

SECTION C

This document covers shelf stable beef stew packaged in a polymeric tray for use by the Department of Defense as a component of operational rations.

C-1 ITEM DESCRIPTION

PCR-B-044A, BEEF STEW, PACKAGED IN A POLYMERIC TRAY, SHELF STABLE

C-2 PERFORMANCE REQUIREMENTS

A. Product standard. A sample shall be subjected to first article (FA) or product demonstration model (PDM) inspection as applicable, in accordance with the tests and inspections of Section E of this Performance-based Contract Requirements (PCR) document. The approved sample shall serve as the product standard. Should the contractor at any time plan to or actually produce the product using different raw material or process methodologies from the approved product standard, which result in a product noncomparable to the product standard, the contractor shall submit a replacement FA or PDM for approval. In any event, all product produced must meet all requirements of this document including product standard comparability.

B. Commercial sterility. The packaged food shall be processed until commercially sterile.

C. Shelf life. The packaged product shall meet the minimum shelf life requirement of 36 months at 80°F.

D. Appearance.

(1) General. The finished product shall be a mixture of cooked beef with potatoes, carrots, mushrooms, onions, and celery in gravy. The finished product may have color from the sauce. The finished product shall be free from foreign materials.

(2) Beef. The cooked beef dices shall be produced from whole muscle beef cuts, and chunking and forming shall not be allowed. The cooked whole muscle beef dices shall have a brown cooked beef color. At least 65 percent by weight of the cooked beef dices in the finished product shall be not less than 3/4 inches and not greater than 1-1/2 inches. The packaged food shall be practically free of bone or bone fragments, cartilage, coarse connective tissue, tendons or ligaments, and glandular material.

(3) Vegetables.

a. Potatoes. The cooked potatoes shall be dices and shall be not less than 1/2 inch in size and shall be an off-white color.

b. Carrots. The cooked carrots shall be dices and shall be approximately 1/2 inch in size and shall be an orange color.

c. Mushrooms. The cooked mushrooms shall be slices and shall be a brown color.

d. Onions and celery. The cooked onions shall be pieces and shall be translucent. The cooked celery shall be pieces and shall be a pale green color.

(4) Gravy. The gravy shall be glossy, slightly thick, and shall be a brown color with flecks of spices.

E. Odor and flavor. The packaged food shall have a cooked beef, potato, carrot, mushroom, onion, and savory gravy odor and flavor. The packaged food shall be free from foreign odors and flavors.

F. Texture.

(1) Beef. The cooked whole muscle beef dices shall be moist and tender and shall not be mushy. The cooked whole muscle beef dices shall have pull apart muscle fiber tendencies representative of whole muscle beef.

(2) Vegetables. The cooked vegetables shall be slightly soft and tender.

(3) Gravy. The gravy shall be smooth and slightly to moderately thick.

G. Net weight. The average net weight shall be not less than 92 ounces (2608 grams). The net weight of an individual polymeric tray shall be not less than 90 ounces (2552 grams).

H. Drained weight. The average drained weight of the beef and vegetables (combined) shall be not less than 50.0 ounces (1418 grams). The drained weight of the beef and vegetables (combined) in an individual polymeric tray shall be not less than 48.0 ounces (1361 grams).

I. Palatability and overall appearance. The finished product shall be equal to or better than the approved product standard in palatability and overall appearance.

J. Analytical requirements.

(1) Protein. The protein content shall be not less than 8.5 percent.

(2) Fat. The fat content shall be not greater than 4.0 percent.

(3) Salt. The salt content shall be not less than 0.5 percent and not greater than 1.3 percent.

SECTION D

D-1 PACKAGING

A. Preservation. Product shall be filled into polymeric trays which shall conform to the requirements of section 3 of MIL-PRF-32004, Packaging of Food in Polymeric Trays, Type I, Retortable products. Government verification testing and inspection of trays, lids, sleeves and fiberboard pads, as applicable, shall be in accordance with section 4 of MIL-PRF-32004 and the Quality Assurance Provisions of Section E of this Performance-based Contract Requirements document.

