PKG&QAP 20332C
24 August 2009
SUPERSEDING
PKG&QAP 20332B
10 October 2003
W/Change 02 24 May 2011

SECTION C

This document covers emergency drinking water 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-20332C, WATER, DRINKING, EMERGENCY

Type, Size, Class and Design.

Type I - Disposable pouch
- Size A - 118 ml (4.0 fl oz)
- Size B - 125 ml (4.2 fl oz)
  - Class 1 - Thermoprocessed
    - Design a – Flat pouch
    - Design b – Side spout pouch
    - Design c – Center spout pouch

Type II - Rigid plastic container
- Size C – 500 ml (16.9 fl oz)
  - Class 2 – Ozone (O_3)
  - Class 3 – Ultraviolet light
  - Class 5 – Other Methods of Disinfection

C-2 PERFORMANCE REQUIREMENTS

A. Product standard. A sample shall be subjected to first article or product demonstration model inspection, as applicable, in accordance with the tests and inspections of Section E of this Packaging Requirements and Quality Assurance Provisions document.

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

SECTION D

D-1 PACKAGING

A. Flexible pouch.

(1) Pouch material. The preformed pouches shall be fabricated from a material structure consisting of, from inside to outside, 0.003 to 0.004 inch thick polyolefin, 0.00035 to 0.0007 inch thick aluminum foil, 0.0006 inch thick biaxially oriented polyamide-type 6, and 0.0005 inch thick polyester meets the performance criteria of this specification. Alternatively, the aluminum foil layer and the biaxially oriented polyamide layer may be in either order. The above values and ranges expressed for the thickness of thin gauge plastic films and aluminum foil are nominal values. A plus or minus 20% tolerance is typical for thin gauge plastic film thickness measurements and a plus or minus 10% tolerance is typical for aluminum foil thickness measurements. The polyolefin layer of bag material shall be suitably formulated for hot fill or post-fill processing. The material shall show no evidence of delamination, degradation, or foreign odor when heat-sealed or fabricated into pouches. The material shall be suitably formulated for food packaging and shall not impart an odor or flavor to the product.

(2) Pouch construction. The pouch shall be a flat style preformed pouch having with the design and dimensions cited in figures 1 (flat pouch), 2 or 3 (spouted pouches). The seals shall have an average seal strength of not less than 6 pounds per inch of width and no individual specimen shall have a seal strength of less than 5 pounds per inch of width when tested as specified in E-6,B(1)a. Alternatively, the pouch shall exhibit no rupture or seal separation greater than 1/16 inch when tested for internal pressure resistance as specified in E-6,B(1)c. A tear notch shall be provided on one or two edges of the pouch for the flat pouch or in the spout area for the spouted pouches. A 1/8-inch wide lip may be incorporated at the open end of the pouch.

(3) Pouch filling and sealing. When specified, either 118 ml (4 fl oz) or 125 ml (4.2 fl oz.) of water shall be filled into the pouch and the filled pouch shall be sealed. The filled and processed pouch shall be buoyant in fresh water. The closure seal shall be free of foldover wrinkles or entrapped matter that reduces the effective closure seal width to less than 1/16 inch. Seals shall be free of impression or design on the seal surface that would conceal or impair visual detection of seal defects. The average seal strength shall be not less than 6 pounds per inch of width and no individual specimen shall have a seal strength of less than 5 pounds per inch of width when tested as specified in E-6,B(1)b. Alternatively, the filled and sealed pouch shall exhibit no rupture or seal separation greater than 1/16 inch or seal separation that reduces the effective closure seal width to less than 1/16 inch when tested for internal pressure resistance as specified in E-6,B(1)c. Filled and sealed pouch shall not leak when tested in accordance with E-6,B(2). Filled and sealed pouch shall not be damaged when subjected to the 10-foot drop test in E-6,B(3). Thermally processed pouches shall be free of swelling.

B. Plastic bottle.

(1) Material and construction. The material shall show no evidence of delamination, degradation, or foreign odor when fabricated into bottles. A square or rectangular shape is required. The height of the bottle with cap shall not exceed 6-1/4 inches. The material shall be suitably formulated for food packaging and shall not impart an odor or flavor to the product. The cap shall provide a hermetic seal, have a positive locking design that will not loosen by vibration, and shall be re-closeable.

(2) Bottle filling and sealing. The bottle shall be filled with 500 ml (16.9 fl oz) of water and hermetically closed with a cap. The filled bottle shall be buoyant in fresh water. Filled and sealed bottle shall not leak when tested in accordance with E-6,B(2). Filled and sealed bottle shall not be damaged when subjected to the 10-foot drop test in E-6,B(3).

