

SECTION C

This document covers thermostabilized ratatouille (mixed vegetables and penne) in a flexible pouch for use by the Department of Defense as a component of operational rations.

C-1 ITEM DESCRIPTION

PCR-R-012, RATATOUILLE (MIXED VEGETABLES AND PENNE), PACKAGED IN A FLEXIBLE POUCH, 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 food shall be processed until commercially sterile.

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

D. Appearance.

(1) General. The finished product shall be a uniform mixture of vegetables (tomatoes, zucchini, green and red bell peppers, onions, and mushrooms), whole grain penne rigate, and vegetarian sausage crumbles in a sauce. The product may have pieces of minced garlic. The finished product shall be free from foreign materials.

(2) Vegetables.

a. Tomatoes. The tomatoes shall be 3/4 inch dices and shall have a cooked red tomato color.

b. Zucchini. The zucchini shall be pieces and shall have a cooked zucchini color.

c. Green and red bell peppers. The green and red bell peppers shall be dices and shall have a cooked pepper color.

d. Onions. The onions shall be pieces and shall have a translucent appearance of cooked onion.

e. Mushrooms. The mushrooms shall be pieces and shall have a brown, cooked mushroom appearance.

(3) Penne. The penne shall be derived from enriched whole grain pasta product. The dry penne rigate shall be tubular with ridges and diagonal end cuts and shall have measurements of not less than 1.5 inches \pm 0.25 inches. The cooked penne rigate shall be intact and have a cooked whole grain pasta color. The penne rigate shall contain 10 grams of dietary fiber per 100 grams of dry pasta product.

(4) Vegetarian sausage crumbles. The vegetarian sausage crumbles shall be of random size with the largest piece not to exceed 1/2 inch. The vegetarian sausage crumbles shall have a cooked ground meat appearance.

(5) Sauce. The sauce shall be glossy and semi-translucent.

E. Odor and flavor. The packaged food shall have an odor and flavor of stewed vegetables, mild cooked vegetarian sausage crumbles, and cooked whole grain pasta in a vegetable broth based sauce flavored with Italian seasoning. The packaged food shall be free from foreign odors and flavors.

F. Texture.

(1) Vegetables. The vegetables shall be tender.

(2) Penne. The penne shall be slightly soft to slightly firm and shall not be pasty.

(3) Vegetarian sausage crumbles. The vegetarian sausage crumbles shall have a texture similar to cooked ground meat.

(4) Sauce. The sauce shall be moderately thick and slightly free flowing.

G. Net weight. The average net weight shall be not less than 8.0 ounces (227 grams). The net weight of an individual pouch shall be not less than 7.5 ounces (213 grams).

H. Drained weight. The average drained weight of vegetables, penne, and vegetarian sausage crumbles (combined) shall be not less than 5.0 ounces (142 grams). The drained weight of vegetables, penne, and vegetarian sausage crumbles (combined) in an individual pouch shall be not less than 4.6 ounces (130 grams).

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

J. Analytical requirements.

(1) Protein content. The protein content shall be not less than 3.0 percent.

(2) Fat content. The fat content shall be not greater than 4.0 percent.

(3) Salt content. The salt content shall be not less than 0.5 percent and not greater than 1.2 percent.

K. Vegetarian requirement. This product shall contain no ingredients, major or trace, and/or processing aids derived from the flesh, skin, blood, entrails, or bones of animals. This includes, but is not limited to oils, fats, fatty acids, and their esters (palmitic, stearic, oleic, and pelargonic acids), flavorings, gelling agents, coagulants, (rennet derived from calves or pepsin derived from swine which are used in cheese manufacture), binders, emulsifiers (mono/di-glycerides, sodium or magnesium stearate, polysorbate, sorbitans, monostearate, glycerin), fatty alcohol, aldehydes, and ketones, lactones, glycerol, amino acids, hydrolyzed proteins, enzymes, and enzyme modified products. Furthermore, these products shall contain no ethyl alcohol, or ingredients derived from or containing methyl alcohol. Milk and eggs, and ingredients derived from them such as yogurt, or cheese (produced without animal based rennet or pepsin), are allowed.

