INCH-POUND

MIL-C-595E
13 November 1990
SUPERSEDING
MIL-C-595D
31 March 1975

MILITARY SPECIFICATION

CHEESE SPREAD, CHEDDAR (OPERATIONAL RATION COMPONENT)

This specification is approved for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification covers cheddar cheese spread in flexible pouches for use by the Department of Defense as a component of the Meal, Ready-to-Eat, Individual (MRE) and as a supplement in the Tray Pack Meal Module operational ration.

1.2 Classification. The cheese spread shall be of the following types as specified (see 6.1)

Type I – Plain
Type II – With Jalapeno Peppers

2. APPLICABLE DOCUMENTS

2.1 Government documents

2.1.1 Specifications, standards and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.1)

SPECIFICATIONS
FEDERAL

L-P-378 - Plastic Sheet and Strip, Thin Gauge, Polyolefin
QQ-A-1876 - Aluminum foil

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, U.S. Army Soldier Systems Command, Natick Research, Development, and Engineering Center, ATTN: SSCNC-WRE, Natick, MA 01760-5018 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A FSC 8940

PPP-B-636 - Boxes, Shipping, Fiberboard

STANDARDS

FEDERAL

FED-STD-595 - Colors Used in Government Procurement

MILITARY

MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes
MIL-STD-129 - Marking for Shipment and Storage

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from the Standardization Documents Order Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

2.1.2 Other Government documents, drawings, publications. The following other Government documents, drawings, and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues are those cited in the solicitation.

ENVIRONMENTAL PROTECTION ACENCY (EPA)
National Primary Drinking Water Regulations

(Copies are available from the Office of Drinking Water, Environmental Protection Agency, WH550D, 401 M Street, S.W., Washington, DC 20460.)

U.S. DEPARTMENT OF AGRICULTURE (USDA)

General Specifications for Approved Dairy Plants and Standards for Grades of Dairy Products (7 CFR Part 58)

U.S. Standards for Grades of Butter

U.S. Standards for Grades of Cheddar Cheese

(Copies are available from the Section Head, Dairy Standardization Branch, Dairy Division Branch, Agricultural Marketing Service, U.S. Department of Agriculture, Room 2750, South Building, P.O. Box 96456, Washington, DC 20090-6456.)

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES (HHS)

Federal Food, Drug, and Cosmetic Act and Regulations Promulgated Thereunder (21 CFR Parts 1-199)

(Copies are available from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402-0001.)

2.2 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents which are DOD adopted are those listed in the issue of the DODISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DODISS are the issues of the documents cited in the solicitation (see 6.1).

AMERICAN ASSOCIATION OF CEREAL CHEMISTS (AACC)

Approved Methods of the American Association of Cereal Chemists

(Application for copies should be addressed to the American Association of Cereal Chemists, 3340 Pilot Knob Road, St. Paul, MN 55121.)

ASSOCIATION OF OFFICIAL ANALYTICAL CHEMISTS (AOAC)

Official Methods of Analysis of the Association of Official Analytical Chemists

(Application for copies should be addressed to the AOAC International, 2200 Wilson boulevard, Suite 400-CD, Arlington, VA 22201-3301.)

NATIONAL ACADEMY OF SCIENCES

Food Chemicals Codex

(Application for copies should be addressed to the National Academy Press, 2101 Constitution Avenue, N.W., Washington, DC 20418.)

NATIONAL CHEESE INSTITUTE

Cheese Color Reference Standard

(Application for copies should be addressed to the National Cheese Institute, 16th Street, N.W., Washington, DC 20006

(Non-Government standards and other publications are normally available from the organizations that prepare or distribute the documents. These documents also may be available in or through libraries or other informational services.)

2.3 Order of precedence. In the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 First article. When specified (see 6.1), a sample shall be subjected to first article inspection (see 6.2), in accordance with 4.4.

3.2 Ingredients. All ingredients shall be clean, sound, wholesome, and free from foreign material, evidence of rodent or insect infestation, extraneous material, off-odors, off-flavors, and off-colors.

3.2.1 Butter. Butter used shall be U.S. Grade A or better of the U.S. Standards for Grades of Butter. The butter shall be lightly salted, fresh from current production (not more than 30 days from churning to the receipt at manufacturer's plant) and bulk packed in 60 to 68 pound blocks. Alternatively, the butter may be straight lot storage butter, provided: it is all from one manufacturer; it has been held more than 30 days but not more than 12 months from date of churning to receipt at the manufacturer's plant; and the product has been placed in frozen storage within 15 days from churning (the temperature during the 15 days shall not exceed 40^0F and the final storage temperature shall not exceed -5^0F.) When storage butter is used, it shall be regraded prior to being shipped to the manufacturer's plant.