D-2 LABELING

A. Pouches and bottles. Each pouch and bottle shall be clearly printed with permanent black ink or other, dark, contrasting color which is free of carcinogenic elements. The information may be located anywhere on the pouch or bottle (in one complete print), except the closure seal area. The label shall contain the following information:

EMERGENCY DRINKING WATER (letters not less than 1/8 inch high)
Net Volume
Contractor's name and address
Date 1/
Lot number

1/ Each pouch or bottle shall have the date of pack noted by using a four digit code beginning with the final digit of the current year followed by the three digit Julian day code. For example, 14 February 2010 would be coded as 0045. The Julian day code shall represent the day the product was packaged into the pouch or bottle.

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-4 UNITIZATION

A. Unit loads. Boxes shall be arranged in unit loads in accordance with DSCP FORM 3507, Loads, Unit; Preparation for Semiperishable Subsistence Items.

D-5 MARKING

A. Shipping containers and unit loads. Shipping containers and unit loads 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. 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. The DCMAO 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 two (2) working days upon completion of all DCMAO 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 examinations 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 A-A-20332C. Finished product not equal to or better than the approved product standard in overall appearance and palatability shall be cause for rejection of the lot. The water in pouches may have low off odors and flavors typical of varying water sources, packaging materials and processing procedures.

Comment [C1]: Natick case ES11-068,(DSCP-SS-11-40057) change 02, 24 May 11, to provide further criteria for evaluating this product.

B. Methods of inspection.

(1) Shelf life. The contractor shall provide a certificate of conformance that the product has a 5-year shelf life when stored at 80°F.

(2) Net volume. The net volume shall be determined by measuring water in a graduated cylinder. Results shall be reported to the nearest 3 ml (0.1 ounce).

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

A. Packaging.

(1) Pouch material certification. The pouch material shall be tested for these characteristics. A Certificate of Conformance (CoC) may be accepted as evidence that the characteristics conform to the specified requirements.

Characteristic	Requirement paragraph	Test procedure
Thickness of films for laminated material	D-1,A(1)a and D-1,A(2)a	ASTM D 2103 1/
Aluminum foil thickness	D-1,A(1)a and D-1,A(2)a	ASTM B 479 2/
Laminated material identification and construction	D-1,A(1)a and D-1,A(2)a	Laboratory evaluation
Color of laminated material	D-1,A(1)a and D-1,A(2)a	FED-STD-595 3/

1/ ASTM D 2103 Standard Specification for Polyethylene Film and Sheeting

2/ ASTM B 479 Standard Specification for Annealed Aluminum and Aluminum-Alloy Foil for Flexible Barrier, Food Contact, and Other Applications

3/ FED-STD-595 Colors Used in Government Procurement

(2) Unfilled preformed pouch certification. A CoC may be accepted as evidence that unfilled pouches conform to the requirements specified in D-1,A(1)a and b. When deemed necessary by the USDA, testing of the unfilled preformed pouches for seal strength shall be as specified in E-6,B(1)a.

(3) Filled and sealed pouch or bottle examination. The filled and closed pouches or bottles shall be examined for the defects listed in table I. The lot size shall be expressed in pouches or bottles. The sample unit shall be one pouch or bottle. The inspection level shall be I and the acceptable quality level (AQL), expressed in terms of defects per hundred units, shall be 0.65 for major defects and 2.5 for minor defects.

TABLE I. Filled and sealed pouch or bottle defects 1/

Category		Defect
Major	Minor	
101		Tear, hole, or open seal.
102		Unclean. 2/
103		Does not pass the 10-foot drop test.
104		Foreign odor.
105		Leakage.
106		Not buoyant in fresh water.
	201	Label missing, incorrect, or illegible.
	202	Net volume less than required.
		Pouches only
107		Delamination. 4/
108		Seal width less than 1/16 inch. 3/
109		Not heat sealed on four sides.
	203	Tear notch missing.
	204	Delamination. 4/
110		Pouch does not have spout.
111		Swollen pouch.
112		Any seal less than 1/16 inch at any point.

113	Any impression or design on the heat seal surfaces which conceals or impairs visual detection of seal defects. 5/

1/ Any evidence of rodent or insect infestation shall be cause for rejection of the lot.