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

<u>Ingredient</u>	<u>Percent by weight</u>
Tomatoes, diced, canned, juice included	26.40
Vegetable broth	17.70
Vegetarian sausage crumbles	10.50
Zucchini, sliced, individually quick frozen (IQF)	10.40
Whole grain penne rigate, uncooked	9.50
Green pepper, diced, (IQF)	5.90
Red pepper, diced, IQF	5.90
Onion, diced, IQF	5.90
Mushrooms, slices and pieces canned	3.70
Olive oil	2.20
Garlic cloves, minced	0.90
Modified food starch	0.70
Salt	0.22
Thyme, oleoresin	0.02
Oregano, oleoresin	0.02
Basil, oleoresin	0.02
Garlic concentrate	0.02

B. Viscosity. The viscosity of the post-retort Ratatouille is 3.5 cm at 165°F for 15 seconds when using a Bostwick consistometer.

SECTION D

D-1 PACKAGING

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

D-2 LABELING

A. Pouches. Each pouch shall be correctly and legibly labeled. Printing ink shall be 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.

(2) Pouch code includes: 1/

Lot Number
Filling equipment identification number
Company code
Retort identification number and Retort cook number (Optional)
Time stamp (hour and minute of filling/sealing operation)

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, 14 February 2010 would be coded as 0045). The Julian code shall represent the day the product was packaged into the pouch and processed. Following the four digit Julian code, 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/ 3/
“Nutrition Facts” label in accordance with the Nutrition Labeling and Education Act (NLEA) and all applicable FDA regulations

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

2/ Company code not required in carton code.

3/ Cartons shall be time stamped with the hour and minute that the pouch is sealed into the carton. (Cartons are not expected to bear same time stamp as pouch). Alternatively, the optional Retort identification and Retort cook number shall be used.

(2) Military nutrition information entitled “Military Rations Are Good Performance Meals” 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.

(3) The product shall be formulated and labeled in accordance with all FDA labeling regulations and policies. The cartons shall be labeled with the following product name.

RATATOUILLE (MIXED VEGETABLES AND PENNE)

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 of ASTM D 5118/5118M, Standard Practice for Fabrication of Fiberboard Shipping Boxes. The fiberboard shall conform to type CF, class D, variety SW, grade 200 of ASTM D 4727/D 4727M, Standard Specification for Corrugated and Solid Fiberboard Sheet Stock (Container Grade) and Cut Shapes. Each box shall be closed in accordance with ASTM D 1974, Standard Practice for Methods of Closing, Sealing, and Reinforcing Fiberboard Boxes.

D-5 MARKING

A. Shipping containers. Shipping containers shall be marked in accordance with DSCP FORM 3556, Marking Instructions for Boxes, Sacks, and Unit Loads of Perishable and Semiperishable Subsistence.

SECTION E INSPECTION AND ACCEPTANCE

The following quality assurance criteria, utilizing ANSI/ASQ Z1.4, Sampling Procedures and Tables for Inspection by Attributes, are required. 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
RDNS-CFF
15 Kansas Street
Natick, MA 01760-5018

One lot shall be randomly selected during each calendar month of production. Six (6) sample units of each item produced shall be randomly selected from that one production lot. The six (6) sample units shall be shipped to Natick within 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 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 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. 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/ 6/

<u>Category</u>		<u>Defect</u>
<u>Major</u>	<u>Minor</u>	<u>Appearance</u>
101		Product not a uniform mixture of vegetables (tomatoes, zucchini, red and green bell peppers, onions and mushrooms), whole grain penne rigate and vegetarian sausage crumbles in a sauce.
	201	Tomato dices not a cooked red tomato color.
	202	Zucchini not pieces.
	203	Zucchini not a cooked zucchini color.
	204	Green and red bell peppers not dices.
	205	Green and red bell peppers not a cooked pepper color.
	206	Onions not pieces.
	207	Onions do not have a translucent appearance of cooked onion.
	208	Mushrooms not pieces.
	209	Mushrooms do not have a brown, cooked mushroom appearance.
	210	Penne not intact.
	211	Penne does not have a cooked whole grain pasta color.
	212	Vegetarian sausage crumbles not random size.
	213	Largest vegetable sausage crumble piece exceeds 1/2 inch.
	214	Vegetarian sausage crumbles do not have a cooked ground meat appearance.

