

4.2 Examination of container. After processing, the container shall be visually examined for compliance with 3.1.4, 3.1.5, and 3.1.9. Defects and defect classifications are listed in table II.

TABLE II. Filled, sealed and processed container defects 1/

1/ The following procedure may be used by inspection personnel to examine for filled, sealed and processed container defects on a consistent basis:

1. Remove tape from one end of protective sleeve only.
2. Remove tray from open end of protective sleeve.
3. Observe interior of sleeve for signs of food product/wetness as this may indicate a potential defect.
4. Observe all sides of tray/lid for obvious leaks.
5. Set tray on flat surface, lid up and observe for apparent swelling. As there is a maximum requirement for allowable residual gas, appearance of the lid should typically range from flush with the surface of the tray flanges to somewhat concave from applied vacuum.
6. With the tray still on a flat surface, press down on the lid with both hands (palms down) and apply a medium force (e.g., 30-40 Pounds). Listen and look for signs of air or food product leakage.
7. Examine lid surface for cuts, holes, leaks, abrasions, seal width, continuous seals, etc. Focus attention to where the lid body interfaces the seal area. If the lid material overhangs the tray flange at the outer edges, lift lid material slightly and examine where the underside of the lid contacts the tray flange. This area may be slightly wetted if a non-continuous seal or other defect is present.
8. Hold tray with lid down and examine the tray body for holes, cuts, cracks, etc. or any areas where wet or dry food product is apparent.
9. Record any defects in accordance with Table II.
10. Re-insert tray into sleeve and re-tape.



Polymeric Tray With Protective Sleeve

4.2 Examination of container. After processing, the container shall be visually examined for compliance with 3.1.4, 3.1.5, and 3.1.9. Defects and defect classifications are listed in table II.

TABLE II. Filled, sealed and processed container defects 1/

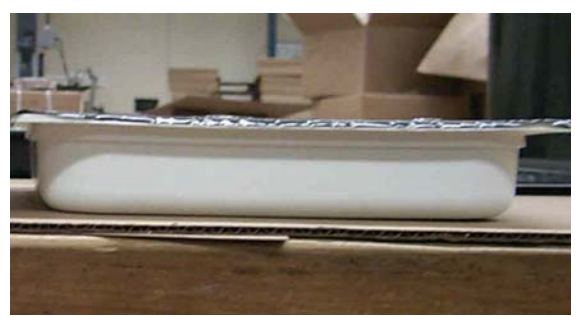
Category	Defect
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Critical Major A Major B Minor

General

1

Swollen container.



Conforming Container (Non-Scoreable)



Swollen Container

2

Tear, crack, cut, hole, or if a multi-layered laminate is used, abrasion through more than one layer of the tray or through the barrier (e.g., foil) layer of the lid material or leakage through any seal or surface.



Leakage Through Seal



Hole in Lid

3

Closure seal not continuous along tray flange surface.



Non-Continuous Seal

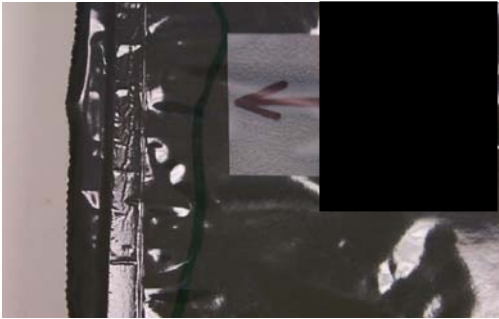


Leakage Under a Non-Cont. Seal

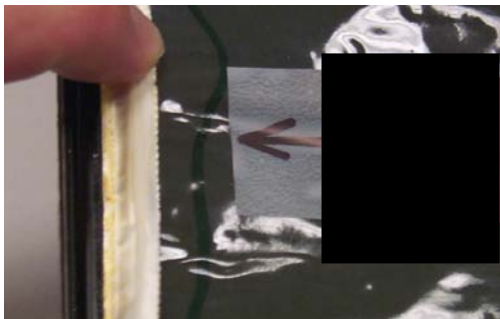
TABLE II. Filled, sealed and processed container defects (Continued) 1/

Category	Defect
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Critical Major A Major B Minor