2/ Outer packaging shall be free from foreign matter which is unwholesome, has the potential to cause package damage (for example, glass, metal filings) or generally detracts from the clean appearance of the package. The following examples shall not be classified as defects for unclean:

a. Foreign matter which presents no health hazard or potential package damage and which can be readily removed by gently shaking the package or by gently brushing the package with a clean dry cloth.

b. Localized dried product which affects less than 1/8 of the total surface area of one package face, or an aggregate of scattered dried product which affects less than 1/4 of the total surface area of one package face.

b. Dried product which affects less than 1/8 of the total surface area of one pouch face (localized and aggregate).

c. Water spots.

3/ The effective closure seal is defined as any uncontaminated, fusion bonded, continuous path, minimum 1/16 inch wide, from side seal to side seal that produces a hermetically sealed pouch.

4/ Delamination defect classification:

Major - Delamination of the outer ply in the pouch seal area that can be propagated to expose aluminum foil at the food product edge of the pouch after manual flexing of the delaminated area. To flex, the delaminated area shall be held 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- counterclockwise directions. Care shall be exercised when flexing delaminated areas near the tear notches to avoid tearing the pouch material. After flexing, 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 classified as a major defect. Additionally, spot delamination of the outer ply in the body of the pouch that is able to be propagated beyond its initial borders is also a major defect. To determine if the laminated area is a defect, use the following procedure: Mark the outside edges of the delaminated area using a bold permanent marking pen. Open the pouch and remove the contents. Cut the pouch transversely not closer than 1/4 inch (±1/16 inch) from the delaminated area. The pouch shall be flexed in the area in question using the procedure described above. Any propagation of the delaminated area, as evidenced by the delaminated area exceeding the limits of the outlined borders, shall be classified as a major defect.

Minor - Minor delamination of the outer ply in the pouch 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. All other minor outer ply delamination in the pouch seal area or isolated spots of delamination in the body of the pouch that do not propagate when flexed as described above shall be classified as minor defects.

5/ If doubt exists as to whether or not the sealing equipment leaves an impression or design on the closure seal surface that could conceal or impair visual detection of seal defects, samples shall be furnished to the contracting officer for a determination as to acceptability.

B. Methods of inspection.

(1) Seal testing. The pouch seals shall be tested for seal strength as required in a, b or c, as applicable.

a. Unfilled pouch seal testing. The seals of the unfilled pouch shall be tested for seal strength in accordance with ASTM F 88, Standard Test Method for Seal Strength of Flexible Barrier Materials. The lot size shall be expressed in pouches. The sample unit shall be one pouch. The sample size shall be the number of pouches indicated by inspection level S-1. Three specimens shall be cut from each of the three sealed sides of each pouch in the sample. The average seal strength of any side shall be calculated by averaging the results of the three specimens cut from that side. Any average seal strength of less than 6 pounds per inch of width or any test specimen with a seal strength of less than 5 pounds per inch of width shall be classified as a major defect and shall be cause for rejection of the lot.

b. Pouch closure seal testing. The closure seals of the pouches shall be tested for seal strength in accordance with ASTM F 88. The lot size shall be expressed in pouches. The sample unit shall be one pouch. The sample size shall be the number of pouches indicated by inspection level S-1. For the closure seal on preformed pouches, three adjacent specimens shall be cut from the closure seal of each pouch in the sample. The average seal strength of any side, end or closure shall be calculated by averaging the three specimens cut from that side, end or closure. Any average seal strength of less than 6 pounds per inch of width or any test specimen with a seal strength of less than 5 pounds per inch of width shall be classified as a major defect and shall be cause for rejection of the lot.

c. Internal pressure test. The internal pressure resistance shall be determined by pressurizing the pouches while they are restrained between two rigid plates. The sample size shall be the number of pouches indicated by inspection level S-1. If a three seal tester (one that pressurizes the pouch through an open end) is used, the closure seal shall be cut off for testing the side and bottom seals of the pouch. For testing the closure seal, the bottom seal shall be cut off. The pouches shall be emptied prior to testing. If a four-seal tester (designed to pressurize filled pouches by use of a hypodermic needle through the pouch wall) is used, all four seals can be tested simultaneously. The distance between rigid restraining plates on the four-seal tester shall be equal to the thickness of the product +1/16 inch. Pressure shall be applied at the approximate uniform rate of 1 pound per square inch gage (psig) per second until 14 psig pressure is reached. The 14 psig pressure shall be held constant for 30 seconds and then released. The pouches shall then be examined for separation or yield of the heat seals. Any rupture of the pouch or evidence of seal separation greater than 1/16 inch in the pouch manufacturer's seal shall be considered a test failure. Any seal separation that reduces the effective closure seal width to less than 1/16 inch (see table I, footnote 3/) shall be considered a test failure and shall be classified as a major defect and shall be cause for rejection of the lot.