TABLE I. Product defects 1/ 2/ 3/ 4/ 5/ 6/- Continued

Category	Defect
<u>Major</u>	<u>Minor</u>
	215
	Sauce not glossy or not semi-translucent.
	<u>Odor and flavor</u>
102	Product does not have an odor or flavor of stewed vegetables or mild cooked vegetarian sausage crumbles or cooked whole grain pasta in a vegetable broth based sauce flavored with Italian seasoning.
	<u>Texture</u>
	216
	Vegetables not tender.
	217
	Penne not slightly soft to slightly firm or is pasty.
	218
	Vegetarian sausage crumble texture not similar to cooked ground meat.
	219
	Sauce not moderately thick or not slightly free flowing.
	<u>Net weight</u>
	220
	Net weight of an individual pouch less than 7.5 ounces (213 grams). <u>7/</u>
	<u>Drained weight</u>
	221
	Combined drained weight of vegetables, penne, and vegetarian sausage crumbles in an individual pouch less than 4.6 ounces (130 grams). <u>8/</u>

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/ Product not verified by a Certificate of Conformance (CoC) as meeting the vegetarian requirement shall be cause for rejection of the lot.

4/ Tomato dice size requirement shall be verified by a COC.

5/ Verification of penne rigate as enriched whole grain pasta product shall be with the statement of ingredients on the label or verified by the producer's CoC. Any nonconforming result shall be cause for rejection of the lot.

6/ Penne rigate shape, size and whole grain penne rigate dietary fiber requirement shall be verified by producer's CoC.

7/ Sample average net weight less than 8.0 ounces (227 grams) shall be cause for rejection of the lot.

8/ Sample average drained weight of vegetables, penne, and vegetarian sausage crumbles (combined) less than 5.0 ounces (142 grams) shall be cause for rejection of the lot.

B. Methods of inspection.

(1) Commercial sterility. Commercial sterility shall be verified in accordance with FDA regulations.

(2) 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.

(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 or to the nearest 1 gram.

(4) Drained weight. The pouch contents 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. 14 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 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 0.1 ounce or to the nearest 1 gram.

(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 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	984.13, 992.15
Fat	985.15
Salt	935.47

Test results shall be reported to the nearest 0.1 percent. Government verification will be conducted through actual testing by a Government laboratory. Any nonconforming results shall be cause for rejection of the lot.

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

A. Packaging.

(1) Pouch material testing. The pouch material shall be examined for the characteristics listed in table I of MIL-PRF-44073 for Type I. The lot size, sample unit, and inspection level criteria for each of the test characteristics are listed below. Any test failure shall be classified as a major defect and shall be cause for rejection of the lot.

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
Low temperature	Pouches	1 pouch	S-2
High temperature	Pouches	1 pouch	S-2

(2) Filled and sealed pouch testing. The filled and sealed thermoprocessed or hot-fill processed pouches shall be examined for the characteristics listed in table I of MIL-PRF-44073 for Type I. The lot size, sample unit, and inspection level criteria for each of the test characteristics are listed below. Any test failure shall be classified as a major defect and shall be cause for rejection of the lot.

Characteristic	Lot size expressed in	Sample unit	Inspection level
Residual gas volume	pouches	1 pouch	S-2
Internal pressure	pouches	1 pouch	S-2 <u>1/</u>
Directional tear	pouches	1 pouch	S-2

1/ When a three-seal tester is used, a separate set of samples is required for testing of the closure seal.

(3) Pouch examination. The pouches shall be examined for the defects listed in table II of MIL-PRF-44073 for Type I. 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 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.

(4) 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 for Type I. 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 II 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.

<u>TABLE II. Shipping container and marking defects</u>		
<u>Category</u>	<u>Defect</u>	
<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 issues of these documents are those active on the date of the solicitation or contract.

DSCP FORMS

DSCP FORM 3556 Marking Instructions for Boxes, Sacks, and Unit 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) www.asq.org

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

ASTM INTERNATIONAL www.astm.org

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

D 4727/D 4727M Standard Specification for Corrugated and Solid Fiberboard Sheet Stock (Container Grade) and Cut Shapes

D 5118/D 5118M Standard Practice for Fabrication of Fiberboard Shipping Boxes

AOAC INTERNATIONAL www.aoac.org

Official Methods of Analysis (OMA) of AOAC International