QUARTERMASTER CORPS
TENTATIVE
SPECIFICATION

C.T.D. NO.
March 9, 1943

UNITED STATES ARMY "5-IN-1" RATION

A. APPLICABLE SPECIFICATIONS.

A-1. The following specifications, of the issue in effect on date of invitation for bids, shall form a part of this specification:

U.S. Army Tentative Specification No. 22-42, "Supplies, Subsistence, for the United States Army, Conditions Governing the Purchase of."

Quartermaster Corps Tentative Specification, OQMG No. 18-A, "Packing for Overseas Shipments."

Quartermaster Corps Tentative Specification, OQMG No. 93, "Boxes, Fibreboard, Corrugated and Solid."

Quartermaster Corps Tentative Specification, OQMG No. 94, "Specifications for Marking of Outside Shipping Containers by Contractors."

Specifications relating to individual components are noted under "Detail Requirements."

B. TYPES AND GRADES.

B-1. The 5-in-1 Ration Unit Package shall be one of three menus and shall consist of food for five (5) men for one day.

B-2. Grades of material shall be as herein specified.

C. MATERIAL AND WORKMANSHIP.

C-1. All materials shall be manufactured and the assembly shall be accomplished in a strictly sanitary manner and in accordance with good commercial practice.

D. GENERAL REQUIREMENTS.

D-1. All deliveries shall conform, in every respect, to the provisions of the Federal Food, Drug, and Cosmetic Act, and regulations promulgated thereunder.

E. DETAIL REQUIREMENTS.

E-1. The U. S. Army 5-in-1 Ration shall be assembled as three different menus, designated as follows:

Menu No. 1 as specified in E-1a.
Menu No. 2 as specified in E-1b.
Menu No. 3 as specified in E-1c.

K-1a. Menu [illegible] components:

Product	No. of Units	Minimum Net Wt. of Unit Ounces	Maximum Measurement of Container	Related Specifications
Army Spread, canned	2	3-3/4	300x106	*C.Q.D. 32, Type I
Baked beans, dehydrated	1	15	401x411	C.Q.D. 90
Beans, snap, canned	1	19	307x409(No.2)	JJJ-B-151a, Style I
Coffee product, soluble	1	1	202x202	C.Q.D. 30
Corn, canned	1	20	307x409(No.2)	N-C-501a
Corned Beef, canned	3	12	Truncated or 404x200 or314 x202x308	PP-B-201
Grapefruit, canned	1	20	307x409(No.2)	Z-G-676, Type A
Bacon, canned	1	24	307x509	C.Q.D. 33, Type II
Milk, canned	1	6	208x206 V.H.	C-M-371
Tomatoes, canned	1	28	401x411(No.2½)	JJJ-T-571a Type I
Biscuit "C" Square	1	32		C.Q.D. 55
Candy, hard	5	1-3/8		None
Cereal, pre-mixed	1	8 or 10		C.Q.D. 92
Cocoa beverage powder	1	10		C.Q.D. 57
Fruit bar	5	2		C.Q.D. 82
Grape juice powder, syn.	1	15(grams)		(to be submitted by C.Q.D.)
Pea soup, dehydrated	1	6		C.Q.D. 26, Type II, Class A or Type III
Prune powder, dehy.	1	8		C.Q.D. 86
Salt	3	½		SS-S-31
Sugar	3	6		JJJ-S-791, Type I
Toilet Paper	5	100 (sheets)		**J.C.Q.D. 10

* Chicago Quartermaster Depot Specification

** Jersey City Quartermaster Depot Specification
(Others refer to Federal Specification)

E-11b. Menu No. 2 shall consist of the following components:

Product	No. of Units	Minimum Net Wt. of Unit Ounces	Maximum Measurement of Container	Related Specification
Army Spread, canned	2	3-3/4	300x106	C.Q.D. 32, Type I
Beef, roast, canned	2	12	Truncated or 404 x200 or 314x202x 308	C.Q.D. 53
Coffee product, soluble	2	1	202x202	C.Q.D. 30
Ham and Eggs, canned	1	30	401x411(No.2) or 404x406	C.Q.D. 20
Meat & Veg. Stew, "C" canned	2	30	401x411(No.2½) or 404 x 406	C.Q.D. 25
Milk, canned	2	6	208x206 V.H.	C-M-371
Peas, canned	1	20	307x409(No.2)	JJJ-P-151a
Apricot spread, dehy.	1	8		C.Q.D. 85
Bean soup, dehydrated	1	6		C.Q.D. 26, Type IV, Class A
Biscuits, "C" Square	1	32		C.Q.D. 55
Candy, hard	5	1-3/8		None
Cereal, pre-mixed	1	8 or 10		C.Q.D. 92
Orange juice powder, syn.	5	1/4		C.Q.D. dated Feb. 3, 1943
Prunes, evaporated	1	10		Z-P-681c
Rice, precooked	1	10		C.Q.D. 89
Tomato juice, canned	1	23 fl.	307x512	JJJ-T-576
Salt	3	1/2		SS-S-31
Sugar	3	6		JJJ-S-791, Type I
Toilet Paper	5	100 (sheets)		J.C.Q.D. 10

E-1c. Menu No. 3 shall consist of the following components:

Product	No. of Units	Minimum Net Wt. of Unit Ounces	Maximum Measurement of Container	Related Specifications
Army Spread, canned	2	3-3/4	300x106	C.Q.D. 32, Type I
Beets, pickled, canned	1	20	307x409(No.2)	JJJ-B-181a
Carrots, canned	1	20	307x409(No.2)	JJJ-C-76a, Styles II or IV
Coffee product, soluble	1	1	202x202	C.Q.D. 30
Meat balls and spaghetti, canned	2	30	401x411(No.2½) or 404x406	C.Q.D. 82
Milk, canned	2	6	208x206 V.H.	C-M-371
Orange juice, canned	1	18 fl.	307x409 (No.2)	Z-O-606
Sausage, canned	1	32	404x504	C.Q.D. 90
Stew: meat, kidney & veg.	1	30	401x411(No.2½) or 404x406	C.Q.D. 76
Biscuits, "C" Square	1	32		C.Q.D. 55
Candy, hard	5	1-3/8		None
Cereal, pre-mixed	1	8 or 10		C.Q.D. 92
Fruit bar	5	2		C.Q.D. 82
Fruit spread, dehy.	1	5		C.Q.D. 87
Lemon juice powder, syn.	5	¼		C.Q.D. 43
Rice pudding mix, dry	1	10		C.Q.D. 93
Salt	3	½		58-S-31
Sugar	3	6		JJJ-S-791, Type I
Tea	1	10 bags (individual servings)		HHH-T-191
Toilet Paper	5	100 (sheets)		J.Q.M.D. 10

E-2. Packaging of components.

The surfaces of all packages, except the cans and transparent overwraps shall have a dull non-reflective color such as, khaki, olive or drab, or that of unbleached kraft. Cellophane employed in packaging materials shall be that designated as MST 53 by the E. I. DuPont De Nemours Company and designated PNO3X by the Sylvania Industrial Corporation.

Because of the possibility of contaminating the foodstuffs with the odor of the board used for the packaging after storage at elevated temperatures in the sealed cartons, all the paper, paperboard, waxes, adhesives and laminating materials used shall be free from objectionable odors.

The packaging of items not specifically described in this section shall be according to the appropriate specifications given in paragraphs E-1a, E-1b and E-1c.

E-2a. Army Spread. - Two ounces shall be packaged in a hermetically sealed, round, key-opening can made either of hot-dipped tin plate having a coating of not less than 1.25 pounds per base box, or electrolytic tin plate. If electrolytic plate is used, both sides of the plate shall be coated with a corrosion-resistant lacquer or enamel and in either case, the inside surface of the can shall be suitably coated. The resulting coatings shall be in accordance with good commercial practice for the type of product being packaged. A key adapted to open the can conveniently, shall be attached.

E-2b. Bacon, canned. - Twenty-four ounces shall be packaged in a hermetically sealed, key-opening can in accordance with E-2a.

E-2c. Beans, baked, dehydrated. - Fifteen ounces shall be packed in a hermetically sealed, round metal can, preferably key-opening. The outer surface of electrolytic plate or both surfaces of chemically treated plate shall be coated with a corrosion-resistant enamel.

E-2d. ~~Coffee product, soluble.~~ Soluble coffee and/or Soluble coffee product. - ~~One ounce~~ One-half ounce of soluble coffee or one pint shall be packaged in a friction plug or scored-top cylindrical can made from tin plate in accordance with E-2a except that enamel is not required on the inside surfaces. The friction plug shall be snug fitting and its sides shall be waxed. The scored top can shall bear suitable instructions for opening. If desired, in place of lithographing the required information on the can, as specified in E-3a, it may be printed on a hard-sized, kraft-colored label which shallcover the entire cylindrical surface of the can with at least a one-fourth inch overlap and be firmly glued at the ends with a water-resistant glue.