(2) Pouch or bottle leakage. The filled and sealed pouch or bottle shall be examined by submerging in water contained in a desiccator or other suitable container and maintaining a vacuum of 15 inches of mercury for at least 30 seconds. A leak is indicated by a steady progression of bubbles. Isolated bubbles caused by entrapped air are not considered a sign of leakage.

(3) Drop test. Filled and processed pouches or bottles shall be dropped in accordance with ASTM D 5276, Standard Test Method for Drop Test of Loaded Containers by Free Fall, from a height of 10 feet. Each pouch or bottle will be dropped twice. Any failure will be cause for rejection of the lot.

C. Packing.

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

D. Unit load examination. The unit load shall be examined in accordance with the requirements of DSCP FORM 3507. Any nonconformance shall be classified as a major defect and shall be cause for rejection of the lot.

PKG&QAP 20332C
24 August 2009
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PKG&QAP 20332B
10 October 2003
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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 3507	Loads, Unit; Preparation for Semiperishable Subsistence Items
DSCP FORM 3556	Marking Instructions for Boxes, Sacks, and Unit Loads of Perishable and Semiperishable Subsistence

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

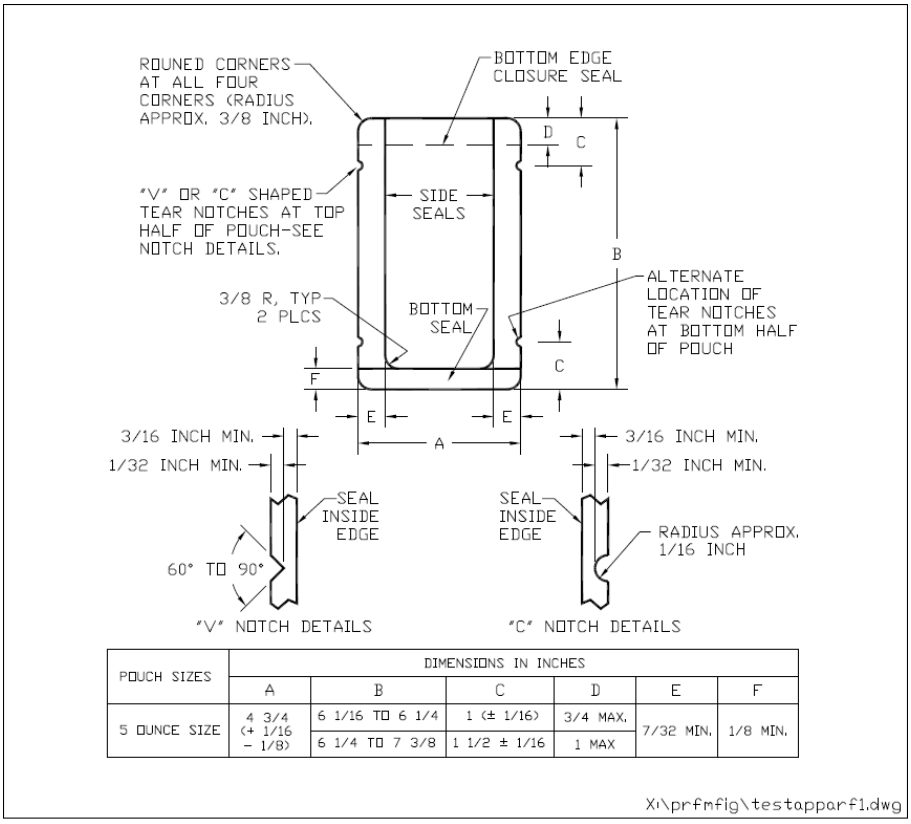
B 479	Standard Specification for Annealed Aluminum and Aluminum Alloy Foil for Flexible Barrier, Food Contact, and Other Applications
D 1974	Standard Practice for Methods of Closing, Sealing, and Reinforcing Fiberboard Boxes
D 2103	Standard Specification for Polyethylene Film and Sheeting
D 4727/D 4727M	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

D 5276	Standard Test Method for Drop Test of Loaded Containers by Free Fall
F 88	Standard Test Method for Seal Strength of Flexible Barrier Materials

AOAC INTERNATIONAL www.aoac.org

Official Methods of Analysis (OMA) of AOAC International



POUCH SIZES	DIMENSIONS IN INCHES					
	A	B	C	D	E	F
5 OUNCE SIZE	4 3/4 (+ 1/16 − 1/8)	6 1/16 TO 6 1/4	1 (± 1/16)	3/4 MAX.	7/32 MIN.	1/8 MIN.
		6 1/4 TO 7 3/8	1 1/2 ± 1/16	1 MAX		

FIGURE 1. Five ounce flat pouch.

