

## **SECTION C**

This document covers dehydrated cooked chili macaroni with beef, packaged in a brickpack pouch, for use by the Department of Defense as a component of operational rations.

### **C-1 ITEM DESCRIPTION**

#### **PCR-C-073, CHILI MACARONI WITH BEEF, COOKED, DEHYDRATED, PACKAGED IN A BRICKPACK POUCH, SHELF STABLE**

##### Packages

Package A – Meal, Cold Weather (MCW)

Package B – Food Packet, Long Range Patrol (LRP)

### **C-2 PERFORMANCE REQUIREMENTS**

A. Product standard. A sample shall be subjected to first article (FA) or product demonstration model (PDM) inspection as applicable, in accordance with the tests and inspections of Section E of this Performance-based Contract Requirements (PCR) document. The approved sample shall serve as the product standard. Should the contractor at any time plan to, or actually produce the product using different raw material or process methodologies from the approved Product Standard, which result in a product 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°F.

C. Dehydrated product.

(1) Appearance.

a. General. The finished product shall be a mixture of cooked ground beef, macaroni, and kidney beans in a tomato-based chili sauce that has been dehydrated. The product shall be free from glazed surface areas or dark colored cores. The packaged food shall be free from foreign materials.

b. Beef. The ground beef pieces shall be cooked, freeze-dehydrated beef and shall be a medium brown color.

c. Macaroni. The macaroni shall be enriched elbow shaped macaroni product. The cooked, dehydrated macaroni product shall be light tan to off-white color.

d. Kidney beans. The beans shall be a light or dark red class of kidney bean. The cooked, dehydrated beans shall be practically free of broken beans, mashed beans or loose skins.

e. Sauce. The dehydrated tomato-based chili sauce shall be a combination of tomato puree and/or tomato paste and chili spices and shall be an orangish-brown to a reddish-brown color.

(2) Odor. The packaged food shall have an odor of cooked, dehydrated kidney beans, macaroni, chili spice blend, and beef. The packaged food shall be free from foreign odors.

(3) Texture. The product shall be fully dehydrated.

(4) Net weight. No individual pouch shall have a net weight of less than 136 grams.

D. Rehydrated product.

(1) Appearance.

a. General. The rehydrated chili macaroni with beef shall be a mixture of ground beef pieces, macaroni and red kidney beans in a tomato-based chili sauce typical of a product that has been frozen and reheated. The rehydrated product shall be free from foreign materials.

b. Beef. The cooked ground beef shall be distinct pieces typically produced by a 3/8 inch machine setting and shall be medium brown color. The beef shall be free of bone or bone fragment, cartilage, coarse connective tissue, tendons or ligaments, and glandular material.

c. Macaroni. The elbow shaped macaroni shall be discernable product and shall be light cream to off-white color.

d. Kidney beans. The beans shall be practically free of broken beans, mashed beans or loose skins.

e. Sauce. The tomato-based chili sauce shall be a mixture of tomato puree and/or tomato paste, and chili spices. The sauce shall be an orangish-brown to a reddish-brown color and may have flecks of herbs and spices.

(2) Odor and flavor. The rehydrated chili macaroni with beef shall have a cooked, chili spice tomato sauce, macaroni, beef and kidney bean odor and flavor. The spice shall be a chili spice blend that shall contain dehydrated ground chili peppers (cayenne, paprika), cumin, onion, garlic and oregano and may contain small amounts of other spices such as, but not limited to, coriander, turmeric, cloves or black pepper. The rehydrated product shall be free from foreign odors and flavors.

(3) Texture.

a. General. The product shall fully rehydrate within ten minutes.

b. Beef. The beef shall be moist and tender.

c. Macaroni. The macaroni shall be slightly soft to slightly firm.

d. Kidney beans. The kidney beans shall be tender and slightly firm. They may be slightly dry inside.

e. Sauce. The sauce shall be moderately thick.

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 requirements.

(1) Protein content. The protein content shall be not less than 19.0 percent.

(2) Fat content. The fat content shall be not greater than 18.0 percent.

(3) Sodium content. The sodium content shall be not greater than 1500 mg per 100 grams.

G. Moisture content. The moisture content shall be not greater than 2.5 percent.

H. Microbiological requirements. The aerobic plate count shall be not greater than 75,000 per gram in four of five samples, and not greater than 150,000 per gram in any individual

sample. The *Escherichia coli* count shall have no positive tubes in the standard 3 tube most probable number (MPN) technique.

