

**SECTION C**

This document covers thermostabilized chili and macaroni packaged in a flexible pouch for use by the Department of Defense as a component of operational rations.

**C-1 ITEM DESCRIPTION**

**PCR-C-027 CHILI AND MACARONI, PACKAGED IN A FLEXIBLE POUCH, SHELF STABLE**

**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 Performance-based Contract Requirements document.

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

C. Shelf life. The packaged food 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 coarsely ground beef and elbow macaroni in a tomato based sauce seasoned with a spicy chili pepper blend. The packaged food shall be free from foreign materials.

(2) Ground beef. The beef shall be typically produced by a 3/8 inch grinder plate, and shall be practically free of bone or bone fragments, cartilage, coarse connective tissue, tendons or ligaments, and glandular material. The beef shall be a brown cooked beef color.

(3) Elbow macaroni. The elbow macaroni shall be an enriched macaroni product. The cooked macaroni shall be curved strands not less than 3/4 inches or greater than 1 1/2 inches in length. The cooked macaroni shall be an off white to light tan color.

(4) Sauce. The sauce shall be a dark red to reddish brown color.

E. Odor and flavor. The packaged food shall have an odor and flavor characteristic of processed chili and macaroni in a spicy chili pepper blend tomato based sauce. The packaged food shall be free from foreign odors and flavors.

F. Texture.

(1) Beef. The cooked ground beef shall be moist and tender.

(2) Elbow macaroni. The cooked macaroni shall be slightly soft to slightly firm. The cooked macaroni shall not be pasty.

(3) Sauce. The sauce shall be moderately thick.

G. Weight.

(1) Net weight. The average net weight shall be not less than 8.0 ounces. No individual pouch shall have a net weight of less than 7.5 ounces.

(2) Drained weight.

a. Beef. The average drained weight of ground beef shall be not less 2.0 ounces. The drained weight of the ground beef in an individual pouch shall be not less than 1.8 ounces.

b. Elbow macaroni. The drained weight of the macaroni in an individual pouch shall be not less than 2.6 ounces.

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

I. Analytical requirements.

(1) Fat content. The fat content shall be not greater than 10.0 percent.

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

### C-3 MISCELLANEOUS INFORMATION

THE FOLLOWING FORMULA IS PROVIDED FOR INFORMATION ONLY TO PROVIDE THE BENEFIT OF PAST GOVERNMENT EXPERIENCE. THIS IS NOT A MANDATORY CONTRACT REQUIREMENT.

A. Ingredients and formulation. Ingredients and formulation percentages may be as follows:

(1) <u>Sauce</u>	<u>Ingredients</u>	<u>Percent by weight</u>
	Beef, raw	53.00
	Water	27.32
	Tomatoes, crushed	7.50
	Tomato paste (26% solids)	5.50
	Chili powder	2.20
	Starch, waxy maize, modified	1.50
	Onion, dehydrated, chopped	1.00
	Salt	0.95
	Sugar, brown, light	0.75
	Lecithin	0.25
	Pepper, black ground	0.03

  

(2) <u>Product</u>	<u>Ingredients</u>	<u>Percent by weight</u>
	Meat sauce	85.0
	Macaroni	15.0

## SECTION D

### D-1 PACKAGING

Product shall be filled into pouches and each pouch shall be packed in a carton in accordance with MIL-PRF-44073, Packaging of Food in Flexible Pouches.

### D-2 LABELING

A. Pouches. Each pouch shall be clearly printed or stamped, in a manner that does not damage the pouch, with 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 when authorized by the inspection agency.

(2) Pouch code includes: 1/

Lot Number  
Filling equipment identification number  
Official establishment number (for example, EST-38)  
Retort identification number  
Retort cook number

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, 12 April 2000 would be coded as 0103). The Julian code shall represent the day the product was packaged into the pouch and processed. Sub-lotting (when used) shall be represented by an alpha character immediately following the four digit Julian code. Following the four digit Julian code and the alpha character (when used), the other required code information shall be printed in the sequence as listed above.

B. Cartons.

(1) The cartons shall be clearly printed on one of the largest panels with permanent black ink as follows:

Product name (7/32 to 9/32 inch block letters)  
Ingredients  
Net weight  
Name and address of packer  
Code (same as pouch code, see pouches) 1/ 2/  
USDA official inspection legend for the packer's plant  
"Nutrition Facts" label in accordance with the Nutrition Labeling and Education Act (NLEA) and all applicable FDA/USDA regulations

1/ Code may be ink printed on any out side carton panel. Code may be embossed on any outside carton panel except the largest panels of the carton.

