

SECTION C

This document covers candy and chocolate confections packaged in a flexible pouch 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-20177E CANDY AND CHOCOLATE CONFECTIONS**

Types, styles, flavors, and flavor styles.

Type II -	Toffee, chocolate flavored
Style A -	Roll
Style B -	Cube
Type IV -	Hard candy
Style C -	Round
Flavor 1 -	Caramel
Style F	Oval
Flavor 1 -	Caramel
Type VI -	Pan coated candy
Style A -	Disks
Flavor 1 -	Milk chocolate, plain
Flavor 2 -	Fruit flavored
Flavor Style a -	Original
Flavor Style b -	Berry
Flavor Style d -	Sour
Flavor 4 -	Peanut butter, plain
Style B -	Oval/Round
Flavor 1 -	Milk chocolate with peanuts

Type X -	Licorice style candy
Style B -	Bite size
Flavor 1 -	Cherry
Type XI -	Mint candy
Style B -	Rings
Flavor 1 -	Wintergreen
Flavor 2 -	Peppermint
Type XII -	Caffeinated mints
Style A -	Round tablets
Flavor 1 -	Peppermint
Style B -	Round tablets, sugar free (21 CFR § 101.60)
Flavor 1 -	Peppermint

Packages.

Package A –	Meal, Cold Weather (MCW)
Package B –	Food Packet, Long Range Patrol (LRP)
Package C –	Meal, Ready-to-Eat™ (MRE™)
Package D –	Arctic Supplement (ARC Sup)
Package E –	Unitized Group Ration™ (UGR™)-Heat & Serve™ (UGR-H&S™)
Package J –	First Strike Ration® (FSR™)
Package K –	Unitized Group Ration™-Express™ (UGR-E™)

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 Packaging Requirements and Quality Assurance Provisions 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. Shelf life. The packaged product shall meet the minimum shelf life requirement of 36 months at 80°F.

C. Appearance. Type X, style B, flavor 1, cherry licorice style candy shall be red in color.

D. Odor and flavor. Type X, style B, flavor 1, cherry licorice style candy shall have a sweet cherry odor and flavor.

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

F. Analytical and microbiological requirements. For all types specified, the analytical and microbiological requirements and procedures and testing shall be in accordance with A-A-20177E.

SECTION D

D-1 PACKAGING

A. Packaging. Candy shall be packaged in commercial packaging. For Types II, IV and XI, candy shall be overwrapped in a preformed or form-fill-seal barrier pouch. Type II, Style A shall have 2 individually packaged rolls overwrapped in a barrier pouch. Type II, Style B shall have 5 individually packaged pieces overwrapped in a barrier pouch. Type IV, Style C and Style F, Flavor 1 shall have 6 individually packaged pieces overwrapped in a barrier pouch. Type XI shall have 9 individually packaged pieces, individually packaged in a moisture-proof transparent material, overwrapped in a barrier pouch.

(1) Preformed pouches.

a. Pouch material. The preformed pouch shall be fabricated from 0.002 inch thick ionomer or polyethylene film laminated or extrusion coated to 0.00035 inch thick aluminum foil which is then laminated to 0.0005 inch thick polyester. Tolerances for thickness of plastic films shall be plus or minus 20 percent and tolerance for foil layer shall be plus or minus 10 percent. 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. The complete exterior surface of the pouch shall be uniformly colored and shall conform to number 20219, 30219, 30227, 30279, 30313, 30324, or 30450 of FED-STD-595, Colors Used in Government Procurement.

b. Pouch construction. The pouch shall be a flat style preformed pouch having maximum inside dimensions of 5 inches wide by 7-1/4 inches long. The pouch shall be made

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by heat sealing three edges with 3/8 inch (-1/8 inch, +3/16 inch) wide seals. The side and bottom 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. 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. A tear nick, notch or serrations shall be provided to facilitate opening of the filled and sealed pouch. A 1/8 inch wide lip may be incorporated at the open end of the pouch.

c. Pouch filling and sealing. The product shall be inserted into the pouch. The closure seal width shall be a minimum of 1/8 inch. 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. 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.

