PKG & QAP
A-A-20155D
14 October 2009
W/Change 01 28 Mar 16 ES16-024 (DSCP-SS-16-00454)
SUPERSEDING
A-A-20155C
3 December 2004

SECTION C

This document covers tuna packaged in flexible pouches, shelf stable for use by the Department of Defense as a component of operational rations.

C-1 ITEM DESCRIPTION

PACKAGING REQUIREMENTS AND QUALITY ASSURANCE PROVISIONS FOR CID A-A-20155D TUNA

Types, forms, colors, packing media, flavors, and salt/sodium level(s).

Type B – Flexible Pouch
Form I – Chunk
Color a – Light
Packing Media 1 – Water
Flavor 1 – Lemon Pepper
Salt/sodium level (a) – Regular (no more than 1.5 percent salt)

Type B – Flexible Pouch
Form I – Chunk
Color a – Light
Packing Media 1 – Water
Flavor 3 – Sweet and Spicy
Salt/sodium level (a) – Regular (no more than 1.5 percent salt)

Type B – Flexible Pouch
Form II – Solid
Color b – White (Albacore)
Packing Media 1 – Water
Unflavored
Salt/sodium level (a) – Regular (no more than 1.5 percent salt)

Packages.

Package C -	Meal, Ready-to-Eat™ (MRE™)
Package J -	First Strike Ration® (FSR®)

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 the Packaging Requirements and Quality Assurance Provisions. 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 non comparable to the product standard, the contractor shall arrange for a new or alternate FA or PDM approval. In any event, all product produced must meet all requirements of this document including product standard comparability.

B. Shelf life. The packaged product shall meet the minimum shelf life requirement of 36 months at 80^{o}F.

C. General. The product shall be tuna packed in water.

D. Appearance.

(1) Type B, Form I, Color a, Packing media 1, Flavor 1. The lemon pepper tuna shall have a chunk light tuna appearance with black pepper pieces throughout.

(2) Type B, Form I, Color a, Packing media 1, Flavor 3. The sweet and spicy tuna shall have a chunk light tuna appearance and shall have a red to orange color with red pepper flakes throughout.

(3) Type B, Form II, Color b, Packing media 1. The unflavored tuna shall have a solid, white albacore tuna packed in water appearance.

E. Odor and Flavor.

(1) Type B, Form I, Color a, Packing media 1, Flavor 1. The lemon pepper tuna shall have an odor and flavor of chunk light tuna and shall have a lemon pepper odor and flavor.

(2) Type B, Form I, Color a, Packing media 1, Flavor 3. The sweet and spicy tuna shall have an odor and flavor of chunk light tuna with sweet, red pepper note and mild chili powder odor and flavor.

(3) Type B, Form II, Color b, Packing media 1. The unflavored tuna shall have a white albacore tuna odor and flavor.

F. Net weight.

(1) Package C.

a. Flavored tuna. The average net weight shall be not less than 4.5 ounces (128 grams). The net weight of an individual pouch shall be not less than 4.2 ounces (119 grams).

b. Unflavored tuna (Option 1). The average net weight shall be not less than 3.0 ounces (85 grams). The net weight of an individual pouch shall be not less than 2.7 ounces (77 grams).

(2) Package J.

a. Flavored tuna. The average net weight shall be not less than 4.5 ounces (128 grams). The net weight of an individual pouch shall be not less than 4.2 ounces (119 grams).

b. Unflavored tuna (Option 1). The average net weight shall be not less than 3.0 ounces (85 grams). The net weight of an individual pouch shall be not less than 2.7 ounces (77 grams).

c. Unflavored tuna (Option 2). The average net weight shall be not less than 2.6 ounces (74 grams). The net weight of an individual pouch shall be not less than 2.3 ounces (65 grams).