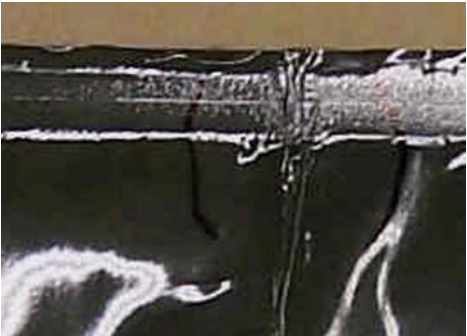


Non-Continuous Seal



Leakage Under same Seal

4 Foldover wrinkle extending into the seal such that the closure seal is reduced to less than 1/8 inch.



Foldover Wrinkle Across Seal

5 Presence of delamination when a multi-layered laminate is used. 3/

3/ Delamination defect classification:

Critical - Evidence of outer ply delamination such that the adjacent ply in the lid body is exposed or evidence of multi ply delamination such that the food contact layer is exposed. Any evidence of outer ply delamination of the tray body or internal layer separation within the tray body due to, for example, poor adhesion between layers.



Internal Layer Separation

TABLE II. Filled, sealed and processed container defects (Continued) 1/

Category			Defect
<u>Critical</u>	<u>Major A</u>	<u>Major B</u>	<u>Minor</u>
	101		Unclean container. <u>4/</u>
	102		Any impressions or design on the seal surfaces which conceals or impairs visual detection of seal defects.
		151	Presence of delamination when a multi-layered laminate is used. <u>3/</u>

3/ Delamination defect classification:

Major B - Delamination of the outer ply in the lid seal area that can be propagated to expose the adjacent ply at the food product edge of the lid. The separated outer ply shall be grasped between thumb and forefinger and gently lifted toward the food product edge of the seal or if the separated area is too small to be held between thumb and forefinger, a number two stylus shall be inserted into the delaminated area and a gentle lifting force applied against the outer ply. If separation of the outer ply can be made to extend to the product edge of the seal with no discernible resistance to the gentle lifting, the delamination shall be scored as a Major B defect. Additionally, spot delamination of the outer ply in the body of the lid that can be propagated beyond its initial borders is also a Major B defect. To determine if the delaminated area is a defect, use the following procedure: Mark the outside edges of the delaminated area using a bold permanent marking pen. Open the tray and remove the contents. Cut the lid on opposing sides of the delaminated area not closer than 3/16 inch from the delaminated area. Hold the delaminated area between the thumb and forefinger of each hand with both thumbs and forefingers touching each other. The delaminated area shall then be rapidly flexed 10 times by rotating both hands in alternating clockwise-counter clockwise directions. After flexing, the separated outer ply shall be grasped between thumb and forefinger and gently lifted away from the lid surface or if the separated area is too small to be held between thumb and forefinger, a number two stylus shall be inserted into the delaminated area and a gentle lifting force applied against the outer ply. Any propagation of the delaminated area, as evidenced by the delaminated area exceeding the limits of the outlined borders, shall be scored as a Major B defect.



Outer- Ply Delamination - Propagated



Outer- Ply Delamination - Propagated

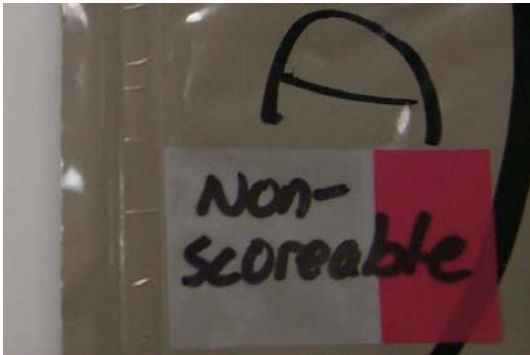
TABLE II. Filled, sealed and processed container defects (Continued) 1/

Category				Defect
<u>Critical</u>	<u>Major A</u>	<u>Major B</u>	<u>Minor</u>	

201 Presence of delamination when a multi-layered laminate is used. 3/; 7/

3/ Delamination defect classification (Continued):

Minor - Minor delamination of the outer ply in the lid seal area is acceptable and shall not be classified as a minor defect unless it extends to within 1/16 inch of the food product edge of the seal. Isolated spots of delamination in the body of the lid that do not propagate when flexed as described above shall be classified as minor. Post-retort wrinkling of the outer ply in the lid seal area shall also be scored as a minor defect. Note: Post-retort wrinkles of the outer ply are typically perpendicular to the flange direction, in a straight line, and extend from within the food product area to the outer edges of the lid.