(2) Horizontal form-fill-seal pouches.

a. Pouch material. The horizontal form-fill-seal pouch shall consist of a formed tray-shaped body with a flat sheet, heat sealable cover or a tray-shaped body with a tray-shaped heat sealable cover. The tray-shaped body and the tray-shaped cover shall be fabricated from a 3-ply flexible laminate barrier material consisting of, from outside to inside, 0.0009 inch thick oriented polypropylene bonded to 0.0007 inch thick aluminum foil with 10 pounds per ream pigmented polyethylene or adhesive and bonding the opposite side of the aluminum foil to 0.003 inch thick ionomer or a blend of not less than 50 percent linear low density polyethylene and polyethylene. The linear low density polyethylene portion of the blend shall be the copolymer of ethylene and octene-1 having a melt index range of 0.8 to 1.2 g/10 minutes in accordance with ASTM D1238, Standard Test Method for Melt Flow Rates of Thermoplastics by Extrusion Plastometer and a density range of 0.918 to 0.922 g/cc in accordance with ASTM D1505, Standard Test Method for Density of Plastics by the Density-Gradient Technique. Alternatively, 0.0005 inch thick polyester may be used in place of the oriented polypropylene as the outer ply of the laminate. The flat sheet cover shall be made of the same 3-ply laminate as specified for the tray-shaped body except the aluminum foil thickness may be 0.00035 inch. Tolerances for thickness of plastic films shall be plus or minus 20 percent and tolerance for the foil layer shall be plus or minus 10 percent. The color requirements of the exterior (oriented polypropylene or polyester side) of the laminate shall

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be as specified in D-1,A(1)a. 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 any odor or flavor to the product.

b. Pouch construction. The tray-shaped body and the tray-shaped cover shall be formed by drawing the flexible laminate material into an appropriately shaped cavity. The flat cover shall be in the form of a flat sheet of the barrier material taken from roll stock. Product shall be placed into the tray-shaped body of the pouch. Pouch closure shall be effected by heat sealing together the cover and body along the entire pouch perimeter. The closure seal width shall be a minimum of 1/8 inch. The closure seal 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. 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. The dimensions of the pouches shall accommodate the commercially packaged candy(ies). The closure seal width shall be a minimum of 1/8 inch. A tear nick, notch, or serrations shall be provided to facilitate opening of the filled and sealed pouch. The sealed pouches shall not show any evidence of material degradation, aluminum stress cracking, delamination or foreign odor. Heat seals shall be free of entrapped matter that reduces the effectiveness. Seals shall be free of impression or design on the seal surface that would conceal or impair visual detection of seal defects.

B. Packaging for Type XII, Style B. Candy shall be packaged in a commercial barrier pouch. The pouch shall be made from a heat-sealable, laminated material, one lamina of which shall be a minimum of 0.00025 inch thick aluminum foil. The filled and sealed pouch shall have dimensions of not more than 3 inches wide by 4-1/2 inches long. The seals shall be free of foldover wrinkles or entrapped matter that reduces the effective seal width to less than 1/16 inch. The seals shall be a minimum 1/8 inch in width. A tear nick, notch or serrations shall be provided to facilitate opening of the filled and sealed pouch. Alternatively, a commercial blister package with a foil film backing may be used. The filled and sealed blister package shall have dimensions of not more than 1-3/4 inches wide by 3-3/4 inches long.

D-2 LABELING

A. Pouches. Each pouch shall be correctly and legibly labeled. Printing ink shall be permanent black ink or other dark contrasting color which is free of carcinogenic elements. The label shall contain the following information:

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- (1) Name and flavor of product (letters not less than 1/8 inch high)
- (2) Ingredients
- (3) Date 1/
- (4) Net weight
- (5) Name and address of packer
- (6) "Nutrition Facts" label in accordance with the Nutrition Labeling and Education Act (NLEA) and all applicable FDA regulations 2/

1/ Each pouch 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 2014 would be coded as 4045. The Julian day code shall represent the day the product was packaged into the pouch.

NOTE: For commercially packaged items that are overwrapped, the above information shall be printed on either the inner or outer package or both. The product name and date shall be printed on the outer package.