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

H. Analytical. The following analytical and microbiological tests shall be performed on the specified tuna product.

Tuna	To be performed	Acceptance Level
Salt/Sodium	X	level a
Methlymercury	X	
Histamine	X	

(1) Salt/Sodium testing shall be performed on the specified tuna product. All requirements, procedures and testing for salt/sodium shall be in accordance with A-A-20155D

(2) Testing for Methylmercury and histamine shall be performed using end-item verification testing for each lot. The test method shall be the AOAC 988.11 method for methylmercury testing. The test methods for histamine shall be AOAC 977.13 method for histamine testing or ELISA method Neogen Veratox for Histamine (AOAC-RI No. 070703). The test results for methylmercury shall be reported to the nearest 0.1 ppm. The test results for histamine shall be reported to the nearest 1 ppm.

SECTION D

D-1 PACKAGING

~~The specified product shall be filled into pouches and each pouch without the carton shall be packed in accordance with MIL-PRF-44073, Packaging of Food in Flexible Pouches, Type I.~~ Product shall be filled into pouches and sealed in accordance with MIL-PRF-44073, Packaging of Food in Flexible Pouches, Type I, Style 1.

D-2 LABELING

A. Pouches. Each pouch shall be correctly and legibly labeled. Printing ink shall be permanent black ink or any other contrasting color, which is free of carcinogenic elements. Prior to thermal processing of the pouches, the product name, lot number and filling

equipment number shall be applied. All other marking may be applied before or after thermal processing.

(1) Product name (not less than 1/8 inch high). Commonly used abbreviations may be used.

(2) Pouch code includes: 1/
Lot Number
Filling equipment identification number
Company code
Retort identification number and Retort cook number (Optional)
Time stamp (hour and minute of filling/sealing operation)

1/ The lot number shall be expressed as a four digit Julian code. The first digit shall indicate the year of production and the next three digits shall indicate the day of the year (Example, 14 February 2010 would be coded as 0045). The Julian code shall represent the day the product was packaged into the pouch and processed. Following the four digit Julian code, the other required code information shall be printed in the sequence as listed above.

NOTE: Commercial pouch graphics (colors, design and labeling) shall be submitted to the Contracting Officer for review and approval and to the US Army Natick Soldier Research, Development and Engineering Center (RDNS-CFF) for review.

D-3 PACKING

A. Packing. Not more than 40 pounds of product shall be packed in a fiberboard shipping box constructed in accordance with style RSC-L of ASTM D 5118/5118M, Standard Practice for Fabrication of Fiberboard Shipping Boxes. The fiberboard shall conform to type CF, class D, variety SW, grade 200 of ASTM D 4727/D 4727M, Standard Specification for Corrugated and Solid Fiberboard Sheet Stock (Container Grade) and Cut Shapes. Each box shall be closed in accordance with ASTM D 1974, Standard Practice for Methods of Closing, Sealing, and Reinforcing Fiberboard Boxes.

D-5 MARKING

A. Shipping containers. Shipping containers shall be marked in accordance with DSCP 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 ANSI/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 overall appearance and palatability. Any failure to conform to the performance requirements or any appearance or palatability failure, shall be cause for rejection of the lot. 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 USDC shall be subject to periodic review sampling and evaluation. The USDC shall select sample units during production of contracts and submit them to the following address for evaluation:

US Army Research, Development and Engineering Command
Natick Soldier Research, Development and Engineering Center
RDNS-CFF

15 Kansas Street
Natick, MA 01760-5018

One lot shall be randomly selected during each calendar month of production. Six (6) sample units of each item produced shall be randomly selected from that one production lot. The six (6) sample units shall be shipped to Natick within five working days from the end of the production month and upon completion of all USDC inspection requirements. The sample units will be evaluated for the characteristics of appearance, odor, flavor, texture and overall quality.

(2) Conformance inspection. Conformance inspection shall include the product examination and the methods of inspection cited in this section and in section 4 of MIL-PRF-44073.

E-5 QUALITY ASSURANCE PROVISIONS (PRODUCT)

A. Product examination. The finished product shall be examined for compliance with the performance requirements in A-A-20155D and specified in Section C of the Packaging Requirements and Quality Assurance Provisions document utilizing the double sampling plans indicated in ANSI/ASQ Z1.4. The lot size shall be expressed in pouches. The sample unit shall be the contents of one pouch. The inspection level shall be S-3 and the acceptable quality level (AQL), expressed in terms of defects per hundred units, shall be 1.5 for major defects and 4.0 for minor defects. Defects and defect classifications are listed in table I.