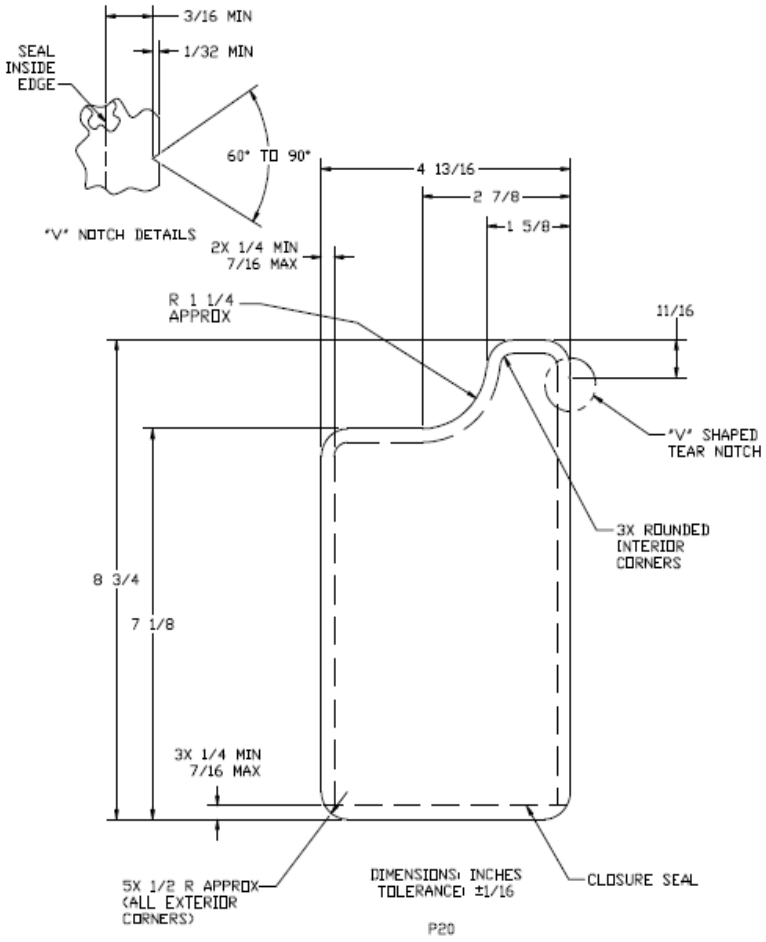


Figure 2. Side Spout Pouch

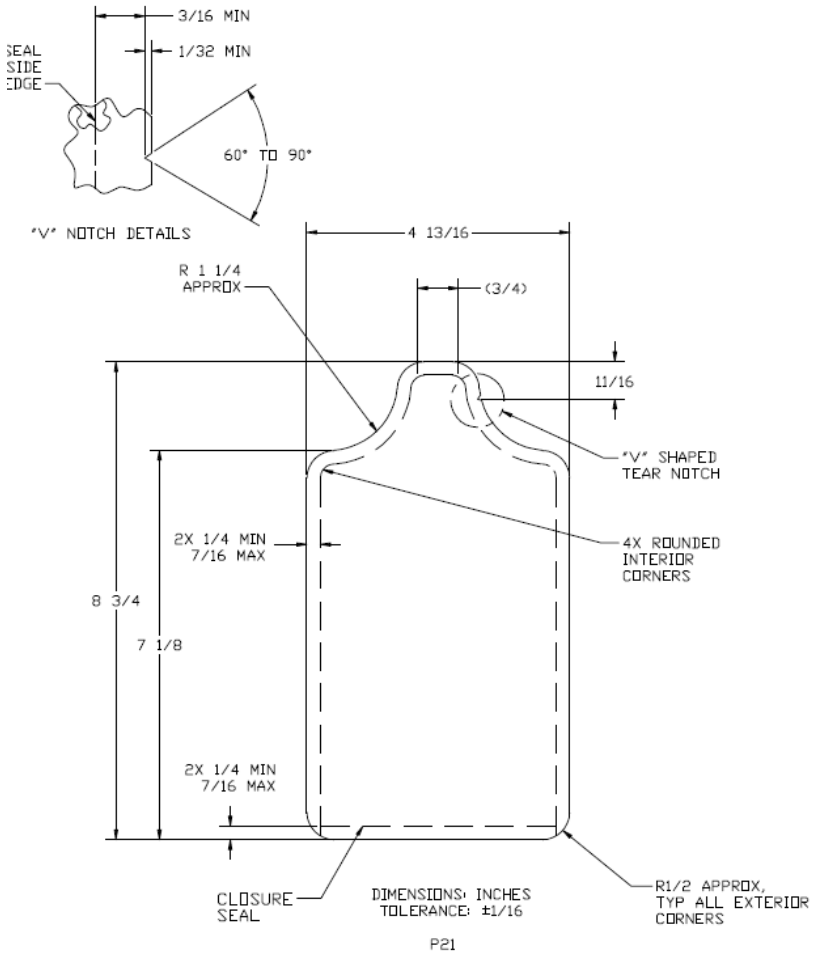


Figure 3. Center Spout Pouch

PKG&QAP 20332C
24 August 2009
SUPERSEDING
PKG&QAP 20332B
10 October 2003
W/Change 02 24 May 2011

For DLA Website Posting

RDNS-CFF 24 May 2011

TO: DLA Troop Support - Subsistence DSCP-FTSA

SUBJECT: ES11-068 (DSCP-SS-11-40057); Document Change and Acceptance of Emergency Drinking Water in Pouches and Packaging and Quality Assurance Provisions (PKG&QAP) for A-A-20332C Water, Drinking, Emergency, Solicitation SPM3S1-10-R-7051

1. DLA Troop Support – Subsistence has requested technical support from Natick concerning Product Demonstration Models (PDMs) of Emergency Drinking Water in Pouches produced by three different producers that were evaluated in Dec 2010 and Jan 2011. These PDMs Lot 0344, Lot 0343, Lot 0337 and Lot 0355-1) were rejected due to objectionable foreign odor and flavor.

2. The pouches of emergency drinking water, which are commercially sterile and meet the packaging performance requirements, were evaluated by a technical panel of trained sensory experts. The panel detected objectionable foreign odors and flavors in the water of all four lots.

3. DLA Troop Support – Subsistence asked if the plasticized odor and flavor is foreign to this product or expected to be present. Review of the history of Natick testing results of this product indicates that most emergency drinking water products either have no or a very low plasticized odor or flavor.

4. Upon further evaluation and discussion by Natick food technologists on 9 May 11, it is recommended that a passing sensory panel average score of “fair” (a rating of 5 to 6 on the 9-point quality scale) be acceptable this one time only for this solicitation of emergency drinking water in pouches. In the field, this product will be fully serviceable. Navy has concurred with this decision.

