OF CONTAINER EXAMINATION--STATIONARY LOT SAMPLING

A. Scope

1. The following procedures are to be used when assessing the condition of containers in stationary lots (lots warehoused and/or ready for shipment) of shelf stable canned foods. The procedures apply to those canned foods covered by Subpart G of the meat inspection regulations and Subpart X of the poultry products inspection regulations.

2. Routine examinations should be conducted at least once per month. Frequencies may vary according to current FSIS policy. Such examinations may be initiated by the inspector or as directed when there is reason to suspect the integrity of the container.

B. Sampling Plans and Defects

1. Table 1 of FSIS Form 7520-1 (Score Sheet), shows the number of sample units to select based on lot size. The table provides acceptance (Ac) and rejection (Re) criteria based on the number, class, and type of defects. Two-step sampling plans are used for routine sampling. Single sampling plans are used for tightened sampling.

2. The two-step sampling plan provides for acceptance or rejection based on results of the 1st step. When the results of the 1st step fall between acceptance and rejection, proceed to examination of 2nd step sample units. If both steps are needed, acceptance/rejection is based on the total sample results.

3. Defect classifications are listed in the Score Sheet. For container types not included in the Score Sheet, (such as, semirigid), use section B-1 of the Score Sheet and criteria for heat seals as provided in the establishment's Partial Quality Control (PQC) program or Total Quality Control (TQC) system.

C. Materials Needed

1. A copy of this FSIS Directive.

2. FSIS Form Nos. 7520-1 and 7520-2.

3. Acceptable equipment and facilities.

D. Basic for selection of samples

1. Lot and Sample Identification. Complete Section A of the Score Sheet for lot identification.

2. Sample Size. How to determine the number of containers needed:

a. Select the appropriate sampling plan from Table 1 of the Score Sheet. The sampling plan is based on the size of the lot.

b. The normal sampling plan will be used for routine examinations or when there is a reason to suspect the integrity of the container.

c. The tightened sampling plan will be used for lots which failed previous condition of container examinations or when directed. (Do not examine a previously failed lot unless evidence is presented that the lot has been reconditioned or sorted and the sorted defective containers are made available for examination.)

E. Random Sampling

Selection of random numbers. The random numbers table may be used to select your random numbers. Use the examples outlined in Attachment 1 to determine the number of random numbers you will need.

F. Preliminary Scanning of Shipping Containers

Before drawing the sample, conduct an overview of the entire lot to determine if there are any abnormal conditions (such as, wet cases, ruptured containers, corroded or leaking containers, damaged cases or containers). If such conditions are noted, the lot may be rejected without sampling. (Note, when there is obvious forklift or transportation damage, the inspector may permit removal of the damaged containers without rejecting the lot provided the damage is not a prevailing condition throughout the lot. This would also apply to lots not selected for examination where similar conditions prevail.)

G. Sample Selection

1. For double sampling, select the random numbers, and identify and mark the shipping cases for both steps. Be sure to distinguish between

1st and 2nd step (for example, an "X" for first step and "XX" for 2nd step). The establishment removes the marked cases. At this time, removal of the 2nd step sample portion from the lot is at the establishment's option.

2. For single sampling (tightened sampling), select the random numbers, and identify and mark the shipping cases.

H. Examining, Classifying and Recording Defects

1. Perform sample unit examinations after the 10 day incubation period has elapsed. This will allow for potential microbial action.

2. Examine each sample unit for the defects shown on the Score Sheet. Defects not listed on the Score Sheet, should be classified in blocks 104 or 208, whichever is applicable. Record all results on a Score Sheet. Label removal is only required when there is evidence of stains or damage or when container overwraps obscure visual examination.

3. Product containers with defects that are not part of the sample must be removed and handled per paragraphs I.3. and J.

4. When two or more defects are found on the same sample unit and indicate the same cause, the defects are considered related and scored once. For example, if two locations are corroded, score once. If more than one related defect is found and one is critical and the other is major, score once as critical. If the defects on the sample unit indicate different causes, then the defects are considered unrelated and scored as separate defects. For example, if a can is dented and has a sharp seam, two defects would be scored.

5. If you notice a reoccurence of scorable or unscorable defects, you may note this in the remarks section of the Score Sheet as a reminder to conduct further investigations. (Note: An unscorable defect is a defect often referred to as a minor defect. A minor or unscorable defect has no adverse effect on container integrity.)

I. Decision on Acceptance

1. Normal sampling. After the 1st step is completed, the lot may be accepted or rejected or 2nd step sampling may be completed. When 2nd step is completed, the results are combined with 1st step results and a decision is made to accept or reject the lot.

2. Tightened sampling. The lot is either accepted or rejected based on sample results.

3. If swollen containers (Defect #101) are found and the container(s) exhibits no obvious mechanical defect, the lot must be retained pending laboratory analysis. Notify your supervisor and the Microbiologist-In-Charge at the designated FSIS laboratory. For establishments under a IQC system or a PQC program for finished product inspection in accordance with 318.309 and/or 381.309, follow the procedures

outlined in the TQC system or the PQC program.

J. Defective Sample Unit Disposition

1. Containers scored critical with obvious mechanical defects must be destroyed.

2. Whenever any major defects are found in the sample, the establishment may decide on the disposition of these containers.

3. For establishments under a TQC system or a PQC program, defective sample units will be disposed of as outlined in the system or Program.

K. Disposition of Rejected Lots

The establishment must provide a written proposal to the inspector before lot disposition. The proposal must include disposition of all defective containers in accordance with 318.309 (d)(2)(ii) and/or 381.309 (d)(2)(ii) of the regulations. The inspector must compare the establishment's proposal with any FSIS instructions given for that lot.