TABLE I. Product defects 1/ 2/

Category		Defect
Major	Minor	
		General
101		Product not type, form, color, packing media, flavor or salt/sodium level as specified.
102		Tuna not an odor and flavor typical of the species that has been subjected to proper handling and good manufacturing practices.

Color

103	Color, “Light” (Color a) or “white” (Color b), not in accordance with 21 CFR § 161.190 (a)(4).

TABLE I. Product defects 1/ 2/ Continued

Category		Defect
Major	Minor	
		Texture
104		Tuna not moist or not tender.
105		Tuna dry or stringy.
		Type B, Form I, Color a, Packing media 1, Flavor 1
106		Lemon pepper tuna not chunk light tuna appearance or not with black pepper pieces throughout.
107		Lemon pepper tuna not an odor or flavor of chunk light tuna or not a lemon pepper odor or flavor.
		Type B, Form I, Color a, Packing media 1, Flavor 3
108		Sweet and spicy tuna not a chunk light tuna appearance or not a red to orange color or not with red pepper flakes throughout.
109		Sweet and spicy tuna not an odor or flavor of chunk light tuna or not with a sweet, red pepper note or not mild chili powder odor or flavor.
		Type B, Form II, Color b, Packing media 1
110		Unflavored tuna not a solid white albacore tuna in water appearance.
111		Product not a white albacore tuna odor and flavor.
		Net weight
	201	Net weight of an individual pouch of flavored tuna less than 4.2 ounces (119 grams). 3/
	202	Net weight of an individual pouch of unflavored tuna (Option 1) less

TABLE I. Product defects 1/ 2/ Continued

Category		Defect
Major	Minor	
		than 2.7 ounces (77 grams). 4/
	203	Net weight of an individual pouch of unflavored tuna (Option 2) less than 2.3 ounces (65 grams). 5/

1/ Presence of any foreign materials such as, but not limited to dirt, insect parts, hair, glass, wood, 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/ Sample average net weight less than 4.5 ounces (128 grams) shall be cause for rejection of the lot.

4/ Option 1, sample average net weight less than 3.0 ounces (85 grams) shall be cause for rejection of the lot.

5/ Option 2, sample average net weight less than 2.6 ounces (74 grams) shall be cause for rejection of the lot.

B. Methods of inspection.

(1) Commercial sterility. Commercial sterility shall be verified in accordance with FDA 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 hedonic scale to be considered acceptable.

(3) Net weight examination. The net weight of the filled and sealed pouches shall be determined by weighing each sample on a suitable scale tared with a representative empty pouch. Results shall be reported to the nearest 0.1 ounce or to the nearest 1 gram.

(4) Methylmercury and histamine testing (Individual samples). The presence of methylmercury and histamine shall be tested using three pouches taken from a production lot. If the methylmercury and histamine results for each of the three individual samples are within the specified allowable levels cited in Box A below, the lot will be considered acceptable. Any test failure shall be classified as a critical defect and shall be cause for rejection of the lot.

Box A

Individual Test Results for Methylmercury and Histamine	
Maximum allowable level for one individual sample shall be:	
Methylmercury:	Not more than 1.0 ppm
Histamine:	Not more that 50 ppm

(5) Methylmercury and histamine testing (Composite samples). The presence of methylmercury and histamine shall be tested using three pouches taken from a production lot.

a. Preparation of Composite Sample. The composite sample method for methylmercury and histamine shall be derived from three individual sample pouches. Individually blend the contents of each individual pouch and then divide the contents of each individual pouch into two approximately equal portions. One portion of each pouch shall be used to create the composite sample. Each portion used to create the composite sample shall be of equal weight. Once formed, the composite sample shall be divided into two equal portions, one portion to be tested for histamine and one portion to be tested for methylmercury. The remaining tuna in each of the three pouches shall be individually retained in the event follow-up testing is necessary.

b. Composite test results.

(1) If the test results for histamine and methylmercury for a composite sample are within the limits in Box B, the lot shall be accepted.