D-2 LABELING

A. Polymeric tray body. The polymeric tray body shall be clearly printed or stamped, in a manner that does not damage the tray, with permanent ink of any contrasting color, which is free of carcinogenic elements. One end of the polymeric tray (see figure 1 of MIL-PRF-32004) shall be marked with the product name and number of portions. If the tray body end markings are not readily legible in low light conditions, a small, easily legible label shall be applied, but not over any existing tray markings. All other markings may be applied along the tray body side. The marking of trays with the product name, lot number and filling equipment number shall be applied prior to processing. Additional tray marking may be applied before or after processing. 1/

Tray body markings shall include:

- (1) Product name. Commonly used abbreviations may be used.
- (2) Tray code includes: 2/
 - Lot number
 - Filling equipment identification number
 - Retort identification number
 - Retort cook number
 - Official establishment number

1/ As an alternate method, tray body markings may be clearly printed or stamped onto the polymeric tray lid prior to processing, in a manner that does not damage the lid, with permanent ink of any contrasting color, which is free of carcinogenic elements, provided that the required markings are applied onto the tray body after processing.

2/ The lot number shall be expressed as either a four-digit code or five-digit code. When using the four-digit code, begin with the final digit of the current year followed by the three-digit Julian code. For example, 14 February 2050 would be coded as 0045. When using the five-digit code, begin with the decade digit of the current year followed by the three-digit Julian code. For example, 14 February 2050 would be coded as 50045. The Julian code shall represent the day the product was packaged into the tray and processed. Sublotting (when used) shall be represented by an alpha character immediately following the four-digit or five-digit code. Following the four-digit or five-digit code and the alpha character (when used), the other required code information shall be printed in the sequence as listed above.

B. Polymeric tray lid. The lid shall be clearly printed or stamped in a manner that does not cause damage. Permanent ink of any contrasting color, which is free of carcinogenic elements, shall be used. As an alternate labeling method, a pre-printed self-adhering 0.002 inch thick clear polyester label printed with indelible contrasting color ink may be used.

Note: The font tested by DEVCOM Soldier Center was Microsoft Helvetica. The font used shall be similarly clear/easy to read as Helvetica. The recommended font sizes are as follows: 22 for the product name, 14 for “yield” and “to heat in water.” If an additional note is required on the label, it should also be in font size 14. All other information should be in font size 9.

(1) Lid labeling shall include:

Product name
Ingredients
Net weight
Name and address of packer
Official inspection legend
“Nutrition Facts” label in accordance with the Nutrition Labeling and Education Act (NLEA) and all applicable U.S. Department of Agriculture (USDA) regulations

(2) Lid labeling shall also show the following statements:

YIELD: Serves 18 portions of approximately 2/3 cup each.

TO HEAT IN WATER: Submerge unopened tray in water. Bring water to a boil. Simmer gently 35-40 minutes. Avoid overheating (tray shows evidence of bulging).

WARNING: Do not heat tray in oven.

TO TRANSPORT AFTER HEATING: Insert tray back into protective sleeve to protect during transport. If sleeve is unavailable, stack trays lid-to-lid with fiberboard pads in between.

CAUTION: Use care when opening as pressure may have been generated within the tray.

TO OPEN: Using a clean knife, cut the lidding around the inside perimeter of the tray seals.

SUGGESTION: Cut lid along 3 sides and fold over uncut portion. Fold back to keep unused portions protected. Stir before serving.

(3) The product shall be formulated and labeled in accordance with all USDA labeling regulations and policies. The lid shall be labeled with the following product name:

BEEF STEW

D-3 PACKING

A. Packing. Four filled, sealed and processed polymeric trays shall be packed with sleeves or fiberboard pads in a fiberboard shipping container constructed in accordance with style RSC-L of ASTM D5118/D5118M, Standard Practice for Fabrication of Fiberboard Shipping Boxes. The fiberboard shall conform to type CF, class D, variety SW, minimum burst grade 275 or ECT 44 of ASTM D4727/D4727M, Standard Specification for Corrugated and Solid Fiberboard Sheet Stock (Container Grade) and Cut Shapes. Type I trays shall be placed flat with the first two trays placed with the lids together and the next two trays with the lids together. Each box shall be closed in accordance with ASTM D1974/D1974M, Standard Practice for Methods of Closing, Sealing, and Reinforcing Fiberboard Boxes.

D-4 UNITIZATION

A. Unit loads. Unit loads shall be as specified in accordance with DLA Troop Support Form 3507, Loads, Unit: Preparation of Semiperishable Subsistence Items.

D-5 MARKING

A. Shipping containers and unit loads. Shipping containers and unit loads shall be marked in accordance with DLA Troop Support Form 3556, Marking Instructions for Boxes, Sacks, and Unit Loads of Perishable and Semiperishable Subsistence.