### **C-3 MISCELLANEOUS INFORMATION**

THE FOLLOWING INGREDIENTS ARE FOR INFORMATION ONLY. THIS IS NOT A MANDATORY CONTRACT REQUIREMENT.

A. Ingredients: Cooked beef, enriched macaroni, kidney beans, tomato paste, chili seasoning, sugar, paprika, partially hydrogenated soybean and/or cottonseed oil, autolyzed yeast extract, caramel color, modified corn starch, dehydrated onions, dextrose, sugar.

### **SECTION D**

#### **D-1 PACKAGING**

Product shall be filled into pouches in accordance with the PACKAGING REQUIREMENTS AND QUALITY ASSURANCE PROVISIONS FOR DEHYDRATED PRODUCT IN A BRICKPACK POUCH.

#### **D-2 LABELING**

Each pouch shall be labeled in accordance with the PACKAGING REQUIREMENTS AND QUALITY ASSURANCE PROVISIONS FOR DEHYDRATED PRODUCT IN A BRICKPACK POUCH.

#### **D-3 PACKING**

Packing for shipment to ration assembler shall be in accordance with the PACKAGING REQUIREMENTS AND QUALITY ASSURANCE PROVISIONS FOR DEHYDRATED PRODUCT IN A BRICKPACK POUCH.

#### **D-5 MARKING**

Marking of shipping containers shall be in accordance with the PACKAGING REQUIREMENTS AND QUALITY ASSURANCE PROVISIONS FOR DEHYDRATED PRODUCT IN A BRICKPACK POUCH.

## **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 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  
AMSRD-NSR-CF-F  
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 USDA 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/tests and methods of inspection cited in this section and in PACKAGING REQUIREMENTS AND QUALITY ASSURANCE PROVISIONS FOR DEHYDRATED PRODUCT IN A BRICKPACK POUCH.

**E-5 QUALITY ASSURANCE PROVISIONS (PRODUCT)**

A. Product examination. The finished product shall be examined for compliance with the performance requirements specified in Section C of this Performance-based Contract Requirements document utilizing the double sampling plans indicated in ANSI/ASQ Z1.4. The lot size shall be expressed in 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/ 3/ 4/ 5/

Category		Defect
<u>Major</u>	<u>Minor</u>	
<b><u>Dehydrated product</u></b>		
<u>Appearance</u>		
101		Product not a mixture of cooked ground beef, macaroni, and kidney beans in a tomato-based chili sauce that has been dehydrated.
102		Glazed surface area measuring more than 0.5 inch in any dimension. <u>6/</u>
103		Dark colored core in any dimension. <u>7/</u>
	201	Ground beef pieces not cooked, freeze-dehydrated beef or not medium brown color.
	202	Cooked, dehydrated macaroni not light tan to off-white color.

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

Category		Defect
<u>Major</u>	<u>Minor</u>	
	203	Cooked, dehydrated kidney beans not practically free of broken beans or mashed beans or loose skins.
	204	Dehydrated tomato-based chili sauce not tomato puree with chili spices; or not tomato paste with chili spices; or not a combination of either tomato puree or tomato paste with chili spices.
	205	Sauce not orangish-brown to reddish-brown color.
		<u>Odor</u>
104		Packaged food does not have an odor of cooked, dehydrated, kidney beans or macaroni or chili spice blend or beef.
		<u>Texture</u>
105		Wet spots or soft spots. <u>7/</u>
		<u>Net weight</u>
	206	Net weight of an individual pouch less than 136 grams.
		<b><u>Rehydrated product 8/</u></b>
		<u>Appearance</u>
106		Product not a mixture of ground beef pieces, macaroni and red kidney beans in a tomato-based chili sauce typical of a product that has been frozen and reheated.
107		Bone or bone fragment measuring more than 0.3 inch in any dimension.
	207	Total weight of cartilage, coarse connective tissue, tendons or ligaments, and glandular material more than 0.35 ounces.
	208	Ground beef pieces not distinct or not a medium brown color.