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 D5118/D5118M, Standard Practice for Fabrication of Fiberboard Shipping Boxes. The fiberboard shall conform to type CF, class D, variety SW, burst grade 200 or ECT grade 32 of ASTM D4727/D4727M, Standard Specification for Corrugated and Solid Fiberboard Sheet Stock (Container Grade) and Cut Shapes. Each box shall be closed in accordance with ASTM D1974/D1974M, 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 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 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 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:

US Army Research, Development and Engineering Command
Natick Soldier Research, Development and Engineering Center
RDNS-CFF
15 Kansas Street
Natick, MA 01760-5056

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One lot shall be randomly selected during each calendar month of production or as otherwise specified in the contract. Three (3) sample units shall be randomly selected from that one production lot. The three (3) sample units shall be shipped to Natick 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 A-A-20177E and Section C of this 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 or packages. The sample unit shall be the contents of one pouch or package. 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
<u>Major</u>	<u>Minor</u>	
		<u>General</u>
101		Product not type or not style or not flavor or not flavor style as specified.
		<u>Type II, Toffee, chocolate flavored</u>
102		Candy does not have a semi-sweet chocolate and caramel odor or flavor.
	201	Candy not a dark brown color.
	202	Outside portion of candy not smooth.
	203	Product adheres to wrappers.
		<u>Type II, Style A, Toffee, chocolate flavored, Roll</u>
	204	Two rolls not individually packaged with a minimum net weight of 28 grams.
	205	Candy not chewy or does not have a grainy interior.
		<u>Type II, Style B, Toffee, chocolate flavored, Cube</u>
	206	Five pieces not individually packaged with a minimum net weight of 40 grams.
	207	Candy not soft or not a chewy texture or does not have a slightly grainy interior.
	208	Candy not a cube or dimensions not 1 inch by 1 inch by 1/2 inch, \pm 1/8 inch.

TABLE I. Product defects 1/ 2/ - Continued

Category		Defect
<u>Major</u>	<u>Minor</u>	
	209	<u>Type IV, Styles C and F, Flavor 1, Hard candy, Round/Oval, Caramel</u> Not six individually wrapped pieces with an individual serving size net weight less than 39 grams.
103		Candy not a sweet or not a caramel odor or flavor.
	210	Candy not a caramel color.
	211	Candy does not have a hard texture or does not dissolve slowly in the mouth.
	212	Product adheres to wrappers.
	213	<u>Type VI, Pan coated candy, General</u> Pan coated candy exhibit excessive seepage of material through the coating.
	214	Pan coated candy coating exhibits pits, holes, or cracks.
	215	Candy shell does not have a high gloss. <u>3/</u>
	216	Pan coated candy colors are not vibrant or are mottled.
104		Pan coated candy coating not of such hardness that it cannot be easily crushed or cracked.
	217	For style A, pan coated candy disks do not resemble a double-convex lens shape.

TABLE I. Product defects 1/ 2/ - Continued

Category		Defect
<u>Major</u>	<u>Minor</u>	
105		<u>Type VI, Style A, Flavor 1, Pan coated candy, Disks, Milk chocolate, plain</u> Candy coating not sweet or candy center not a slightly sweet milk chocolate odor or flavor.
	218	Candy not at least five different colors of loose disks.
	219	Individual serving size net weight less than 47.9 grams.
		<u>Type VI, Style A, Flavor 2, Pan coated candy, Disks, Fruit flavored, General</u>
	220	Candy center not firm or not chewy or is hard or brittle.
	221	Candy not at least five various fruit flavors or candy not at least five various colors of loose disks.
	222	Individual serving size net weight less than 51 grams or greater than 61.5 grams.
106		<u>Type VI, Style A, Flavor 2, Flavor Style a, Pan coated candy, Disks, Fruit flavored, Original</u> Candy not a sweet, fruity odor or flavor.
107		<u>Type VI, Style A, Flavor 2, Flavor Style b, Pan coated candy, Disks, Fruit flavored, Berry</u> Candy not a sweet, fruity odor or flavor.
108		<u>Type VI, Style A, Flavor 2, Flavor Style d, Pan coated candy, Disks, Fruit flavored, Sour</u> Candy not a mild to moderately sweet, sour and fruit odor or flavor.
	223	Disks do not have an evenly distributed coating of fine sugar.
		<u>Type VI, Style A, Flavor 4, Pan coated candy, Disks, Peanut butter, plain</u>