SECTION E INSPECTION AND ACCEPTANCE

The following quality assurance criteria, utilizing American National Standards Institute (ANSI)/American Society for Quality (ASQ) Z1.4, Sampling Procedures and Tables for Inspection by Attributes, are required. Unless otherwise specified, single sampling plans indicated in ANSI/ASQ Z1.4 will be utilized. When required, the manufacturer shall provide the Certificate(s) of Conformance to the appropriate inspection activity. Certificate(s) of Conformance not provided shall be cause for rejection of the lot.

A. Definitions.

(1) Critical defect. A critical defect is a defect that judgment and experience indicate would result in hazardous or unsafe conditions for individuals using, maintaining, or depending on the item; or a defect that judgment and experience indicate is likely to prevent the performance of the major end item, i.e., the consumption of the ration.

(2) Major defect. A major defect is a defect, other than critical, that is likely to result in failure, or to reduce materially the usability of the unit of product for its intended purpose.

(3) Minor defect. A minor defect is a defect that is not likely to reduce materially the usability of the unit of product for its intended purpose, or is a departure from established standards having little bearing on the effective use or operation of the unit.

B. Classification of inspections. The inspection requirements specified herein are classified as follows:

(1) Product standard inspection. The first article or product demonstration model shall be inspected in accordance with the provisions of this document and evaluated for appearance, odor, flavor, and texture. Any failure to conform to the performance requirements or any appearance or palatability failure shall be cause for rejection of the lot.

(2) Periodic review evaluation. The approved first article or product demonstration model shall be used as the product standard for periodic review evaluations. All food components that are inspected by the USDA shall be subject to periodic review sampling and evaluation. The USDA shall select sample units during production of contracts and submit them to the following address for evaluation:

COMBAT CAPABILITIES DEVELOPMENT COMMAND (DEVCOM) SOLDIER CENTER
FCDD-SCD-SCR
10 GENERAL GREENE AVENUE
NATICK, MA 01760-5000

One lot shall be randomly selected during each calendar month of production or as otherwise specified in the contract. Two (2) sample units shall be randomly selected from that one production lot. The two (2) sample units shall be shipped to DEVCOM Soldier Center within five (5) working days from the end of the production month from which they are randomly selected and upon completion of all USDA inspection requirements. The sample units will be evaluated for overall quality against the current first article or product demonstration model.

(3) Conformance inspection. Conformance inspection shall include the examinations/tests and methods of inspection cited in this section.

E-5 QUALITY ASSURANCE PROVISIONS (PRODUCT)

A. Product examination. The finished product shall be examined for compliance with the performance requirements specified in Section C of this Performance-based Contract

Requirements document utilizing the double sampling plans indicated in ANSI/ASQ Z1.4. The lot size shall be expressed in trays. The sample unit shall be the contents of one tray. The inspection level shall be S-3 and the acceptance quality limit (AQL), expressed in terms of defects per hundred units, shall be 4.0 for major defects and 6.5 for minor defects. Defects and defect classifications are listed in table I. The trays shall be heated in accordance with the heating instructions from the tray label prior to conducting any portion of the product examination. The samples for drained weight inspection shall be selected using the same sampling criteria as above.

TABLE I. Product defects 1/ 2/

Category		Defect
<u>Major</u>	<u>Minor</u>	
		<u>Appearance</u>
101		Finished product not a mixture of cooked beef or not potatoes or not carrots or not mushrooms or not onions or not celery or not in gravy.
102		Bone or bone fragment measuring more than 0.3 inch in any dimension.
	201	Cooked whole muscle beef not dices or not a brown cooked beef color. <u>3/</u>
	202	Cooked beef dices in the finished product not dimensions as specified. <u>4/</u>
	203	Total weight of cartilage, coarse connective tissue, tendons or ligaments, and glandular material more than 2.0 ounces (57 grams).
	204	Cooked potatoes not dices or are less than 1/2 inch in size or not an off-white color.
	205	Cooked carrots not dices or not approximately 1/2 inch in size or not an orange color.
	206	Cooked mushrooms not slices or not a brown color.
	207	Cooked onions not pieces or not translucent. Cooked celery not pieces or not a pale green color.