(2) If the test result for either histamine or methylmercury for a composite sample is greater than the limit in Box A, the lot shall be rejected for that test, with no

further testing allowed. Any test failure shall be classified as a critical defect and shall be cause for rejection of the lot.

(3) If the test result for either (or both) histamine or methylmercury for a composite sample is greater than the allowable level cited in box B (below), but not greater than the limit in Box A (above), testing shall revert to individual sample testing for the test and for the lot in question. The remaining portions of each of the three individual sample pouches, (i.e., the portions of tuna not used for the composite) shall be individually tested. If these three meet the limits in Box A, the lot shall be accepted. If these three do not meet the limits in Box A, the lot shall be rejected. Any retest failure shall be classified as a critical defect and shall be cause for rejection of the lot.

Box B

Maximum allowable level for the composite sample tested for Methylmercury and histamine shall be:	
Methylmercury:	Less than or equal to 0.33 ppm
Histamine:	Less than or equal to 13 ppm when using the ELISA method
Histamine:	Less than or equal to 16 ppm when using the AOAC 977.13 method

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

A. Packaging.

(1) Pouch material testing. The pouch material shall be examined for the characteristics listed in table I of MIL-PRF-44073 for Type I. The lot size, sample unit, and inspection level criteria for each of the test characteristics are listed below. Any test failure shall be classified as a major defect and shall be cause for rejection of the lot.

Characteristic	Lot size expressed in	Sample unit	Inspection level
Oxygen transmission rate	yards	1/2 yard	S-1
Water vapor transmission rate	yards	1/2 yard	S-1
Camouflage	yards	1/2 yard	S-1
Thermal processing	pouches	1 pouch	S-2
Low temperature	pouches	1 pouch	S-2

High temperature	pouches	1 pouch	S-2
Directional tear, when applicable	pouches	1 pouch	S-3

(2) Filled and sealed pouch testing. The filled and sealed thermoprocessed or hot-fill processed pouches shall be examined for the characteristics listed in table I of MIL-PRF-44073 for Type I. The lot size, sample unit, and inspection level criteria for each of the test characteristics are listed below. Any test failure shall be classified as a major defect and shall be cause for rejection of the lot.

Characteristic	Lot size expressed in	Sample unit	Inspection level
Residual gas volume	pouches	1 pouch	S-2
Internal pressure	pouches	1 pouch	S-2 1/
~~Directional tear~~	~~pouches~~	~~1 pouch~~	~~S-2~~

1/ When a three-seal tester is used, a separate set of samples is required for testing of the closure seal.

(3) Pouch examination. The pouches shall be examined for the defects listed in table II of MIL-PRF-44073 for Type I. The lot size shall be expressed in pouches. The sample unit shall be one thermal processed pouch. 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.

B. Packing.

(1) Shipping container and marking examination. The filled and sealed shipping containers shall be examined for the defects listed in table II below. 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 II. Shipping container and marking defects

Category		Defect
Major	Minor	
101		Marking missing or incorrect or illegible.

102		Inadequate workmanship. 1/
	201	More than 40 pounds of product.

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.

SECTION J REFERENCE DOCUMENTS

Unless otherwise specified, the issues of these documents are those active on the date of the solicitation or contract.

DSCP FORMS

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

MILITARY SPECIFICATIONS

MIL-PRF-44073	Packaging of Food in Flexible Pouches

NON-GOVERNMENTAL STANDARDS

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

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

ASTM INTERNATIONAL www.astm.org

D 1974	Standard Practice for Methods of Closing, Sealing, and Reinforcing Fiberboard Shipping Containers
D 4727/D 4727M	Standard Specification for Corrugated and Solid Fiberboard Sheet Stock (Container Grade) and Cut Shapes
D 5118/D 5118M	Standard Practice for Fabrication of Fiberboard Shipping Boxes

PKG & QAP
A-A-20155D
14 October 2009
W/Change 01 28 Mar 16 ES16-024 (DSCP-SS-16-00454)
SUPERSEDING
A-A-20155C
3 December 2004

AOAC INTERNATIONAL www.aoac.org

Official Methods of Analysis (OMA) of AOAC International