

## **SECTION C**

This document covers thermostabilized pasta with ground hot Italian sausage packaged in polymeric trays for use by the Department of Defense as a component of operational rations.

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

#### **PCR-P-041, PASTA WITH GROUND HOT ITALIAN SAUSAGE, PACKAGED IN A POLYMERIC TRAY, SHELF STABLE**

### **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. Commercial sterility. The packaged product shall be processed until commercially sterile.

C. Shelf life. The finished product shall meet the minimum shelf life requirement of 36 months at 80°F.

D. Appearance.

(1) General. The finished product shall be pasta and ground hot Italian pork sausage in Italian seasoned tomato sauce. The packaged food shall be free from foreign materials.

(2) Pasta. The pasta shall be enriched macaroni product and shall be malfalda shape (1.25 inch in length) with 2 percent albumin. The pasta shall be intact, distinct, and separate. The pasta shall be off white in color.

(3) Sausage. The cooked ground hot Italian sausage shall be reddish brown to brown in color. The ground sausage shall be practically free of bone or bone fragments, cartilage, coarse connective tissue, tendons or ligaments, and glandular material.

(4) Sauce. The sauce shall be red to reddish brown in color and shall be typical of a tomato-based sauce with pieces of tomato and flecks of herbs and spices.

E. Odor and flavor. The packaged food shall have an odor and flavor of cooked pasta with hot Italian pork sausage in a moderately spicy tomato-based sauce. The packaged food shall be free from foreign odors and flavors.

F. Texture.

(1) Pasta. The cooked pasta shall be slightly soft to slightly firm.

(2) Sausage. The cooked sausage shall be moist and slightly firm.

(3) Sauce. The sauce shall be moderately thick with pieces of tomato.

G. Net Weight. The average net weight shall be not less than 95 ounces. No individual tray shall have a net weight of less than 93 ounces.

H. Drained weight. The average drained weight shall be not less than 66.0 ounces. The drained weight of pasta and sausage (combined) in an individual polymeric tray shall be not less than 64.0 ounces.

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

K. Analytical requirements.

(1) Protein content. The protein content shall be not less than 7.3 percent.

(2) Fat content. The fat content shall be not greater than 8.5 percent.

(3) Salt content. The salt content shall be not less than 0.7 percent and not greater than 1.4 percent.

**C-3 MISCELLANEOUS INFORMATION**

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

A. Ingredients/formulation. Ingredients and formulation percentages for the tomato sauce may be as follows:

<u>Ingredients</u>	<u>Percent by weight</u>
Water	40.73
Crushed chunky tomatoes	36.00
Tomato paste	14.75
Parmesan cheese	2.50
Modified waxy maize starch	2.00
Dehydrated onions	1.50
Salt <u>1/</u>	1.00
Sugar	1.00
Garlic powder	0.30
Oregano	0.08
Red pepper	0.06
Basil	0.04
Fennel	0.04

1/ The total amount of salt in the sauce formula may be adjusted as necessary to produce a product that complies with the finished product salt requirements.

B. Product preparation. Percentages for product preparation may be as follows:

<u>Ingredients</u>	<u>Percent by weight</u>
Sauce	51.50
Sausage blanched <u>1/</u>	34.00
Blanched pasta <u>2/</u>	14.50

1/ The sausage used in development of this product was Decosta bulk hot Italian pork sausage distributed by HALLSMITH -SYSCO, Norton, MA. The uncooked bulk ground sausage was blanched in hot water to an approximate yield of 85 percent.

2/ The pasta used was malfalda (1.25 inch) with 2 percent albumin manufactured by A. Zerega's Sons, Inc. Fair Lawn, New Jersey. The pasta was blanched to approximately double the dry pasta weight, rinsed and cooled.

## **SECTION D**

### **D-1 PACKAGING**

A. Preservation. Product shall be filled into polymeric trays and the trays with protective sleeves shall conform to the requirements of section 3 of MIL-PRF-32004, Packaging of Food in Polymeric Trays. Verification testing and inspection of trays, lids and sleeves shall be in accordance with Section 4 of MIL-PRF-32004 and the Quality Assurance Provisions of Section E of this Performance-based Contract Requirements document.