Outer-Ply Delamination – Post-retort (Non-Scoreable)



Outer-Ply Delamination – Post-retort

The following additional guidance is provided for scoring Minor 201 delamination:

If found within 1/16 inch of the FPE, post-retort wrinkles are technically scoreable as minor 201 defects. However, USDA and vendors should use their best judgment when scoring these wrinkles. As such, post-retort wrinkles should be scored as a minor defect only if they span the entire width of seal.

202 Color does not contribute to woodland camouflage.



Color not Woodland Camouflage

TABLE II. Filled, sealed and processed container defects (Continued) 1/

Category				Defect
<u>Critical</u>	<u>Major A</u>	<u>Major B</u>	<u>Minor</u>	

203 Presence of any permanent tray body deformation such that deformed area is discolored and roughened in texture.

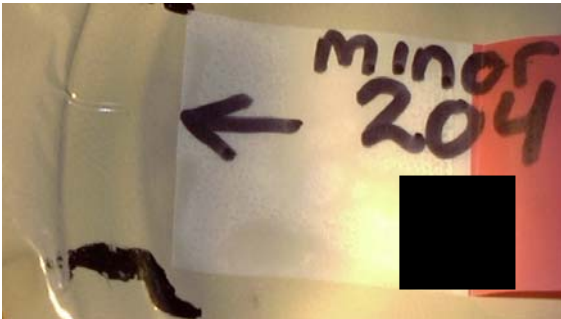


Tray Body Deformation



Tray Body Deformation

204 Areas of “wave-like” striations or wrinkles along the seal area that span the entire width of seal. 4/; 7/



Wrinkle Across Seal Width – Fingernail “Catches”



Striation (Non-Scoreable)



Striation (Non-Scoreable)



Wrinkle Across Seal Width, but Fingernail Doesn’t “Catch” (Non-Scoreable)

TABLE II. Filled, sealed and processed container defects (Continued) 1/

Category	Defect
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Critical Major A Major B Minor

The following additional guidance is provided for scoring Minor 204 defects:

Striations or wrinkles that occur during sealing are technically scoreable as minor 204 defects. However, USDA and vendors should use their best judgment when scoring them.

As such, striations or wrinkles should be scored as minor 204 defects only if they:

- extend across the full width of seal, and
- for wrinkles, if running a fingernail across it (along the length of flange), the fingernail "catches" on one or more of the wrinkles.

Type I Products

6

Abrasion on the lid material within 1/16 inch of food product edge of seal such that barrier (e.g., foil) layer of the lid material is exposed. 7/



Foil Exposed at FPE

7

Presence of entrapped matter within 1/16 inch of the food product edge of seal or entrapped moisture or vapor within 1/16 inch of the food product edge of seal that results in less than 1/16 inch of defect free seal width at the outside edge. 2/; 7/



Entrapped Matter



Entrapped Matter

TABLE II. Filled, sealed and processed container defects (Continued) 1/

Category	Defect
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Critical Major A Major B Minor



Entrapped Matter

103

Closure seal width less than 1/8 inch. 5/; 7/



Thin Seal - Long Side



Thin Seal - Corner

205 Presence of any seal defect or anomaly (for example, entrapped moisture, gases, etc.) within 1/16 inch of food product edge of seal. 5/; 7/

5/ The following shall be scored as minor defects if present within 1/16 inch of the food product edge of seal:

a. Small concave impressions or cavities indicating slight tray imperfections or hard particulates affixed to the seal head and contacting the lid and tray.