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

Category		Defect
<u>Major</u>	<u>Minor</u>	
	209	Macaroni not discernible product or not light cream to off-white color.
	210	Kidney beans not practically free of broken beans or mashed beans or loose skins.
	211	Sauce not tomato puree with chili spices; or not tomato paste with chili spices; or not a combination of either tomato puree or tomato paste with chili spices.
	212	Sauce not an orangish-brown to a reddish - brown color.
		<u>Odor and flavor</u>
108		Product does not have a cooked chili spice tomato sauce or cooked macaroni or cooked beef or cooked kidney bean odor or flavor.
		<u>Texture</u>
	109	Hard cores due to incomplete water penetration. <u>9/</u>
	213	Ground beef not moist or not tender.
	214	Macaroni not slightly soft to slightly firm.
	215	Kidney beans not tender or not slightly firm. <u>10/</u>
	216	Sauce not moderately thick.

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. Foreign flavor is not applicable to dehydrated product.

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. Palatability is not applicable to dehydrated product.



3/ Verification of the macaroni as enriched elbow shaped macaroni product shall be verified with the statement of ingredients on the label or verified by producer's Certificate of Conformance (CoC). Any nonconforming results shall be cause for rejection of the lot.

4/ Class of kidney beans shall be verified by producer's CoC.

5/ Machine setting requirement for beef pieces shall be verified by producer's CoC.

6/ Evidence of faulty dehydration.

7/ Evidence of incomplete dehydration.

8/ Rehydrate according to pouch instructions. Product that does not rehydrate within ten minutes shall be cause for rejection of the lot.

9/ Dry areas attributable to gristle and similar materials in the meat shall not be considered defects because they do not necessarily rehydrate properly.

10/ Dry areas in the interior of the kidney bean shall not be considered defects if the areas are not hard.

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 hedonic scale to be considered acceptable.

(2) 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 1 gram.

(3) 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 composite sample shall be prepared and analyzed in accordance with the following methods of the Official Methods of Analysis (OMA) of AOAC International:

<u>Test</u>	<u>Method Number</u>
Protein	992.15, 988.05 or 991.20
Fat	925.12 or 985.15
Sodium	985.35, 984.27

Test results for protein and fat shall be reported to the nearest 0.1 percent. Test results for sodium shall be reported to the nearest 1 mg per 100 grams. Government verification will be conducted through actual testing by a Government laboratory. Any nonconforming results shall be cause for rejection of the lot.

(4) Moisture content testing. Eight filled and sealed pouches shall be selected at random from the lot regardless of lot size. The contents of each pouch shall be blended to uniformity using a blender or food processor. The blending must be rapid and conducted in such a way that minimum heat is transferred to the product and that the product has minimum exposure to atmospheric moisture. Each sample shall be tested for moisture content in accordance with the Official Methods of Analysis (OMA) of AOAC International, method 926.08 (except the temperature-time cycle for moisture analysis shall be modified by using a temperature of 70°C for 16 hours at a pressure of not more than 100 mm of mercury). Test results shall be reported to the nearest 0.1 percent. Government verification will be conducted through actual testing by a Government laboratory. Any result not conforming to the moisture requirement shall be cause for rejection of the lot.

(5) Microbiological testing. Five filled and sealed pouches shall be selected at random from the lot regardless of the lot size. The pouched product shall be individually tested for microbiological levels in accordance with the OMA of AOAC International, for aerobic plate count, method 966.23 or 990.12, and for *E. coli*, method 966.24. The diluent shall be added to each sample of dry product and allowed to stand for 15 minutes before blending the sample. Government verification will be conducted through actual testing by a Government laboratory. Any result not conforming to the microbiological requirements shall be cause for rejection of the lot.

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

Inspection for packaging, labeling, packing, and marking shall be in accordance with the PACKAGING REQUIREMENTS AND QUALITY ASSURANCE PROVISIONS FOR DEHYDRATED PRODUCT IN A BRICKPACK POUCH.

**SECTION J REFERENCE DOCUMENTS**

SPECIFICATIONS

PACKAGING REQUIREMENTS AND QUALITY ASSURANCE PROVISIONS  
FOR DEHYDRATED PRODUCT IN A BRICKPACK POUCH.

NON-GOVERNMENTAL STANDARDS

AMERICAN SOCIETY FOR QUALITY (ASQ) [www.asq.org](http://www.asq.org)

ANSI/ASQ Z1.4-2003      Sampling Procedures and Tables for Inspection by  
Attributes

AOAC INTERNATIONAL [www.aoac.org](http://www.aoac.org)

Official Methods of Analysis (OMA) of AOAC International