5. Based on this revised evaluation criteria for this solicitation, three of the four PDMs - Lot 0344, Lot 0343, and Lot 0337 - are acceptable for procurement.

6. To support the intended use of the emergency drinking water, a change to the PKG&QAP for A-A-20332C has been developed and is recommended. This change provides further guidance to panelists when evaluating emergency drinking water in pouches on the possible presence of low levels of off odors and flavors.

7. Natick recommends the following document change be incorporated into the subject document for all current, pending and future procurements until the document is formally amended or revised:

Paragraph E-5, A. Add "The water in pouches may have low off odors and flavors typical of varying water sources, packaging materials, and processing procedures."

8. Verbal agreement with these decisions was attained via phone discussion on 11 May 11 between, Natick and the Navy. The Navy has agreed to the acceptance of these three PDMs for Solicitation SPM3S1-10-R-7051. And they concur in the change to PKG&QAP for A-A-20332C which provides guidance for the evaluation of this product. This will provide clarified requirements for future procurements of emergency drinking water in pouches.

9. DLA Troop Support – Subsistence, by a phone discussion on 12 May 11 between DLA and Natick, has been notified of this change to the document and advised that PDMs Lot 0344, Lot 0343, and Lot 0337 are acceptable for procurement.

10. Use of a highly acceptable water source and good manufacturing practices in the filling, retorting and storage of these pouches of emergency drinking water will help to ensure the highest quality for this survival item.

11. Attached is Change 02, PKG&QAP for A-A-20332C Water, Drinking, Emergency, dated 24 May 2011, with change highlighted.