3.2.2 Plastic cream. Plastic cream shall be a high fat cream product separated from fresh raw comingled milk that complies with all the requirements for acceptable milk as specified in the General Specifications for Approved Dairy Plant and Standards for Grades of Dairy Products (7 CFR Part 58). The plastic cream shall be pasteurized by heating every particle to not less than 1900F and holding the cream continuously for not less than 15 seconds, or any other temperature/time found to be equivalent in microbial destruction, which has been recognized by the FDA. The plastic cream shall have a sweet cream flavor and shall be free from objectionable flavors and odors such as, but not limited to, rancid, tallowy, fruity, fishy, oxidized, musty, old cream, metallic, or sour. The plastic cream shall contain not less than 78 percent milk fat; not more than 1 microgram pheonl per mL phosphatase activity; not more than 10 per gram coliform count; not more than 5,000 per gram bacterial estimate (SPC); and not more than 20 gram yeast mold count.

3.2.3 Cheddar Cream. Cheddar cheese (except for finish and appearance) shall be U.S. Grade A or better, shall meet the medium cured requirements of the U.S. Standards for Grades of Cheddar Cheese when graded, and shall be at least 90 days old at the time of use. The finish and appearance shall be U.S. Grade B or better of the U.S. Standards for Grades of Cheddar Cheese. The cheese may be colored or uncolored.

3.2.4 Cheese coloring. The cheese coloring shall be annatto containing not less than 2.0 percent as bixon or carotenal solutions with not less than 2.0 percent Beta-apo-8'-carotenal, specifically designed for coloring butter and cheese and which has been certified by the FDA.

3.2.5 Salt. The salt shall be noniodized, white, refined sodium chloride with or without anticaking agents and shall comply with the purity standards for sodium chloride of the Food Chemicals Codex.

3.2.6 Acidifying agents. The acidifying agents shall be either phosphoric, citric, or lactic acid, or a combination thereof, and shall comply with the purity standards of the Food Chemicals Codex.

3.2.7 Vitamin A. The vitamin A concentrate or vitamin A ester (palmitate) shall comply with the purity standards of the Food Chemicals Codex and shall exhibit no off-odor or flavor.

3.2.8 Thiamine hydrochloride (vitamin B_1), pyridoxine hydrochloride (vitamin B_6), and ascorbic acid (vitamin C). The vitamins thiamine hydrochloride (vitamin B_1), pyridoxine hydrochloride (vitamin B_6), and ascorbic acid (vitamin C) shall comply with the purity standards of the Food Chemicals Codex.

3.2.9 Stabilizers and emulsifying agents. The stabilizers and emulsifying agents shall comply with the purity standards of the Food Chemicals Codex and shall consist of those optional ingredients authorized in the Definitions and Standards of Identity under the Federal Food, Drug and Cosmetic Act for pasteurized processed cheddar cheese spread, 21 CFR Part 133.179. Emulsifying agents such as mono and diglycerides may also be used.

3.2.10 Water. Water used for formulation and washing shall conform to the National Primary Drinking Water Regulations.

3.2.11 Jalapeno peppers. Jalapeno peppers used in making type II product shall be diced, green packed in brine. The jalapeno peppers shall possess a hot peppery characteristic flavor with no off flavors. The pepper dices shall be no longer than 1/8 inch in any dimension and shall exhibit a uniform light green color. The peppers shall have a pH not greater than 4.0, an acidity range from 1.4 to 2.5%, a salt content range from 6.5 to 8.5%, and a minimum heat range of 1500 Scoville Heat Units.

3.3 Preparation and processing. Processing shall be on a continuous basis.

3.3.1 Preparation of the cheddar cheese. The medium cured cheddar cheese shall be trimmed and cleaned, as necessary, to remove all rind, wax, mold, or any other objectionable materials from the surface. The trimmed and cleaned cheddar cheese shall be milled or shredded. The milling or shredding of the cheese may be accomplished up to 24 hours prior to the preparation of the cheese spread. The milled/shredded cheese shall be protected from contamination in the clean covered containers and shall be held under refrigeration until time of use.

3.3.2 Preparation of cheese spread. The cheese spread shall be prepared using the quantities of ingredients indicated based on the weight of the finished cheese spread and by blending the ingredients in accordance with an established process schedule or a method which results in cheese spread complying with the finished product requirements in 3.4.

a. Cheddar cheese. The quantity of milled/shredded medium cured cheddar cheese used shall be in accordance with the Definitions and Standards of Identity under the Federal Food, Drug and Cosmetic Act for pasteurized process cheddar cheese spread or pasteurized cheese spread with fruits, vegetables or meats (21 CFR Part 133.176).

b. Butter or plastic cream. Butter or plastic cream, or a combination of both, shall be used as a fat standardizing ingredient. Blend milled cheese and butter or plastic cream, or a combination of both, together in a steam jacketed vat, kettle, or laydown cooker. The mixture shall be heated to a temperature not to exceed 1800F while constantly stirring until the cheese and butter have completely melted. Scorching of the mixture shall be avoided.

c. Water. The amount of water used is dependent on the moisture content of the cheddar cheese, butter, and jalapeno peppers (type II only) and the amount of moisture lost during processing. The water may be added in several aliquots during the blending process. The water shall be used to dissolve the stabilizers, emulsifying agents, salts, and other powdered ingredients.