E-2e. Bean and other soups, dehydrated. - Six ounces shall be packaged in a water-vapor resistant bag contained in a kraft lined bending chip board carton not less than 0.022 inch thick (85 lbs. per 1000 square feet), or a bending chip board not less than 0.024 inch thick (90 lbs. per 1000 square feet). One or both ends of the carton preferably shall have glued flap closures, otherwise the ends shall have locked tuck-in flaps.

B-2h. Cocoa beverage powder. - Ten ounces shall be packaged in a bag and carton in accordance with B-2e.

B-2i. Fruit bars. - Two ounces shall be sealed in a moisture-vapor resistant heat-sealing cellophane bag, the film being at least 0.0009 inch thick, and placed in a carton made from dark colored board at least 0.010 inch thick made from virgin pulp or pulp made from clean mixed papers carefully sorted to exclude any material that might impart a flavor or odor to the contents. The bar shall then be adequately pasteurized. After cooling, the package shall be overwrapped in a sheet of moisture-vapor resistant cellophane not less than 0.0012 inch thick. All seams and closures shall be tightly sealed against the transmission of water vapor.

Alternatively, the fruit may be placed in a wrapper or liner made from waxed glassine, having a turpentine test (TAPPI T 454 m-42) of not less than 300 seconds, and placed in a tray or carton made from virgin pulp or pulp made from clean mixed papers carefully sorted to exclude any material that might impart a flavor or odor to the contents or placed directly in a waxed tray made from virgin groundwood and sulphite pulp similar to butter carton board except that both faces shall have a dull color produced by a non-toxic dye. The tray or carton shall then be wrapped with a sheet of moisture-vapor resistant cellophane not less than 0.0009 inch thick, then pasteurized and overwrapped as required in the preceding paragraph.

B-2j. Fruit Spreads. - Eight ounces shall be packaged in a bag and carton in accordance with B-2e.

B-2k. Grape, Orange or Lemon Juice Powder. - The powder shall be packaged in a water-vapor resistant envelope constructed of a sheet of water-vapor resistant heat-sealing cellophane not less than 0.0009 inch thick laminated to another film of the same kind with not less than 16 lbs. per ream (24 x 36 - 500) of a permanently plastic water-vapor resistant laminating agent. Alternatively, the envelope may be constructed from three sheets of glassine laminated together with not less than 5 lbs. per ream (24 x 36 - 500) of a permanently plastic water-vapor resistant laminating agent.

B-2l. Rice Pudding Mix. - Ten ounces shall be packaged in a bag and carton in accordance with B-2g.

B-2m. Rice, precooked. - Ten ounces shall be packaged in a bag and carton in accordance with B-2e.

E-2n. Prunes or prune powder, dehydrated. - Shall be packaged in a bag made in accordance with E-2e or similarly made with two sheets of water-vapor resistant cellophane not less than 0.001S inch thick laminated together. The bag containing the prune powder shall be enclosed in a carton made in accordance with E-2e.

E-2o. Salt. - One-half ounce shall be packaged in a specially constructed envelope made from No. 1 kraft paper having a basis weight of at least 45 lbs. (24 x 36 - 500) and a bursting strength of at least 45 points. The bag shall be equipped with a perforated paper tape under the flap, which will expose the perforations when the flap is opened and allow the salt to be shaken out. After filling, the flap shall be securely sealed so that the envelope will not allow its contents to sift.

E-2p. Sugar. - Six ounces shall be packaged in a flat center-seam envelope with flaps at both ends, made from No. 1 kraft paper or a sheet of glassine laminated to a sheet of No. 1 kraft paper having a basis weight of at least 60 lbs. (24 x 36 - 500). After filling, the end of the envelope and flap shall be folded over, then the fold and flaps shall be tightly sealed with a strong adhesive. No particles of sugar shall sift out of the seams on the envelope after handling and shaking.

E-3. Labeling of components.