B. Polymeric tray closure. The filled, sealed, and processed tray shall be securely closed.

## **D-2 LABELING**

A. Polymeric tray body. The polymeric tray body shall be clearly printed or stamped, in a manner that does not damage the tray, with permanent ink of any contrasting color, which is free of carcinogenic elements. One end of the polymeric tray (see figure 1 of MIL-PRF-32004) shall be marked with the product name and number of portions. If the tray body end markings are not readily legible in low light conditions, a small, easily legible label shall be applied, but not over any existing tray markings. All other markings may be applied along the tray body side. To avoid erroneous marking of trays, the product name, lot number and filling equipment number shall be applied prior to processing. Additional tray marking may be applied before or after processing. 1/

Tray body markings shall include:

(1) Product name. Commonly used abbreviations may be used when authorized by the inspection agency.

(2) Tray code includes: 2/  
Lot Number  
Filling equipment identification number  
Retort identification number  
Retort cook number

1/ As an alternate method, tray body markings may be clearly printed or stamped onto the polymeric tray lid prior to processing, in a manner that does not damage the lid, with permanent ink of any contrasting color, which is free of carcinogenic elements, provided that the required markings are applied onto the tray body after processing.

2/ 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, 3 March 2004 would be coded as 4063). The Julian code shall represent the day the product was packaged into the tray and processed. Sublotting (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. Polymeric tray lid. The lid shall be clearly printed or stamped, in a manner that does not cause damage. Permanent ink of any contrasting color, which is free of carcinogenic elements, shall be used. As an alternate labeling method, a pre-printed self-adhering 0.002 inch thick clear polyester label printed with indelible contrasting color ink may be used.

(1) Lid labeling shall include:

Product name  
Ingredients  
Net weight  
Name and address of packer  
Official establishment number (for example, EST 38) or a three letter code identifying the establishment

(2) Lid labeling shall also show the following statements:

TO HEAT IN WATER: Submerge unopened tray in water. Bring water to a boil. Simmer gently 35-40 minutes. Avoid overheating (tray shows evidence of bulging).

WARNING: Do not heat tray in oven.

TO TRANSPORT AFTER HEATING: Insert tray back into protective sleeve to protect during transport. If sleeve is unavailable, stack trays lid-to-lid with fiberboard pads in between.

CAUTION: Use care when opening as pressure may have been generated within the tray.

TO OPEN: Using a clean knife, cut the lidding around the inside perimeter of the tray seals.

SUGGESTION: Cut lid along 3 sides and fold over uncut portion. Fold back to keep unused portions protected.

YIELD: Serves 9 portions of approximately 1-1/2 cups each.

### **D-3 PACKING**

A. Packing for shipment to ration assembler. Four filled, sealed, processed and sleeved polymeric trays shall be packed in a snug fitting fiberboard box conforming to style RSC-L, type CF, grade 275 of ASTM D5118/D5118M-95 (2001), Standard Practice for Fabrication of Fiberboard Shipping Boxes. The sleeved trays shall be placed flat with the first two trays placed with the lids together and the next two trays with the lids together. The box shall be closed in accordance with ASTM D1974-98, Standard Practice for Methods of Closing, Sealing, and Reinforcing Fiberboard Boxes.

### **D-4 UNITIZATION**

A. Unit loads. Unit loads shall be as specified in DSCP FORM 3507, Loads, Unit: Preparation of Semiperishable Subsistence Items.

## **D-5 MARKING**

A. Shipping containers and unit loads. Marking of shipping containers and unit loads shall be as specified in 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/ASQC Z1.4-1993, Sampling Procedures and Tables for Inspection by Attributes, are required. Unless otherwise specified, Single Sampling Plans indicated in ANSI/ASQC Z1.4-1993 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 Center  
AMSRD-NSC-CF-F  
15 Kansas Street  
Natick, MA 01760-5018

One lot shall be randomly selected during each calendar month of production. Two (2) sample units of each item produced shall be randomly selected from that one production lot. The two (2) 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 and the 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 Section C of this Performance-based Contract Requirements document utilizing the double sampling plans indicated in ANSI/ASQC Z1.4 - 1993. The lot size shall be expressed in trays. The sample unit shall be the contents of one tray. The inspection level shall be S-3 and the acceptable quality level (AQL), expressed in terms of defects per hundred units, shall be 4.0 for major defects and 6.5 for minor defects. Defects and defect classifications are listed in table I below. The trays shall be heated in accordance with the heating instructions from the tray label prior to conducting any portion of the product examination. The samples for drained weight inspection shall be selected using the same sampling criteria as above.