d. Stabilizer. Not more than 0.30 percent by weight of the finished product.

e. Emulsifying agents. Not less than 1.90 percent nor more than 3 percent by weight (anhydrous salts) of the finished product.

f. Mono and diglycerides. Not more than 0.50 percent by weight of the finished product.

g. Salt. The amount of salt in the formula is dependent upon the salt content in the cheese and butter and jalapeno peppers (type II only). The total salt shall comply with the finished product requirements in 3.4.3.

h. Cheese coloring. Cheese coloring shall be added as necessary so that the finished product will conform to the color requirement in 3.4.1.

i. Vitamins. Vitamin A, thiamine hydrochloride (vitamin B_1), pyridoxine hydrochloride (vitamin B_6), and ascorbic acid (vitamin C) shall be added to the cheese spread in such quantity to ensure that each pouch contains not less than:

Ingredients	Percent by weight
Vitamin A	2500 IU
Thiamine (vitamin B_1)	0.80 mg
Pyridoxine (vitamin B_6)	1.0 mg
Ascorbic acid (vitamin C)	38 mg

j. Acidifying agent. The acidifying agent shall be added after all ingredients have been blended and in a quantity to achieve a pH in the finished product as specified in 3.4.3.

k. Jalapeno peppers. The amount of jalapeno peppers (pepper solids and liquid brine) used in type II product shall be of sufficient quantity to achieve a finished product flavor and odor as specified in 3.4.2.

3.3.3 Thermal processing. The cheese spread after blending shall be thermally processed in accordance with CFR Part 113, Thermally Processed, Low-Acid Foods Packaged in Hermetically Sealed Containers.

3.3.3.1 Records of processing temperatures. Recording charts of all heating and cooling times and temperatures, regardless of type of system used, shall be maintained. The charts shall be taken from recorders, which have been accurately calibrated in the applicable temperature range and time recording function. The recording clock time and actual time shall be synchronized during all processing operations. The charts shall also include the date, plant identification, operator, contract number, lot number, and product being run (for example, startup water, product, and post rinses). The charts shall be maintained for three years and shall be made available for review by the government inspector.

3.3.3.2 Continuity of preparation, processing , and packaging. The cheese spread shall be prepared, processed, and filled into a pouch in a continuous manner with minimum delay between the various stages.

3.3.4 Pouch filling and sealing. The cheese spread shall be aseptically filled at 170^0 to 180^0F into a pouch, fabricated and constructed as specified in 5.1.1, and sealed immediately after filling. If the cheese spread is not filled using an aseptic filler, all filling operations shall be conducted in a filling room maintained in a “clean room” condition.

3.3.5 Filled pouch cooling temperature requirements. The filled and sealed pouch of cheese spread shall be water cooled, air cooled or a combination of both, sufficiently to ensure that the product temperature in the center of the pouch shall be below 100^0F prior to packing. If water cooling is utilized, the pouches shall be thoroughly dry before packing.

3.4 Finished product requirements.

3.4.1 Appearance. The cheese spread (type I and II), after the pouch has been kneaded, shall be smooth, homogeneous plastic mass, which is spreadable at 70^0F and shall be free from a grainy (sandy) texture (mouthfeel). The cheese surface shall have a uniform sheen with no evidence of oiling of or curdling. The color of type I product shall be a uniform light yellow-orange which falls between No. 6 and No. 10 on the National Cheese Institute color standards with no evidence of mottling, browning, or color fading. The color of type Ii product may possess a slight green/grey hue and shall exhibit visible green pepper particles uniformly dispersed throughout. There shall be no color foreign to the product. There shall be no foreign material such as, but not limited to, dirt, insect parts, hair, wood, glass, or metal.

3.4.2 Flavor and odor. The cheese spread (type I product only) shall possess a pleasing flavor and odor of a medium cured cheddar cheese with a slight butter flavor note. The cheese spread (type I product only) shall have a slight salty taste. The type II product shall have a pronounced jalapeno pepper flavor and odor and shall impart a moderate heat or mouth burning sensation. There shall be no foreign odors or flavors such as, but not limited to, burnt, scorched, stale, sour, rancid, or moldy. Slight bitterness associated with medium cured cheddar flavor may be evident.

3.4.3 Analytical requirements. The finished product shall comply with the following analytical requirements:

a. The moisture content shall be not less than 38.0 percent nor greater than 42.0 percent.

b. The fat content shall be not less than 38.0 percent nor greater than 42.0 percent.

c. The salt content shall be not less than 1.6 percent nor greater than 2.2 percent.

d. The pH shall be not less than 5.5 and not greater than 5.9.

3.4.4 Net weight requirements. The average net weight shall be not less than 1.5 ounces with no individual net weight less than 1.4 ounces.

3.4.5 Emulsion stability requirement (temperature cycle). The cheese spread, when tested for emulsion stability as specified in 4.5.8.2, shall show no evidence of emulsion separation.

3.4.6 Palatability. The finished product shall be equal to or better than the approved preproduction sample (see 6.1) in palatability and overall appearance.