TABLE I. Product defects 1/ 2/ - Continued

Category		Defect
<u>Major</u>	<u>Minor</u>	
	208	Gravy not glossy or not slightly thick or not a brown color or not with flecks of spices.
		<u>Odor and flavor</u>
103		The packaged food does not have a cooked beef or not potato or not carrot or not mushroom or not onion or not savory gravy odor or flavor.
		<u>Texture</u>
	209	Cooked whole muscle beef dices not moist or not tender or is mushy.
	210	Cooked whole muscle beef dices do not have pull apart muscle fiber tendencies representative of whole beef.
	211	Cooked vegetables not slightly soft or not tender.
	212	Gravy not smooth or not slightly to moderately thick.
		<u>Net weight</u>
	213	Net weight of an individual polymeric tray less than 90 ounces (2552 grams). <u>5/</u>
		<u>Drained weight</u>
	214	Drained weight of the beef and vegetables (combined) in an individual polymeric tray less than 48.0 ounces (1361 grams). <u>6/</u>

1/ Presence of any foreign materials such as, but not limited to dirt, insect parts, hair, glass, wood, or metal, or any foreign odors or flavors such as, but not limited to burnt, scorched, rancid, sour, stale, musty or moldy shall be cause for rejection of the lot.

2/ Finished product not equal to or better than the approved product standard in palatability and overall appearance shall be cause for rejection of the lot.

3/ The requirement for whole muscle beef with no chunking and forming shall be verified by Certificate of Conformance (CoC).

4/ Verification that at least 65 percent by weight of the cooked beef dices in the finished product meet the dimensions of not less than 3/4 inch and not greater than 1-1/2 inches shall be measured by USDA on the first production lot of a contract cycle and annual PDM replenishment or if a new beef supplier is obtained. A visual examination for comparability to the PDM shall be conducted on all lots produced using the same beef supplier between PDM replenishments. If the visual examination is noncomparable to the PDM, then USDA shall measure the beef dices.

5/ Sample average net weight less than 92 ounces (2608 grams) shall be cause for rejection of the lot.

6/ Sample average drained weight of the beef and vegetables (combined) less than 50.0 ounces (1418 grams) shall be cause for rejection of the lot.

B. Methods of inspection.

(1) Commercial sterility. Commercial sterility shall be verified in accordance with USDA/Food Safety and Inspection Service (FSIS) regulations.

(2) Shelf life. The contractor shall provide a Certificate of Conformance that the product has a 36 month shelf life when stored at 80°F. Government verification may include storage for 6 months at 100°F or 36 months at 80°F. Upon completion of either storage period, the product will be subjected to a sensory evaluation panel for appearance and palatability and must receive an overall score of 5 or higher based on a 9 point quality scale to be considered acceptable.

(3) Net weight. The net weight of the filled and sealed polymeric tray shall be determined by weighing each sample unit on a suitable scale tared with a representative empty tray and lid. Results shall be reported to the nearest 1 ounce or to the nearest 1 gram.

(4) Drained weight. Weigh a U.S. Standard No. 8 sieve to obtain the sieve tare weight. The polymeric tray contents shall be poured into a flat-bottom container. A minimum of three times the volume of the polymeric tray of not less than 140°F and not greater than 190°F water shall be added to the container so as to cover the contents. The contents and water shall be gently agitated so as to liquefy rendered fat without breaking the beef dices or vegetables. The contents shall then be poured into a U.S. Standard No. 8 sieve in a manner

that will distribute the product over the sieve without breaking the beef dices or vegetables. The sieve area shall be such that the distributed product does not completely cover all the openings of the sieve. The sieve shall be tilted at such an angle to assure complete drainage of liquid from the product. Drain product for two minutes before determining the combined drained weight by subtracting the sieve tare weight from the gross weight. The drained weight shall be reported to the nearest 0.5 ounce or to the nearest 1 gram.

(5) Analytical. The sample to be analyzed shall be a one-pound composite of three filled and sealed polymeric trays that have been selected at random from one production lot. The composite sample shall be prepared (see NOTE) and analyzed in accordance with the following methods of the Official Methods of Analysis (OMA) of AOAC International:

<u>Test</u>	<u>Method Number</u>
Protein	992.15
Fat	960.39, 991.36, 2007.04, or 2008.06
Salt	935.47 or 971.27

Test results shall be reported to the nearest 0.1 percent. Government verification will be conducted through actual testing by a Government laboratory. Any result not conforming to the analytical requirement shall be cause for rejection of the lot.

NOTE: The USDA will use AOAC method 983.18 for preparation of the sample.