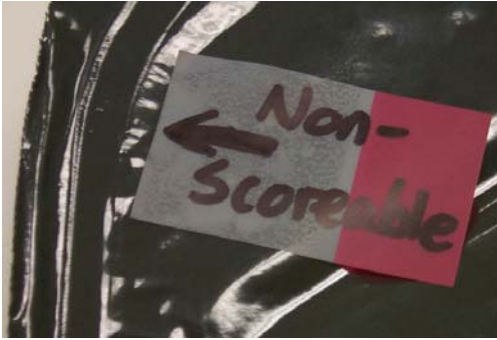
Concave Impression – Tray Imperfection

TABLE II. Filled, sealed and processed container defects (Continued) 1/

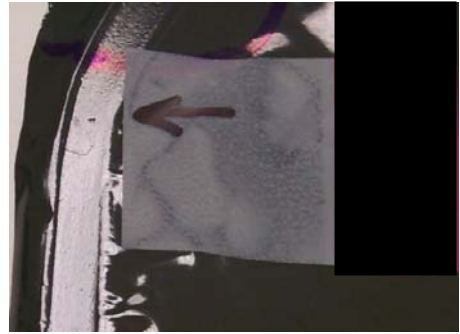
Category	Defect
----------	--------

Critical Major A Major B Minor

b. Small (i.e., 1/32 inch or less in any direction) convex bumps or points on the seal area indicating small imperfections on the seal head. NOTE: This anomaly is typically visible on successive trays coming off the heat sealer.



Seal Head Imperf. – Outside 1/16” of FPE



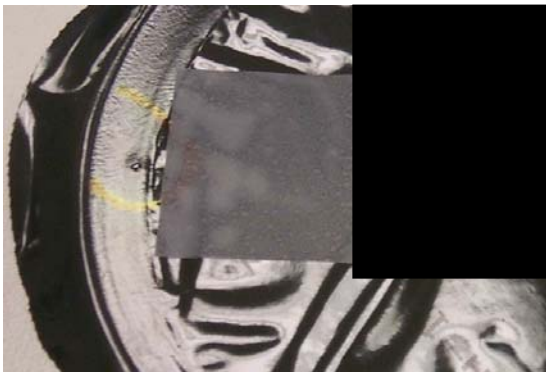
Seal Head Imperf. – Within 1/16” of FPE

c. Minor impressions or scorching of the top layer of the lid material on the seal area indicating soft particulates on the seal head being “burned-off” during sealing. NOTE: This anomaly is typically visible on successive trays coming off the heat sealer.

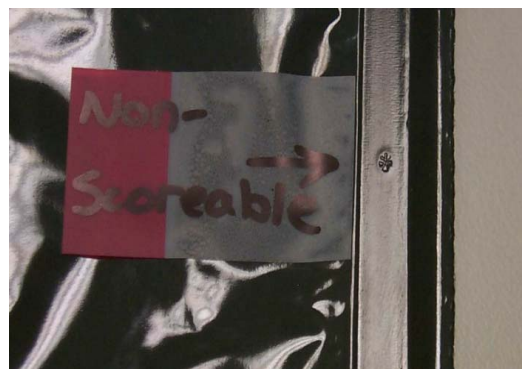


Scorching

d. Anomalies caused by entrapped moisture or vapor (which typically appear as concave spots on the tray flange surface) that result in less than 1/8” of defect free seal width at the outside edge of these spots.



Entrapped Moisture or Vapor
(Non-Scoreable)



Entrapped Moisture or Vapor
(Non-Scoreable)

TABLE II. Filled, sealed and processed container defects (Continued) 1/

Category	Defect
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Critical Major A Major B Minor

2/ The following shall be scored as minor defects if present within 1/16 inch of the food product edge of seal:

- e. For solid products only, anomalies caused by entrapped matter that result in less than 1/8" but not less than 1/16" of defect free seal width at the outside edge of these spots. Solid products would include eggs, stuffing, mashed potatoes, rice, lasagnas, bakes, and other items possessing minimal or no capability for hydraulic stresses during transport, and would exclude items packed in brine, gravy, and/or other low viscosity sauces.

The following additional guidance is provided for scoring Minor 204d/e defects:

Entrapped matter is scored as before, i.e., if within 1/16 inch of the food product edge then it is a critical defect, regardless of defect-free seal width behind it.