2/ Official establishment number not required in carton code.

(2) Military nutrition information entitled "Food, Water, and Exercise are Tactical Weapons" shall be printed on the entrée cartons large panel opposite to the panel printed with the data in D-2,B,(1) above. The information, provided by the contracting officer, shall be clearly printed with permanent black ink in an area no smaller than 4-1/4 inches by 6-3/4 inches.

**Comment [p1]:** Natick Case Number ES04-077, Change 02, 07-JUN-04. Nutrition Labels for Inclusion in the Meal, Ready-to-Eat (MRE).

**D-3 PACKING**

A. Packing for shipment to ration assembler. Seventy-two pouches(of the same product) in cartons shall be packed flat or on edge in a snug-fitting fiberboard shipping container conforming to style RSC, type CF, class domestic, grade 200 of ASTM D 5118, Standard Practice for Fabrication of Fiberboard Shipping Boxes. Each container shall be securely closed in accordance with ASTM D 1974, Standard Practice for Methods of Closing, Sealing, and Reinforcing Fiberboard Shipping Containers.

**D-4 MARKING**

A. Shipping containers. Shipping containers shall be marked in accordance with DPSC Form 3556, Marking Instructions for Shipping Cases, Sacks and Palletized/Containerized Loads of Perishable and Semiperishable Subsistence.

**SECTION E INSPECTION AND ACCEPTANCE**

The following quality assurance criteria, utilizing ANSI/ASQC Z1.4-1993, 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. 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 Soldier & Biological Chemical Command  
Soldiers System Ctr., Natick Soldier Center  
Attn: AMSSB-RCF-F(N)  
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 USDA inspection requirements. The sample units will be evaluated for the characteristics of appearance, odor, flavor, texture and overall quality. Failure of samples to conform to all such characteristics may be cause for rejection.

(2) Conformance inspection. Conformance inspection shall include the examinations/tests and 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 specified in Section C of this Performance-based Contract Requirements utilizing the double sampling plans indicated in ANSI/ASQC Z1.4 - 1993. 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. For drained weight inspection, a separate set of pouches shall be selected from the lot using the same sampling criteria as above. The pouches shall be immersed in not less than 140°F water for 10 minutes prior to conducting the product examination and the drained weight inspection.

TABLE I. Product defects 1/ 2/ 3/ 4/ 5/

Category		Defect
Major	Minor	
		<u>Appearance</u>
101		Product not a mixture of coarsely ground beef and elbow macaroni in a tomato sauce.
102		Bone or bone fragment measuring more than 0.3 inch in any dimension.
	201	Ground beef is not a brown cooked beef color.
	202	Total weight of cartilage, coarse connective tissue, tendons or ligaments, and glandular material more than 0.35 ounces.
	203	Macaroni is not off white to light tan color.
	204	Sauce is not dark red to reddish brown color.
		<u>Odor and flavor</u>
103		Odor or flavor not characteristic of processed chili and macaroni in a spicy chili pepper blend tomato sauce.
		<u>Texture</u>
	205	Ground beef not moist or not tender.
	206	Macaroni not slightly soft to slightly firm.
	207	Macaroni is pasty.
	208	Sauce not moderately thick.
		<u>Weight</u>
	209	Net weight of an individual pouch less than 7.5 ounces. 6/
	210	Drained weight of ground beef in an individual pouch less than 1.8 ounces. 7/
	211	Drained weight of the macaroni in an individual pouch less than 2.6 ounces.

1/ Presence of any foreign material, such as, but not limited to dirt, insect parts, hair, wood, glass, metal, or foreign odors or flavors, such as, but not limited to burnt, scorched, rancid, sour, or stale 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/ Machine setting requirement for ground beef shall be verified with the producer's certificate of conformance.

4/ Verification of the enriched macaroni product shall be with the statement of ingredients on the label.

5/ Size and type requirement for macaroni product shall be verified by certificate of conformance.

6/ Sample average net weight less than 8.0 ounces shall be cause for rejection of the lot.

7/ Sample average drained weight of ground beef less than 2.0 ounces shall be cause for rejection of the lot.

B. Methods of inspection.

(1) Commercial sterility. Testing for commercial sterility shall be in accordance with MIL-PRF-44073.

(2) Shelf life. The contractor shall provide a certificate of conformance that the product has a 3 year 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. 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.

(4) Drained weight. The contents of the pouch shall be poured into a flat-bottom container. A minimum of three times the volume of the pouch of not less than 140°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 and to remove the sauce. The contents shall then be poured into a U.S. Standard No. 7 sieve in a manner that will distribute the product over the sieve. 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 approximately a 45° angle and allowed to drain for 2 minutes before determining the drained weight by subtracting the sieve tare weight from the gross weight. The drained weight shall be reported to the nearest 0.1 ounce.