TABLE I. Product defects 1/ 2/ - Continued

Category		Defect
<u>Major</u>	<u>Minor</u>	
109		Candy does not consist of a peanut butter center with a thin candy shell.
110		Candy coating not sweet or candy center not a peanut butter odor or flavor.
	224	Individual serving size net weight less than 43.4 grams.
111		<u>Type VI, Style B, Flavor 1, Pan coated candy, Oval/Round, Milk chocolate with peanuts</u> Candy does not consist of a roasted peanut center coated with milk chocolate and covered with a thin candy shell.
112		Candy not a slightly sweet, milk chocolate, peanut odor or flavor.
	225	Candy not at least five different colors.
	226	Individual serving size net weight less than 49.3 grams.
113		<u>Type X, Style B, Flavor 1, Cherry, Licorice style candy</u> Candy not a sweet cherry odor or flavor.
	227	Candy color not red.
	228	Candy not glossy.
	229	Candy does not have a soft chewy texture.
	230	Candy dimensions not 3/4 inch by 5/8 inch \pm 1/8 inch.
	231	Individual serving size net weight less than 63 grams.

TABLE I. Product defects 1/ 2/ - Continued

Category		Defect
<u>Major</u>	<u>Minor</u>	
114		<u>Type XI, Style B, Mint candy, Rings</u> Candy does not have sweet mint odor or flavor characteristic of the flavor specified.
	232	Candy not firm or is hard or brittle.
	233	Candy not individually packaged in a moisture-proof transparent material.
	234	Nine candies not a minimum net weight of 32 grams.
115		<u>Type XII, Style A, Caffeinated mints, Round tablets</u> Candy not a sweet mint odor or flavor.
	235	Candy not flat or not intact.
	236	Candy diameter greater than 0.5 inch.
	237	Candy not white in color.
	238	Candy texture not a hard initial bite or break, or shatters when chewing.
	239	Individual serving size not 10 to 12 tablets or net weight less than 10 grams.
116		<u>Type XII, Style B, Caffeinated mints, Round tablets, sugar free</u> Candy does not have a strong peppermint odor or flavor or does not have a sweet flavor.
	240	Candy not white in color.
	241	Candy not intact.
	242	Candy diameter greater than 0.6 inch.

TABLE I. Product defects 1/ 2/ - Continued

Category		Defect
<u>Major</u>	<u>Minor</u>	
	243	Candy texture not hard or does not dissolve slowly in the mouth.
	244	Candy individual net weight per piece not 1.8 grams.
	245	Five tablets less than 9 grams or six tablets less than 11 grams.

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/ For Type VI, Style A, Flavor 2, Flavor style d, candy shell does not have a high gloss shall not be scored as a defect due to disks having an evenly distributed coating of fine sugar.

B. Methods of inspection.

(1) 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.

(2) Net weight.

a. Commercially packaged product. The net weight shall be verified with the label on the commercial package. Product not conforming to the net weight requirement as specified in A-A-20177E shall be cause for rejection of the lot.

b. Commercially packaged product overwrapped in a barrier pouch. The net weight of the filled and sealed pouches shall be determined by weighing each sample unit 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 as applicable.

(3) Analytical and microbiological testing. For all candy types specified, the following condition applies for analytical and microbiological testing:

a. For prepackaged product received from a supplier and is not further processed, the contractor will furnish a Certificate of Conformance (CoC) that the product meets all analytical and microbiological requirements. No additional testing is required. If the product is received in bulk and repackaged, analytical and microbiological requirements and procedures and testing shall be in accordance with A-A-20177E.

b. Caffeine content of Type XII, Style B, Flavor 1 shall be verified by producer's Certificate of Analysis (CoA).

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.