3.5 Plant qualifications. The product shall be prepared, processed and packaged in establishments meeting the requirements of Title 21, Code of Federal Regulations, Part 100, "Current Good Manufacturing Practice in Manufacturing, Processing, Packaging, or Holding of Human Foods," and the plant sanitation requirements of the appropriate government inspection agency.

3.6 Federal Food, Drug, and Cosmetic Act. All deliveries shall conform in every respect to the provisions of the Federal Food, Drug, and Cosmetic Act and regulations promulgated thereunder.

4. QUALITY ASSURANCE PROVISIONS

4.1 Contractor's responsibility. Inspection and acceptance by the USDA shall not relieve the contractor of obligation and responsibility to deliver a product complying with all requirements of this specification. The contractor shall ensure product compliance prior to submitting the product to the USDA for any inspection.

4.2 Inspection and certification. Product acceptability shall be determined by the USDA. The USDA will determine the degree of inspection and supervision necessary to ensure compliance with the requirements of this specification.

4.3 Classification of inspections. The inspection requirements specified herein are classified as follows:

a. First article inspection (see 4.4).

b. Quality conformance inspection (see 4.5).

First article inspection. When a first article is required (see 6.1), it shall be inspected in accordance with the quality assurance provisions of this specification and evaluated for overall appearance and palatability. Any

failure to conform to the quality assurance provisions of this specification or any appearance or palatability failure shall be cause for rejection of the first article.

4.5 Quality conformance inspection. Unless otherwise specified, sampling for inspection shall be performed in accordance with MIL-STD-105.

4.5.1 Component and material examination. In accordance with 4.1, components and materials shall be examined in accordance with all the requirements of referenced documents unless otherwise excluded, amended, modified, or qualified in this specification or applicable purchase document.

4.5.1.1 Ingredient and component examination. Conformance of ingredients and components to identity, condition, and other requirements specified in 3.2 shall be certified by the ingredient supplier or ingredient manufacturer, and compliance shall be verified by examination of pertinent labels, markings, U.S. Grade Certificates, certificates of analyses, or other such valid documents acceptable to the inspection agency. If necessary, each ingredient shall be examined organoleptically or inspected according to generally recognized test methods such as the standard methods described in the Official Methods of Analysis of the Association of Official Analytical Chemists and in the Approved Methods of the American Association of Cereal Chemists, to determine conformance to the requirements. Any nonconformance to an identity, condition, or other requirement shall be cause for rejection of the ingredient or component lot or of any involved products.

4.5.1.2 Laminated pouch and bag material certification. A certificate of compliance may be accepted as evidence that the characteristics listed below conform to the specified requirements.

Material requirement	Requirement paragraph	Test procedures
Polyolefin film	5.1.1	As specified in L-P-378, except that a machinist’s micrometer may be used provided that its graduations and accuracy conform to the requirements of L-P-378.
Polyester film thickness	5.1.1	As specified in L-P-378 above.
aluminum foil thickness	5.1.1	As specified in QQ-A-1876.
laminated material identification and construction	5.1.1	Laboratory evaluation.
Color of laminated material	5.1.1	Visual evaluation.
Polyethylene film	5.1.2	As specified in L-P-378 above.

4.5.2 In-process examination. In-process examination shall be performed to determine conformance to the preparation, processing, filling, sealing, and packaging requirements. Any nonconformance revealed by actual examination or by review of records of time, temperature or formulation or of other valid documents shall be cause for rejection of the involved product.

Filled and sealed pouch examination. The filled and sealed pouches shall be examined for the defects listed in table I. The lot size shall be expressed in pouches. The sample unit shall be one filled and sealed pouch. The inspection level shall be I 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. A minimum of 200 samples shall be examined for critical defects. The finding of any critical defect shall be cause for rejection of the lot.

TABLE I. Filled and sealed pouch defects 1/

Category			Defect
Critical	Major	Minor	
1			Tear, hole, or open seal
2			Swollen pouch
3			Aberrations in pouch material or heat seals resulting from heat sealing, pouch fabrication, hot filling or heat processing that reduce the effective closure seal width to less than 1/16 inch 2/
	101		Seal widths not as specified
	102		Not heat sealed as specified
	103		Inside pouch dimensions not as specified
	104		Closure seal not located as specified
	105		Closure or top seal extends into or below tear notch location
	106		Not clean 3/
	107		Required labeling or marking missing, incorrect, illegible, or that smudges
	108		Embossed code marking not located as specified

TABLE I. Filled and sealed pouch defects 1/ (cont'd)

Category			Defect
Critical	Major	Minor	
	109		Distance between inside edge of tear notch or serrations and inside edge of seal is less than 3/16 inch
	110		Presence of entrapped matter (for example, product residue) that reduces the effective closure seal to less than 1/16 inch wide 4/
		201	Tear notch or serrations missing
		202	Tear notch or serrations not located as specified
		203	Depth of tear notch or serrations not as specified
		204	Excess pouch material at edges exceeds 3/16 inch

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

2/ Aberrations in pouch material or heat seals include:

a. Major fold-over wrinkles or severe wrinkles, that extend into heat seal area and reduce effective seal width to less than 1/16 inch; or

b. Severe wrinkles in the body of the pouch along the inside edges of the heat seals.