Entrapped moisture or vapor within 1/16 inch of the food product edge can be scored as no defect, or a minor defect, or a critical defect, based on continuous defect-free seal width outside of the contaminated spot. Specifically, for entrapped moisture or vapor within 1/16 inch of the FPE:

- if $\geq 1/8$ inch of defect free seal outside spot = no defect
- if $< 1/8$ inch of defect free seal outside spot = minor defect
- if $< 1/16$ inch of defect free seal outside spot = critical defect

USDA has developed an Excel chart (below) on entrapped matter/moisture contamination for additional assistance in scoring Critical 7 and Minor 204d/e defects.

POLYMERIC TRAY DEFECTS CHART (Type I Products Only)								
Based on MIL-PRF-32004A March 05, 2001 Performance Specifications								
Updated on 11/02/01 to include Tray Pack PAT Meeting Inspection changes.								
Updated on 11-08-01 to include different defect examples (Lee B. - USDA)								
Updated on 11-09-01 after discussions between Lee Brothers, Donna McCarter and Robert Trotter								
Updated on 04-01-03 to include differentiations between "solid" and "non-solid" product entrapped matter								
Updated on 06/21/05 to update the defect name changes. Based on MIL-PRF-32004B w/change 01 24 FEB 05.								
ENTRAPPED MATTER (NON-SOLID PRODUCT)								
FOOD PRODUCT EDGE								
	# 1	# 2	# 3	# 4	# 5	# 6	# 7	# 8
1/16"						1/32"	1/32"	
1/16"						1/32"	1/32"	
1/16"								
*** measurements in cells represent seal area that is clear of defects.								
OUTSIDE SEAL EDGE								
	Critical 7	Critical 7	Critical 7	Non-scorable	Non-scorable	Critical 7	Critical 7	Critical 7
	Spot w/ 1/16" of FPE	Spot w/ 1/16" of FPE	Spot w/ 1/16" of FPE	Spot outside 1/16" & total seal width > 1/8"	Spot outside 1/16" & total seal width > 1/8"	Spot w/ 1/16" of FPE	Spot w/ 1/16" of FPE	Spot w/ 1/16" of FPE
ENTRAPPED MOISTURE OR VAPOR AND ENTRAPPED MATTER (SOLID PRODUCT)								
FOOD PRODUCT EDGE								
	# 1	# 2	# 3	# 4	# 5	# 6	# 7	# 8
1/16"						1/32"	1/64"	1/32"
1/16"						1/32"	1/64"	
1/16"								
OUTSIDE SEAL EDGE								
	Non-scoreable	Minor 205d/e	Critical 7	Non-scorable	Non-scorable	Critical 7	Minor 205d/e	Critical 7
	$\geq 1/8"$ defect free seal outside spot	between 1/16" & 1/8" dfs outside spot	$< 1/16"$ dfs outside spot	spot occurs $> 1/16"$ from FPE	spot occurs $> 1/16"$ from FPE	$< 1/16"$ dfs outside spot	between 1/16" & 1/8" dfs outside inner spot	$< 1/16"$ dfs outside spot
1).	ARE SEAL WIDTHS ON EITHER SIDE OF A DEFECT ADDED TOGETHER TO DETERMINE TOTAL DEFECT FREE SEAL AREA ? Seal width is total available width at a particular point along the flange (with or without contamination present).							
2).	Discuss difference between MAJ A 103 and Minor 205d. (example: why is #2 on first chart different than #2 on second chart?) Major A 103 is designed to find seal widths that are thin due to poor sealing practices, faulty trays, etc. Entrapped matter (non-solid product) before, i.e., if within 1/16" of FPE then it is a critical, regardless of defect-free seal width behind it. The new change is that entrapped moisture or entrapped matter (solid product) within 1/16" of FPE can be scored as nothing, minor, or critical, based on continuous defect-free seal width outside contaminated spot.							
3).	DSCP will advise vendors and USDA contractually as to which products are "solid" in nature. Solid products would typically include eggs, stuffed potatoes, rices, lasagnas, bakes, and other items possessing minimal or no capability for hydraulic stresses during transport, and would exclude items packed in brine, gravy, and/or other low viscosity sauces.							