<u>Characteristic</u>	<u>Requirement paragraph</u>	<u>Test procedure</u>
Thickness of films for laminated material	D-1,A(1)a and D-1,A(2)a	ASTM D2103 <u>1/</u>
Aluminum foil thickness	D-1,A(1)a and D-1,A(2)a	ASTM B479 <u>2/</u>
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 <u>3/</u>

1/ Standard Specification for Polyethylene Film and Sheeting

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

3/ 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

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necessary by the USDA, testing of the unfilled preformed pouches for seal strength shall be as specified in E-6,B(1)a.

(3) Barrier pouch certification. For barrier pouch for Type XII, Style B, all material, construction and sealing requirements may be verified by a CoC.

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

TABLE II. Filled and sealed pouch defects 1/

Category		Defect
<u>Major</u>	<u>Minor</u>	
101		Tear or hole or open seal.
102		Seal width less than 1/16 inch. <u>2/</u>
103		Presence of delamination. <u>3/</u>
104		Unclean pouch. <u>4/</u>
105		Pouch has foreign odor.
106		Any impression or design on the heat seal surfaces which conceals or impairs visual detection of seal defects. <u>5/</u>
107		Not packaged as specified.
108		Presence of stress cracks in the aluminum foil. <u>6/ 7/</u>
	201	Label missing or incorrect or illegible.
	202	Tear nick or notch or serrations missing or does not facilitate opening.
	203	Seal width less than 1/8 inch but greater than or equal to 1/16 inch. <u>2/</u>
	204	Presence of delamination. <u>3/</u>

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

2/ 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.

3/ 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 ($\pm 1/16$ 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.

4/ Outer packaging shall be free from foreign matter which is unwholesome, has the potential to cause pouch damage (for example, glass, metal filings) or generally detracts from the clean

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appearance of the pouch. The following examples shall not be classified as defects for unclean:

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

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

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.

6/ Applicable to form-fill-seal pouches only.

7/ The initial examination shall be a visual examination of the closed package. Any suspected visual evidence of stress cracks in the aluminum foil (streaks, breaks, or other disruptions in the laminated film) shall be verified by the following physical examination. To examine for stress cracks, the inside surface of both tray-shaped bodies shall be placed over a light source and the outside surface observed for the passage of light. Observation of light through the pouch material in the form of a curved or straight line greater than 2 mm in length shall be evidence of the presence of stress cracks. Observation of light through the pouch material in the form of a curved or straight line 2 mm in length or smaller or of a single pinpoint shall be considered a pinhole. Observation of ten or more pinholes per pouch shall be evidence of material degradation.

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 preformed pouch seal testing. The seals of the unfilled preformed pouch shall be tested for seal strength in accordance with ASTM F88/F88M, Standard Test Method for Seal Strength of Flexible Barrier Materials. The lot size shall be expressed in pouches. The sample unit shall be one unfilled pouch. The sample size shall be the number of pouches indicated by inspection level S-1. Three adjacent 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 three specimens cut from that side. Any average seal strength of

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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 F88/F88M. 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. For the form-fill-seal pouches, three adjacent specimens shall be cut from each side and each end 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 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. 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 II, footnote 2/) shall be considered a test failure. Any test failure shall be classified as a major defect and shall 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 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. Shipping container and marking defects

Category	Defect	
<u>Major</u>	<u>Minor</u>	
101		Marking missing or incorrect or illegible.
102		Inadequate workmanship. <u>1/</u>
	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 applicable version of these documents is that which is active on the date of the solicitation or contract.

DLA Troop Support Form

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

FED-STD-595	Colors Used in Government Procurement
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NON-GOVERNMENTAL STANDARDS

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

ANSI/ASQ Z1.4	Sampling Procedures and Tables for Inspection by Attributes
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ASTM INTERNATIONAL	www.astm.org
B479	Standard Specification for Annealed Aluminum and Aluminum-Alloy Foil for Flexible Barrier, Food Contact, and Other Applications
D1238	Standard Test Method for Melt Flow Rates of Thermoplastics by Extrusion Plastometer
D1505	Standard Test Method for Density of Plastics by the Density-Gradient Technique
D1974/D1974M	Standard Practice for Methods of Closing, Sealing, and Reinforcing Fiberboard Boxes
D2103	Standard Specification for Polyethylene Film and Sheeting
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
F88/F88M	Standard Test Method for Seal Strength of Flexible Barrier Materials