Pouches exhibiting one or more of these aberrations shall be tested in accordance with 4.5.7.

3/ Outer packaging shall be free from foreign matter, which is unwholesome, has the potential to cause pouch damage (for example, glass, metal fillings, etc.) or generally detracts from the clean appearance of the pouch. The following examples shall not be scored 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 pouch 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).

c. Water spots.

d. Very thin film of grease, oil, or product residue, which is discernible to touch, but is not readily discernible by visual examination.

4/ 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.

4.5.4 Net weight examination. 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. Any individual net weight of less than 1.4 ounces shall be classified as a minor defect. The lot size shall be expressed in pouches. The sample unit shall be one filled and sealed pouch. The inspection level shall be S-3 and the acceptable quality level (AQL), expressed in terms of defects per hundred units, shall be 2.5. The results shall be reported to the nearest 0.1 ounce. In addition, the lot shall be rejected if the sample average net weight is less than 1.5 ounces.

4.5.6 Product examination. The product shall be examined for the defects listed in table II. The lot size shall be expressed in pouches. The sample unit shall be one filled and sealed pouch. The inspection level shall be S-3 and the AQL, expressed in terms of defects per hundred units, shall be 1.5.

TABLE II. Product defects. 1/ 2/ 3/

Category	Defect
Major	Dry product
101	Not a smooth, homogeneous appearance
102	Color not a uniform light yellow-orange, or there is evidence of mottling, browning, or color fading (type I only)
103	Not a uniform sheen
104	Evidence of oiling off or curdling
105	Not spreadable at 70^{0}F
106	Flavor and odor not pleasing, not typical of medium cured cheddar cheese (type I only)
107	Evidence of grainy (sandy) texture (mouthfeel)
108	Type II product does not have a pronounced characteristic jalapeno flavor and odor and does not impart a moderate heat or mouth burning sensation
109	Type II product does not have visible green pepper particles uniformly dispersed throughout

1/ The presence of any foreign material (for example, dirt, insect parts, hair, wood, glass, metal), foreign odor or flavor (for example, burnt, scorched, moldy, rancid, sour, stale), or foreign color shall be cause for rejection of the lot.

2/ Product not equal to or better than the approved preproduction sample in palatability and overall appearance shall be cause for rejection of the lot.

3/ Knead pouches before opening for examination.

4.5.6 Pouch leakage and delamination examination. All exterior surfaces and edges of the filled and sealed pouch shall be examined visually for product leakage while applying a manual kneading action which forces the product against the interior pouch surface in the area being observed. After leakage testing, the pouch shall be examined for evidence of delamination. Any product leakage from the pouch or evidence of delamination of the pouch shall be classified as a major defect, except delamination of outer ply when located in the seal area 1/16 inch or further from the food product edge of seal. Pouches exhibiting this type of delamination shall be tested by manually flexing the delaminated area 10 times. The area of delamination shall be held between the thumb and forefinger of each hand with both thumbs and forefingers touching each other. The delamination area shall then be rapidly flexed by rotating both hands in alternating clockwise – counterclockwise directions. Care shall be exercised when flexing delaminated area near the tear notches to avoid tearing the pouch material. After flexing, the separated outer ply shall be grasped between the thumb and forefinger and gently lifted toward the food product edge of the seal. 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 an be made to extend to less than 1/16 inch from the product edge of the seal with no discernible resistance to the gentle lifting, the pouch shall be rejected. The lot size shall be expressed in pouches. The sample unit shall be one filled and sealed pouch. The inspection level shall be I and the AQL, expressed in terms of defects per hundred units, shall be 0.65.

4.5.7 Internal pressure test. Internal pressure resistance shall be determined by pressurizing the pouches while they are restrained between two rigid plates spaced 1/2 $\pm$ 1/16 inch apart. 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 of the closure seal, the bottom seal shall be cut off. The pouches shall be emptied and cleaned thoroughly with a mild detergent and water solution 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. Pressure shall be applied at an approximate uniform rate of 1 pound per square inch gauge (psig) per second until 17 psig pressure is reached. The 17 psig pressure shall be held constant for 30 seconds and then released. The pouches shall then be examined for separation of yield of heat seals. Any rupture of evidence of seal separation that reduces the effective closure seal width to less than 1/16 inch (see 5.1.1) shall be considered a test failure. The lot size shall be expressed in pouches. The sample unit shall be one filled and sealed pouch. The inspection level shall be S-1. Any test specimen failing to meet the internal pressure requirements specified in 5.1.1 shall be classified as a major defect and shall be cause for rejection of the lot.

4.5.8 Testing of filled and sealed pouches. The finished product shall be tested for the requirements specified in 3.4.3. and 3.4.5. The procedures for testing shall be in accordance with 4.5.8.1 for moisture, fat, salt, and pH, and with 4.5.8.2 for emulsion stability.