(5) Analytical. The sample to be analyzed shall be a composite of eight filled and sealed pouches which have been selected at random from the lot. The composited sample shall be prepared (see NOTE) and analyzed in accordance with the following methods of the Official Methods of Analysis of AOAC International:

<u>Test</u>	<u>Method Number</u>
Fat	985.15, 976.21
Salt	935.47

Test results shall be reported to the nearest 0.1 percent. Any nonconforming results 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)**

**A. Packaging and labeling.**

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

TABLE II. Pouch material quality assurance criteria

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
Environmental conditions	pouches	1 pouch	S-2

(2) Pouch examination. The pouches shall be examined for the defects listed in table II of MIL-PRF-44073. 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 acceptable quality level (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.

(3) Examination of pouch and carton assembly. The completed pouch and carton assemblies shall be examined for the defects listed in table III of MIL-PRF-44073. The lot size shall be expressed in units of completed assemblies. The sample unit shall be one pouch and carton assembly. The inspection level shall be S-3 and the AQL, expressed in terms of defects per hundred units, shall be 0.65 for major defects and 2.5 for minor defects. Fifty sample pouch and carton assemblies 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 III 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 III. Shipping container and marking defects

Category		Defect
<u>Major</u>	<u>Minor</u>	
101		Marking omitted, incorrect, illegible, or improper size, location sequence or method of application.

102 Inadequate workmanship. 1/

201 Contents more or less than 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.

#### SECTION J REFERENCE DOCUMENTS

##### DPSC FORMS

DPSC FORM 3556 Marking Instructions for Shipping Cases, Sacks and Palletized/Containerized 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)

ANSI/ASQCZ1.4-1993 Sampling Procedures and Tables for Inspection by Attributes

##### AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

D 1974 Standard Practice for Methods of Closing, Sealing, and Reinforcing Fiberboard Shipping Containers

D 5118 Standard Practice for Fabrication of Fiberboard Shipping Boxes

AOAC INTERNATIONAL Official Methods of Analysis of the AOAC International



REPLY TO  
ATTENTION OF

DEPARTMENT OF THE ARMY  
U.S. ARMY RESEARCH, DEVELOPMENT AND ENGINEERING COMMAND  
NATICK SOLDIER CENTER  
KANSAS STREET  
NATICK, MA 01760-5018  
7 June 2004

Food Engineering Services Team

MEMORANDUM FOR Defense Supply Center Philadelphia  
Directorate of Subsistence, Bldg. 6  
ATTN: DSCP-FTSL (Mr. Mike Malason)  
700 Robbins Avenue  
Philadelphia, PA 19111-5092

SUBJECT: ES04-077, Nutrition Labels for Inclusion in the Meal, Ready-to-Eat (MRE)

1. Four nutrition labels for inclusion in the MRE have been approved by the Joint Services Operational Rations Forum (JSORF), which was held February 2003, at Fort Lee, VA.
2. The Natick Soldier Center (NSC) has prepared graphic drawings and electronic files (".jpeg" and ".ppt") of the nutrition labels that shall replace the label information entitled, "Military Rations Are Good Performance Meals", on the chipboard cartons of the following MRE Entrees:

For Chili and Macaroni, PCR-C-027, Delete "Military Rations Are Good Performance Meals" and Insert "Food, Water, and Exercise are Tactical Weapons".

For Beef Stew, PCR-B-020, Delete "Military Rations Are Good Performance Meals" and Insert "WHAT'S IN AN MRE".

For Spaghetti w/ Meat Sauce, PCR-S-0002, Delete "Military Rations Are Good Performance Meals" and Insert "Basic Heat Injury Prevention".

For Beef Enchiladas, PCR-B-010 Delete "Military Rations Are Good Performance Meals" and Insert "Do's and Don'ts for Cold Weather Nutrition".

3. NSC requests the Defense Supply Center Philadelphia (DSCP) provide the four nutrition labels to the MRE Assemblers for inclusion in the MRE XXV procurement (2005 Date of Pack). (Enclosed)

4. The point of contact for this action is Ms. Barbara Daley, Individual Combat Ration Team, Combat Feeding Directorate, at DSN 256-4937/COM (508) 233-4937.

12 Encls

DONALD A. HAMLIN  
Team Leader  
Food Engineering Services Team

Arichards

CF:

Aylward, J  
Daley, B  
Hamlin, D  
Hill, B

Richards, A  
Valvano, R