Additional Guidance:

3.1.6 Protective sleeve. The sleeve shall protect the tray, lid, and seals from physical damage. The maximum height of the filled, sealed and processed tray with protective sleeve shall not exceed 2-1/8 inches. The length of the protective sleeve shall cover the entire tray flange, and shall not exceed 12-13/16 inches. The width of the protective sleeve shall fit snugly against the tray flange so as to restrict the sliding motion of the tray within the sleeve. The top and bottom faces of the sleeve at the open ends shall be compressed in such a manner so as to keep the top sleeve face flush against the tray lid and seams (see 6.4). The tray shall be restrained within the sleeve, at both ends, in such a manner so as to prevent the tray from sliding out. *The sleeve shall provide added stacking strength to the tray.* The color of all inside and outside surfaces of the sleeve shall be natural kraft, tan, or dull gray. A label with the following instructions shall be printed, stamped, or otherwise applied onto the protective sleeve, in a manner that does not damage the sleeve, with permanent ink of any contrasting color. Type size of the label shall be no smaller than shown below, but can be larger.



Proper Stack & Restraint Combo



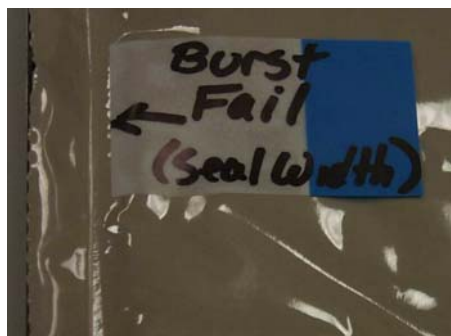
Improper Stack & Restraint Combo

4.3.8 Internal pressure.

4.3.8.1 Destructive. Internal pressure resistance... Any rupture of the container (i.e., through tray, lid or closure seal) or *evidence of any seal separation greater than 1/16 inch or minimum closure seal width less than 1/16 inch shall be considered a test failure.*

4.3.8.2 Non-Destructive (Type I only). Internal pressure resistance resistance and container integrity shall be determined by using the approved Non-Destructive Static Compression Tester (ND Tester) or other test apparatus expressly approved by the Government ...

4.3.8.2.1 Internal pressure resistance. When determining internal pressure resistance in accordance with 4.3.8.2, the following criteria shall apply: (a) Any rupture of the container (i.e., through tray, lid or closure seal) or *evidence of any seal separation greater than 1/16 inch or minimum closure seal width less than 1/16 inch shall be considered a test failure.* The tray tested shall be withheld from the lot. (b) Any tray passing the ND test and possessing a minimum closure seal width greater than 1/8 inch may be placed back into the lot.



Additional Guidance (Continued):

D-3 PACKING (From all Poly Tray Food Product PCRs)

- Packing for shipment to ration assembler. *Four filled, sealed, processed and sleeved polymeric trays shall be packed in a snug fitting fiberboard box conforming to style RSC-L, type CF, grade 275 of ASTM D 5118, Standard Practice for Fabrication of Fiberboard Shipping Boxes.* The sleeved trays shall be placed flat with the first two trays placed with the lids together and the next two trays with the lids together. The box shall be closed in accordance with ASTM D 1974, Standard Practice for Methods of Closing, Sealing, and Reinforcing Fiberboard Shipping Containers.



Proper Box & Liner Height



*Improper Box & Liner Height
Scored as Inadequate Workmanship*

Additional Guidance for Army Veterinary Inspection (AVI) Personnel:

- Lid strain from excessive abuse. Polymeric trays that undergo excessive abuse (e.g., falling off trucks, etc.) may exhibit lid strain with or without accompanying product leakage. Lid strain is the internal separation of one or more layers of the lid material from the tray flange caused by physical abuse, not a deficiency of the lid material. Polymeric trays that exhibit lid strain should be examined carefully by AVI personnel to determine if any material (product, moisture, oils, etc.) is leaking or has leaked through the strained area. If there is any signs of leakage, the tray should be disposed of. If there are no signs of leakage, the tray should preferably be disposed of. If not, it should be heated and consumed immediately (and inspected again after heating, prior to opening for consumption). Heated, but unopened trays exhibiting lid strain should not be reheated.



Lid Strain Without Leakage



Lid Strain Without Leakage