4.5.8.1 Analytical testing. The sample for testing shall be a composite of product derived from the number of primary containers indicated by inspection level S-2. The product shall be composited by the testing laboratory. The lot size shall be expressed in pouches. The results shall be reported as follows: Moisture, fat, and salt – nearest 0.1 percent; pH – nearest 0.1 unit. any nonconformance to the requirements in 3.4.3 shall be classified as a major defect and shall be cause for rejection of the lot. The chemical analysis of the finished product shall be in accordance with the following AOAC methods:

TEST	SOURCE	METHOD
pH 1/	2/	Electrometric Hydrogen-Ion Concentration (pH)
Moisture	3/	Moisture Method I
Fat	3/	Fat
Salt	3/	Total Chlorides

1/ Test shall be made on the sample as is, without dilution after adjusting the temperature at 25^0F.

2/ Chapter Beverages; Malt Beverages and Beverage Materials; Section; Beer.

3/ Chapter: Dairy Products; Section Cheese.

4.5.8.2 Temperature cycle test for emulsion stability. The product shall be tested for emulsion stability from the number of pouches indicated by inspection level S-1. the lot size shall be expressed in pouches. The samples shall not be kneaded any time during the temperature cycle test. The results shall be reported as pass or fail. Any nonconformance to the requirements in 3.4.5 shall be classified as a major defect and shall be cause for rejection of the lot. The filled and sealed pouches shall be tested as follows:

a. Hold for 2 days at a temperature of $-20^0 \pm 5^0$F.

b. Remove from -20^0F and hold for 2 days at $70^0 \pm 5^0$F.

c. Remove from 70^0F and hold for 2 days at $100^0 \pm 5^0$F.

d. Cool to $70^0 + 5^0$F and examine for emulsion separation. Examination for emulsion separation shall be performed on samples which have not been kneaded.

4.5.9 Intermediate bag examination. The intermediate bag shall be examined for defects listed in table III. The lot size shall be expressed in bags. The sample unit shall be one filled and sealed intermediate bag. The inspection level shall be S-3 and the AQL, expressed in terms of defects per hundred units, shall be 6.5.

TABLE III. Intermediate bag defects

Category	Defect
Minor	
201	Bag not close fitting.
202	Bag not closed in manner specified.
203	Number of pouches in intermediate bag less than required.

4.5.10 Shipping container examination. Shipping containers shall be examined for defects in assembly, closure, and reinforcement (when applicable) in accordance with PPP-B-636. In addition, the following defects shall be classified as follows:

Major: National stock number, item description, contract number, date of pack markings missing, incorrect, or illegible.
Pads and cells missing or not as specified (applicable to MRE shipments).
For shipment to ration assembler for MRE: Number of pouches per shipping container is less than required.
For shipment to ration assembler for tray Pack Meal Module: Number of intermediate bags in a shipping container less than the number marked on the shipping container.

Minor: Cells not positioned as specified (applicable to MRE shipments).
Pouches not evenly arranged on edge or stacked flat in cells (applicable to MRE shipments).

Shipping container not snug-fitting (applicable to Meal Module shipments).
Net weight of shipping container exceeds 25 pounds (applicable to Meal Module shipments).

5. PACKAGING

5.1 Preservation. Preservation shall be level A.

5.1.1 Level A. One and one-half ounces of type I or type II product shall be filled in a pouch formed by heat sealing to the size and design configuration as shown on figure 1. The pouch material shall be fabricated from a 3-ply laminate consisting from inside to outside of minimum 0.002 inch thick polyolefin, extrusion coated or laminated to 0.00035 inch thick aluminum foil, laminated to 0.0005 inch thick polyester. The three plies shall be laminated so that the aluminum foil is between the other two layers. The pouch color shall conform to number 20219, 30219, 30227, 30279, 30313, 30324, or 30450 of FED-STD-595. Any difference in gloss caused by the exterior layer will be considered acceptable. The polyolefin layer of pouch material shall be suitably formulated for hot filling or post-fill processing as applicable (see 3.3.4). As an alternative to tear notches, if the pouch has serrated edges, the serrations may be used as tear notches provided that the serrations are sharp (no plastic tailings exist) and the serration depth and the minimum seal width at the serrated edges are in accordance with the dimensions shown on figure 1. Excess pouch material at the edges of the pouch shall not exceed 3/16 inch. The product shall be hot filled into the pouch. Closure shall be accomplished with a 3/8 $\pm$ 1/8 inch wide heat seal. If thermal impulse or a combination (heat curved bar with thermal impulse) sealing is used, any seal width from 1/8 to 7/6 inch will be acceptable. The closure seal shall be free of entrapped matter (for example, product residue) that reduces the effective closure seal to less than 1/16 inch wide. The closure seal shall be located in accordance with figure 1. Not less than 24 hours after hot-filling, the pouches shall withstand an internal pressure of 17 psig for 30 seconds without rupture or seal separation greater than 1/16 inch (see 4.5.7). The filled and sealed pouch shall not leak or show evidence of delamination when examined in accordance with 4.5.6. The pouch shall show no aberration in the pouch material or heat seals. filled and sealed pouches showing aberrations shall withstand a minimum internal pressure of 17 psig when tested in accordance with 4.5.7 to verity package integrity. The pouch material shall not transfer any foreign flavor or odor to the product being packaged.