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

Category		Defect
<u>Major</u>	<u>Minor</u>	
		<u>Appearance</u>
101		Product not pasta and ground hot Italian pork sausage in Italian seasoned tomato sauce.
102		Bone or bone fragment measuring more than 0.3 inch in any dimension.
	201	Pasta not intact, not distinct, or not separate.

TABLE I. Product defects 1/ 2/ 3/ 4/ cont'd

Category		Defect
<u>Major</u>	<u>Minor</u>	
		<u>Appearance</u> cont'd
	202	Pasta not off white in color.
	203	Total weight of cartilage, coarse connective tissue, tendons or ligaments, and glandular material is more than 2.0 ounces.
	204	Sausage not reddish brown to brown in color.
	205	Sauce not red to reddish brown in color.
	206	Sauce not typical of a tomato-based sauce with pieces of tomato and flecks of herbs and spices.
		<u>Odor and flavor</u>
103		The packaged food does not have an odor or flavor of pasta with hot Italian sausage in a moderately spicy tomato-based sauce.
		<u>Texture</u>
	207	Pasta not slightly soft to slightly firm.
	208	Sausage not moist or not slightly firm.
	209	Sauce not moderately thick with pieces of tomato.
		<u>Net weight</u>
	210	Net weight of an individual polymeric tray less than 93 ounces. <u>5/</u>
		<u>Drained weight</u>
	211	Drained weight of pasta and sausage (combined) in an individual polymeric tray less than 64.0 ounces. <u>6</u>

1/ Presence of any foreign materials such as, but not limited to dirt, insect parts, hair, wood, glass, metal, or mold, or any 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/ Size and type requirements for the pasta and sausage shall be verified by certificate of conformance.

4/ Verification of the enriched macaroni product shall be with the statement of ingredients on the label. Any nonconforming results shall be cause for rejection of the lot.

5/ Sample average net weight less than 95 ounces shall be cause for rejection of the lot.

6/ Sample average drained weight less than 66.0 ounces shall be cause for rejection of the lot.

B. Methods of inspection.

(1) Commercial sterility. Commercial sterility shall be verified in accordance with USDA/FSIS regulations.

(2) Shelf life. The contractor shall provide a certificate of conformance that the product has a 3 year shelf life when stored at 80<sup>0</sup>F. Government verification may include storage for 6 months at 100<sup>0</sup>F or 36 months at 80<sup>0</sup>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 polymeric tray shall be determined by weighing each sample unit on a suitable scale tared with a representative empty tray and lid. Results shall be reported to the nearest 1 ounce.

(4) Drained weight. To determine drained weight, the contents of the polymeric tray shall be poured into a flat bottom container. A minimum of three times the polymeric tray's volume of not less than 140<sup>0</sup>F water shall be added to the container so as to cover the contents. The contents and water shall be agitated so as to liquefy rendered fat and to remove the sauce without undue breakup of the sausage or pasta. The contents shall then be poured into the U.S. Standard No. 7 sieve in a manner that will distribute the product over the sieve without undue breakup of the sausage or pasta. 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 such an angle to assure complete drainage of liquid from the product. Drain product for two 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 0.5 ounce.

(5) Analytical. The sample to be analyzed shall be a one-pound composite of three filled and sealed polymeric trays that have been selected at random from one production lot. The composite sample shall be prepared and analyzed in accordance with the following Official Methods of Analysis of AOAC International (OMA).

<u>Test</u>	<u>Method Number</u>
Protein	984.13 or 992.15
Fat	985.15
Salt	935.47

Test results shall be reported to the nearest 0.1 percent. Verification will be conducted through actual testing by a Government laboratory. Any result not conforming to the analytical requirements shall be cause for rejection of the lot.

**E-6 QUALITY ASSURANCE PROVISIONS (PACKAGING AND PACKING MATERIALS, POLYMERIC TRAY)**

A. Packaging and labeling.

(1) Polymeric tray testing. For purposes of clarification, the polymeric tray without the lid will be referred to as the “tray” and the polymeric tray with the lid shall be referred to as the “container”. The polymeric tray with protective sleeve and polymeric tray material shall be examined for the characteristics listed in table I of MIL-PRF-32004, Packaging of Food in Polymeric Trays. The lot size, sample unit, and inspection level criteria are provided in table II below 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. For rough handling survivability at frozen temperature, polymeric tray survival rate shall be at least 85 percent.