E-6 QUALITY ASSURANCE PROVISIONS (PACKAGING AND PACKING MATERIALS, POLYMERIC TRAY)

A. Packaging and labeling.

(1) Polymeric tray testing. For purposes of clarification, the polymeric tray without the lid will be referred to as the “tray” and the polymeric tray with the lid shall be referred to as the “container”. The tray, container and packaging materials, as applicable, in accordance with the lot size, sample unit, and inspection level criteria shall be examined for the performance characteristics listed in table I of MIL-PRF-32004, Packaging of Food in Polymeric Trays. Any test failure shall be classified as a major defect and shall be cause for rejection of the lot.

(2) Examination of container. The container shall be examined for the defects listed in table II of MIL-PRF-32004. The lot size shall be expressed in containers. The sample unit shall be one processed and labeled container. The inspection level shall be I and the AQL,

expressed in terms of defects per hundred units, shall be 0.65 for major A defects, 2.5 for major B defects and 4.0 for minor defects. Two hundred sample units shall be examined for critical defects. The finding of any critical defect shall be cause for rejection of the lot. The labeling defects are listed in table II as follows:

TABLE II. <u>Container labeling defects</u>		
Category		Defect
<u>Major A</u>	<u>Minor</u>	
101		Polymeric tray lid or body labeling missing or incorrect or illegible.
	201	When a pre-printed self-adhering label is used, the label not adhering to tray lid (for example, label raised or peeled back from edge to corner) or presence of any areas of gaps along the perimeter of the label where the label is not properly adhered.

(3) Label adhesive examination. When self-adhering labels are used, the adhesive shall be tested in accordance with ASTM D3330/D3330M, Standard Test Method for Peel Adhesion of Pressure-Sensitive Tape. In lieu of testing, a CoC shall be provided.

B. Packing.

(1) Shipping container and marking examination. The filled and sealed shipping containers shall be examined for the defects listed in table III. The lot size shall be expressed in shipping containers. The sample unit shall be one shipping container fully packed. The inspection level shall be S-3 and the AQL, expressed in terms of defects per hundred units, shall be 4.0 for major defects and 10.0 for total defects.

TABLE III. <u>Shipping container and marking defects</u>		
Category		Defect
<u>Major</u>	<u>Minor</u>	
101		Marking missing or incorrect or illegible.
102		Inadequate workmanship. <u>1/</u>
	201	Arrangement or number of polymeric trays not as specified.

1/ Inadequate workmanship is defined as, but not limited to, incomplete closure of container flaps, loose strapping, inadequate stapling, improper taping, or bulged or distorted container.

C. Unitization.

(1) Unit load examination. The unit load shall be examined in accordance with DLA Troop Support Form 3507, Loads, Unit: Preparation of Semiperishable Subsistence Items. Any nonconformance shall be classified as a major defect.

SECTION J REFERENCE DOCUMENTS

Unless otherwise specified, the applicable version of these documents is that which is active on the date of the solicitation or contract.

DEPARTMENT OF DEFENSE SPECIFICATION

MIL-PRF-32004 Packaging of Food in Polymeric Trays

(Copies of this document are available online at <https://quicksearch.dla.mil>)

DLA Troop Support Forms

Form 3507 Loads, Unit: Preparation of Semiperishable Subsistence Items

Form 3556 Marking Instructions for Boxes, Sacks, and Unit Loads of
Perishable and Semiperishable Subsistence

(These forms are available online at
<https://www.dla.mil/Troop-Support/Subsistence/Operational-rations/PCR-ACR/>)

NON-GOVERNMENTAL STANDARDS

AMERICAN SOCIETY FOR QUALITY (ASQ) www.asq.org

ANSI/ASQ Z1.4 Sampling Procedures and Tables for Inspection by
Attributes

AOAC INTERNATIONAL www.aoac.org

Official Methods of Analysis (OMA) of AOAC International

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SUPERSEDING
PCR-B-044
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ASTM INTERNATIONAL www.astm.org

D1974/D1974M	Standard Practice for Methods of Closing, Sealing, and Reinforcing Fiberboard Boxes
D3330/D3330M	Standard Test Method for Peel Adhesion of Pressure-Sensitive Tape
D4727/D4727M	Standard Specification for Corrugated and Solid Fiberboard Sheet Stock (Container Grade) and Cut Shapes
D5118/D5118M	Standard Practice for Fabrication of Fiberboard Shipping Boxes