5.1.2 Intermediate bag. When specified (see 6.1), eighteen 1.5 ounce pouches of product, unit packed as specified in 5.1.1, shall be packed in a close fitting intermediate bag made from clear, food grade polyethylene film having a minimum thickness of 0.003 inches. Closure shall be accomplished by folding the open end down over the body of the bag and taping.

5.2 Level C packing.

5.2.1 For shipment to ration assembler for Meal, Ready-to-Eat. From two hundred and ninety-four to three hundred filled and sealed pouches of cheese spread shall be packed in a snug-fitting fiberboard box constructed and closed in accordance with style RSC, type CF (variety SW), class domestic, grade 175 of PPP-B-636. The inside of each box shall be fitted with individual cells and top and bottom pads fabricated of the same material as the box. Each cell shall be made from a single sheet of fiberboard scored and folded to form four walls having a height equal to the inside height of the box less the thickness of the top and bottom pads. The flutes of the fiberboard in the cell walls shall be in the same direction as the flutes of the box sides and end panels. The top and bottom pad dimensions shall be equal to the inside length and width of the box less 1/4 inch. Each box shall be fitted with three individual cells, positioned three in length, one in width and one in depth. The pouches shall be evenly arranged on edge or stacked flat within each cell. The number of pouches per cell shall approximate the number marked on the box exterior divided by the number of cells in the box.

5.2.2 For shipment to ration assembler for Tray Pack Meal Module. Not more than 25 pounds of product, preserved as specified in 5.1.2, shall be packed in a snug-fitting fiberboard box constructed and closed in accordance with style RSC, type CF, class domestic, grade 275 of PPP-B-636. When metal fasteners are used in box construction, the fasteners on the inside of the box shall be covered with tape or paperboard.

5.3 Labeling and marking.

5.3.1 Pouches. Each pouch shall bear lot identification information presented in the sequence listed below:

Date of pack (using four digit code beginning with the final digit of the current year and followed by the three digit Julian date)

Lot number (if different from date of pack)

Batch code	As applicable, specified
Production shift	in a code approved by the
Filling equipment identification	USDA inspector

When embossed coding is used, the code shall be located in one of the heat seals. There shall be a continuous seal path between the embossed code and the inside edge of the side seal that is detectable by visual examination. Additionally, each pouch shall contain the following information, as applicable, clearly printed with permanent ink in large black letters below. The color of printing ink shall conform to number 20045, 20122, 30045, 30099, 30108, 30111, or 30140 of FED-STD-595.

CHEESE SPREAD, CHEDDAR, PLAIN, (TYPE I)
(OPERATIONAL RATION COMPONENT)

or

CHEESE SPREAD, CHEDDAR, WITH JALAPENO PEPPERS, (TYPE II)
(OPERATIONAL RATION COMPONENT)

KNEAD PACKAGE BEFORE OPENING
TO OPEN, TEAR OFF ONE CORNER OF POUCH

(Ingredient Statement)
Net Weight .... 1.5 Ounces
(Name and Address of Manufacturer)

5.3.2 Shipping containers. Shipping containers shall be marked in accordance with MIL-STD-129.

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Acquisition requirements. Acquisition documents must specify the following:

a. Title, number, and date of this specification.
b. Issue of DODISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (se 2.1.1 and 2.2).
c. When a first article is required (see 3.1, 4.4, and 6.2).
c. Provisions for approved preproduction samples (see 3.4.6 and 6.2).
e. When 1.5 ounce pouches of product are to be packed into intermediate bags (see 5.1.2).
f. Type of product required (see 1.2)

6.2 First article. When a first article is required, it shall be inspected and approved under the appropriate provisions of FAR 52.209. The first article should be a preproduction sample. The contracting officer should specify the appropriate type of first article and the number of units to be furnished. The contracting officer should also include specific instructions in acquisition documents regarding arrangements for selection, inspection, and approval of the first article.

6.3 Appropriate level of pack. Based on the conditions known or expected to be encountered during shipment, handling, and storage of the specific item being procured, the procuring activity should select the appropriate level of pack in accordance with the criteria established in AR 700-15/NAVSUPINST 4030.28/AFR 71-6/MCO 4030.33A/DLAR 4145.7.