TABLE II. Polymeric tray quality assurance criteria

Characteristic	<u>Prior to processing</u>		
	Lot size expressed in	Sample unit	Inspection level
Tray configurations and dimensions	Trays	1 tray	S-1
Oxygen gas transmission rate of tray	Trays	1 tray	S-1
Oxygen gas transmission rate of lid	Yards	1/2 yard	S-1
Water vapor transmission rate of tray	Trays	1 tray	S-1

TABLE II. Polymeric tray quality assurance criteria cont'd

<u>Prior to processing cont'd</u>			
Characteristic	Lot size expressed in	Sample unit	Inspection level
Water vapor transmission rate of lid	Yards	1/2 yard	S-1
Camouflage	Containers	1 container	S-1
<u>After processing</u>			
Characteristic	Lot size expressed in	Sample unit	Inspection level
Processing	Trays	1 tray	S-2
Rough handling survivability	Test containers	1 container	S-2
Protective sleeve	Containers	1 container	S-1
Residual gas	Containers	1 container	S-1
Closure seal	Containers	1 container	S-1
Internal pressure	Containers	1 container	S-1
Lid opening	Containers	1 container	S-1

(2) Examination of container. The container with protective sleeve removed shall be examined for the defects listed in table II of MIL-PRF-32004 and the labeling defects listed in table III below. The lot size shall be expressed in containers. The sample unit shall be one processed and labeled container. The inspection level shall be I and the AQL, expressed in terms of defects per hundred units, shall be 0.65 for major A defects, 2.5 for major B defects and 4.0 for minor defects. Two hundred sample units shall be examined for critical defects. The finding of any critical defect shall be cause for rejection of the lot.

TABLE III. Container labeling defects

Category		Defect
<u>Major A</u>	<u>Minor</u>	
101		Polymeric tray lid or body labeling missing, incorrect or illegible.
	201	When a pre-printed self adhering label is used, the label not adhering to tray lid (for example, label raised or peeled back from edge to corner) or presence of any areas of gaps along the perimeter of the label where the label is not properly adhered.

(3) Label adhesive examination. When self-adhering labels are used, the adhesive shall be tested in accordance with ASTM D3330/D3330M-00. In lieu of testing, a certificate of conformance (COC) shall be provided.

B. Packing.

(1) Shipping container and marking examination. The filled and sealed shipping containers shall be examined for the defects listed in table IV 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 IV. 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. <u>1/</u>
	201	Arrangement or number of polymeric trays not as 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.

C. Unitization.

(1) Unit load examination. The unit load shall be examined in accordance with the requirements of DSCP FORM 3507, Loads, Unit: Preparation of Semiperishable Subsistence Items. Any nonconformance shall be classified as a major defect.

**SECTION J REFERENCE DOCUMENTS**

DSCP FORMS

- |                |   |
|----------------|---|
| DSCP FORM 3507 | Loads, Unit: Preparation of Semiperishable Subsistence Items                                      |
| DSCP FORM 3556 | Marking Instructions for Boxes, Sacks and Unit Loads of Perishable and Semiperishable Subsistence |

MILITARY SPECIFICATIONS

- |               |                                      |
|---------------|--------------------------------------|
| MIL-PRF-32004 | Packaging of Food in Polymeric Trays |
|---------------|--------------------------------------|

GOVERNMENT PUBLICATIONS

- Federal Food, Drug, and Cosmetic Act and regulations promulgated thereunder (21 CFR Parts 1-199) and (9 CFR Parts 1-391)

NON-GOVERNMENTAL STANDARDS

AMERICAN SOCIETY FOR QUALITY (ASQ)

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

ASTM INTERNATIONAL

- |                        |   |
|------------------------|---|
| D1974-98               | Standard Practice for Methods of Closing, Sealing, and Reinforcing Fiberboard Boxes |
| D3330/D3330M-00        | Standard Test Method for Peel Adhesion of Pressure-Sensitive Tape                   |
| D5118/D5118M-95 (2001) | Standard Practice for Fabrication of Fiberboard Shipping Boxes                      |

AOAC INTERNATIONAL

- Official Methods of Analysis of the AOAC International (OMA)