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PART 2 OF 2

PROCEDURES FOR CONDITION OF CANNED PRODUCT CONTAINER EXAMINATION
Attachments

1-Examples of Container Score Sheet, FSIS Form 7520.1
(See Amend. 1 dated 9-8-88 of the directive.)
2-Examples of Condition of Container Examination
(See next page)
3-Random Numbers
(See paper copy of the directive.)
4-Random Numbers Worksheet for Example 1.0
(See paper copy of the directive.)
5-Random Numbers Worksheet for Example 2.0
(See paper copy of the directive.)

FSIS DIRECTIVE 7520.2

ATTACHMENT 2

EXAMPLES OF CONDITION-OF-CONTAINER EXAMINATION

Example 1.0 A lot of 28,800 metal cans is to be examined under the normal sampling plan. The lot is palletized and cased - 2400 cases (12 cans per case) arranged on 50 pallets each holding 48 cases. The sample size is 228 sample units (cans) for the first step. (See Section C of the Score Sheet for sampling plans.)

You have decided to take 1/2 of the maximum number of cans from a case permitted in Table 2 of the Score Sheet; that is, 3 cans from each case. The selection of 228 cans for the first step proceeds as follows:

1.1 How to determine the total number of cases to examine:

228 (sample units required) = 76 (cases to examine) 3 (No. of cans/cases to examine)

(228 ? 3 = 76)

If the number of cases to be examined is greater than the number of pallets, a case(s) will be drawn from each pallet.

1.2 How to determine the total number of cases per pallet to be examined:

76 (cases to examine) = 1 case per pallet plus 26 cases
50 (No. of pallets) (1 more from each of 26 pallets)

1.3 Designate numbers for each pallet from 1 through 50 on a Random Numbers Worksheet. Remember there are 48 cases on each pallet.

1.4 Draw 1 usable number (1 through 48) from the random number table. This indicates the case to be drawn from the first pallet. Repeat the process for each of the remaining 49 pallets.

1.5 Draw 26 usable numbers (1 through 50) from the random numbers table. These 26 numbers indicate the 26 additional pallets from which to select the additional cases.

1.6 Repeat the case selection procedure in 1.4, drawing 26 usable numbers to identify the 26 additional cases needed. (One case from each of the 26 pallets selected in 1.5.) Select another random number if a case number was previously selected for that pallet.

1.7 For 2nd step sampling, 288 cans are needed. Two cases from 46 pallets and 1 case from 4 pallets would be selected. Thus, select 4 random numbers from 1 through 50 to determine the four pallets from which only ne case will be drawn. Draw two usable numbers (1 through 48) for each pallet requiring selection of two cases and one usable number (1 through 48) for each pallet requiring the selection of one case. For individual pallets, if any numbers from first step are duplicated, select additional numbers so that no case is sampled more than once.

1.8 Assign cases on each pallet consecutive numbers from 1 through 48 using a predetermined pattern (such as, top to bottom, left to right).

1.9 Group the cans in each case into 4 adjacent sections of 3 cans. For example, the cans could be sectioned as follows:

Figure

(See paper copy of the directive.)

When looking at the cans in the first case to be examined, you may start with section 1. The second case to be selected may have cans examined from section 4. The third case sample units may be from section 2 and the fourth case sample units from section 3. This cycle should be repeated until all sampling is completed.

Consider the situation where you might have cases containing 24 cans each. You decide to look at 6 cans from each of a predetermined number of cases. The sectioning of the cans could be as follows:

Figure

(See paper copy of the directive.)

The cycle could be as follows:

Case 1	Section 2
Case 2	Section 3
Case 3	Section 4
Case 4	Section 1
Case 5	Section 2
Case 6	Section 3
Case 7	Section 4
Case 8	Section 1
Case 9	Section 2
etc.	etc.

Example 2.0 A lot of 28,800 metal cans is to be examined under the normal sampling plan. The lot is palletized and cased - 2.400 cases (12 cans per case) arranged on 80 pallets, each holding 30 cases. The sample size is 228 sample units (cans) for the first step.

You have decided to take the maximum number of cans from a case as specified in Table 2 of the Score Sheet; that is, 6 cans from each case. The selection of 228 cans for the first step proceeds as follows:
2.1 228 (sample units required = 38 (cases to examine)
6 (No. of cans/cases to examine)
(228 ? 6 = 38)
The number of cases to be examined is less than the number of pallets. Therefore, you will use the table of random numbers to select the pallets from which you will draw one case per pallet.

2.2 Designate numbers for each pallet from 1 through 80 on a Random Numbers Worksheet.

2.3 Draw one usable number (1 through 80) from the random numbers table. This number indicates the first of 38 pallets to be selected. Repeat the process until you have 38 pallets identified. (Remember there are 30 cases on each pallet.)

2.4 Draw one usable number (1 through 30) from the random numbers table. This number indicates the case to be drawn from the first pallet selected in 2.3 above. Repeat the process for each of the remaining 37 pallets.
2.5 For 2nd step sampling, repeat 2.1 through 2.4 to draw a set of random numbers based on 288 cans. For individual pallets, if any numbers from 1st step sampling are duplicated, select additional numbers so that no case is sampled more than once.

2.6 Follow 1.8 for case numbering and 1.9 for case sectioning.
Example 3: This lot contains 50 pallets (48 cases each--6 cans per case). Since 19 pallets were distributed, only 31 pallets are available for sampling. The remaining portion of the lot consists of 8,928 cans. Follow procedures outlined above in Examples 1.0 and 2.0. Results may require action regarding the 19 pallets not available for examination. Make a note in the remarks section of the Score Sheet that not all cans from the lot were available.