6.4. Technical information.

a. It is anticipated that the product covered by this document will have an acceptable keeping quality of not less than six months at 100^0f and not less than two years at 70^0F.

b. The medium cured cheddar cheese should be not less than three months nor more than eight months of age at the time of use. The use of young cheese (less than three months) will result in a finished cheese spread with a weak cheddar/buttery flavor. In addition the body of the cheese spread will be weak and have a fast meltdown buttery mouthfeel. Cheddar cheese, which is older than eight months of age, will result in a sharp flavored cheese spread giving rise to bitterness with storage. The medium cured cheddar cheese used may either be colored or uncolored. If colored cheese is used, the coloring agent should be annatto or carotenal coloring specifically designed for high fat cheese products, and shall be thermally stable.

c. The processing of the cheese spread should be a continuous operation from blending the ingredients to being filled and sealed into the flexible pouches. Any delays exposing the ingredients at ambient temperature before blending or holding the cheese at 170^0 to 180^0F before processing or after processing and before filling for long periods of time can result in unacceptable product.

d. The processing temperature should be at least 280^0f and the product should be held for the time specified by the approving authority to yield a commercially sterile product.

6.5 Subject term (key word) listing.

Meal, Ready-to-Eat (MRE)
Tray Pack Meal Module

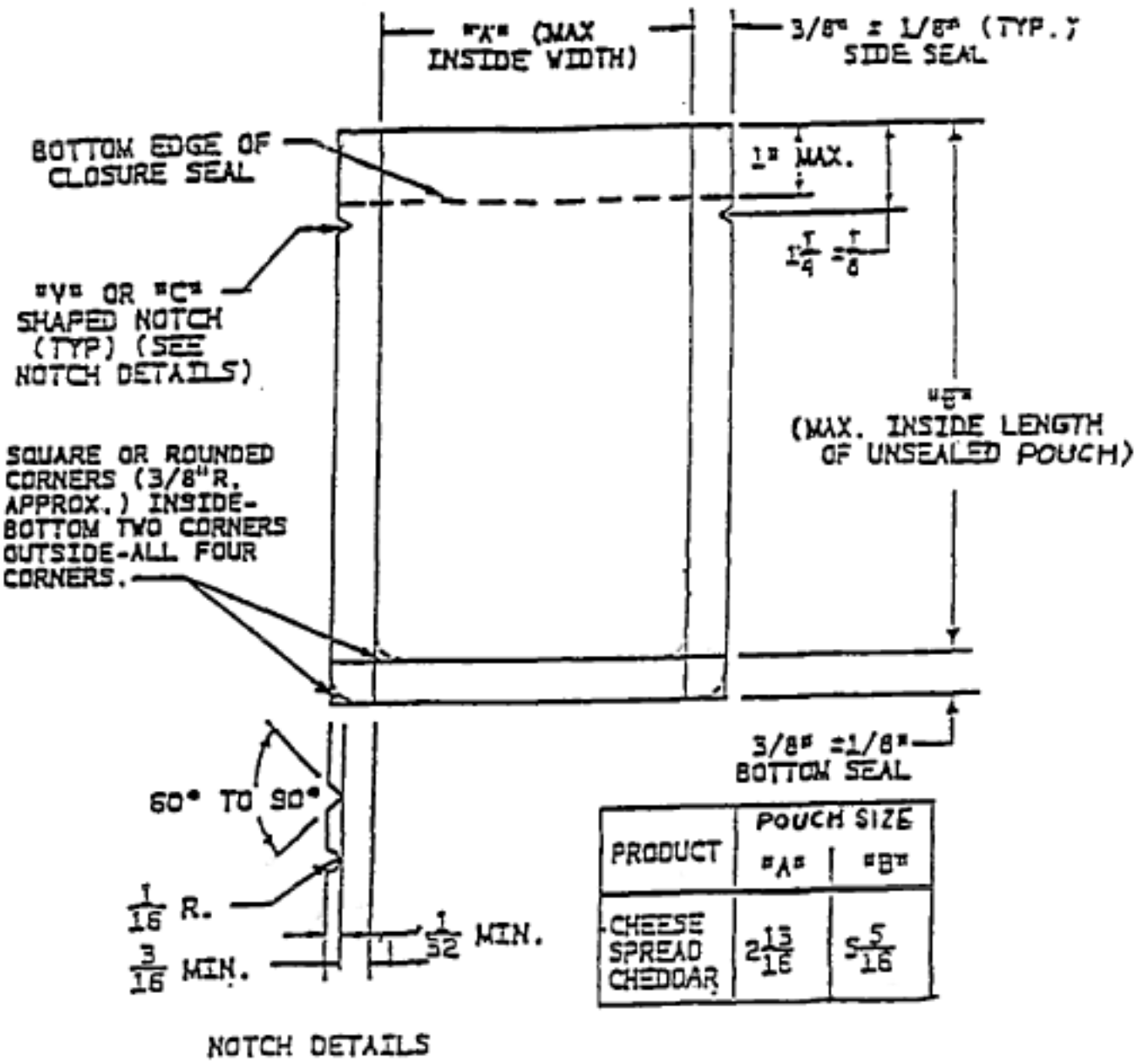
6.6 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

Custodians:
Army – GL
Navy - SA
Air Force – 50

Review activities:
Army – MD, QM
Navy - MC
DP - SS

Preparing activity:
Army - GL

(Project 8940-0705)



PRODUCT	POUCH SIZE "A"	"B"
CHEESE SPREAD CHEDDAR	2 13/16	5 5/16

FIGURE-1
FOUR SEAL POUCH