E-3a. All components shall be labeled plainly with the following information:

NAME of Product
NET WEIGHT
Instructions for preparation, if necessary
NAME and ADDRESS of Manufacturer

In addition, any other information shall be given as required in conformance with the provisions of the Federal Food, Drug, and Cosmetic Act, and regulations promulgated thereunder.

The cans for meat or meat products shall have the above information, together with the inspection legend, lithographed on the body or on one end of the can in process-proof ink.

The Establishment Number EST -- also may be lithographed on the can, otherwise it and the date of packing --43, shall be embossed in one end of the can.

E-3b. A menu for breakfast, dinner, and supper covering the components packed, shall be placed in each carton.

F. METHODS OF INSPECTION AND TEST

F-1. Inspection shall be made at point of origin, unless otherwise specified.

F-2. Chemical analyses, if required by the purchaser shall be made in accordance with methods of the Association of Official Agricultural Chemists, in effect on date of invitation for bids.

F-3. Physical tests of packaging materials shall be made in accordance with methods of the Technical Association of the Pulp and Paper Industry (TAPPI) and those of the American Society for Testing Materials (ASTM).

F-4. The sizing of the board in paragraph H-1c shall be determined as follows: A 5-inch square section of the board shall be weighed, immersed for ten (10) minutes in water at 78° ± 3° F. at a depth of 3 inches in a horizontal position. The board shall then be removed, the excess water quickly wiped off with a dry, soft, absorbent rag, using a minimum of pressure, and the board reweighed at once. To be hard-sized, the board shall not absorb more than 4.0 grams of water under these conditions.

F-5. The water-resistance of the adhesives used shall be determined as follows;

Two sections of the board to be used shall be cut approximately 3 inches by 6 inches. The adhesive shall be applied evenly over the surface of one of these sections. The other section shall be superimposed on the first and maintained under a pressure of 5 pounds per square inch for one minute and then allowed to dry for twenty-four hours. The sample shall be trimmed into two square pieces cut from the interior, approximately 2 inches by 2 inches, then immersed in tap water for twenty-four hours. The joint shall then be carefully pried apart from all four edges. To be water-resistant, not less than 75 percent of the surfaces shall show a fiber separation.

G. PACKAGING, LABELING, PACKING, AND MARKING FOR SHIPMENT.

G-1. Packaging.

The components of this ration other than those in cans (possibly excepting the plug top coffee can) shall be compactly assembled in a specially constructed solid fiber carton with snug fitting inner liner and top and bottom pads. All these materials shall be free from objectionable odor.

G-1a. The solid fiber carton shall be manufactured of double kraft-lined bending board between 0.040 and 0.045 inches in thickness. The kraft liners shall be at least 0.006 inch thick; the filler shall be of a finish which will insure the finished board conforming with all requirements.

G-1b. The carton shall be of special slotted construction with all flaps meeting. It shall be approximately 9-3/4 inches by 6-3/4 inches by 7-3/4 inches, inside dimensions. No overlap of the inner and outer flaps shall be permissible, nor shall they gap more than 1/16 inch. Each side of the outer flaps shall be tapered inwards at an angle of 7° from a point about 5/8 inch from the hinge and about 1/4 inch from the side of the carton. Except at the hinges, all corners (including those situated 5/8 inch from the hinges), of the shaped flaps shall be rounded with a 1/4 to 5/16 inch radius. The carton shall have tear slots 3/16 inch long.

G-1c. The board shall be hard-sized throughout (See F-4).

G-1d. The bursting strength (TAPPI T 403 m-36) of the board shall be at least 155 points.

G-1e. The board shall weigh not less than 140 pounds and not more than 155 pounds per thousand square feet.

G-1f. No scores shall check or crack when folded through 135 angular degrees in one direction and 180° in the other.

G-1g. The average tensile strength of the board (TAPPI T 404 m-41) shall not be less than 140 pounds per inch of width, machine direction, nor less than 55 pounds per inch of width, cross direction.

G-1h. The board shall permit penetration of the wax, specified in G-1a, to a depth of about 65 percent of the thickness of the board when one side is held in contact with the wax heated to 195° ± 5° C., for between 10 and 25 seconds.

G-1i. The convex side of the score line bead shall be on the inside of the carton.

G-1j. The manufacturer's joint on the carton shall be glued and made in the following manner:

(1) The flap of the joint shall be on the outside of the end of the case and integral with one side of the case. The outer corners of the flap shall be rounded with a 1/4 inch radius.

(2) The flap shall be tightly and adequately glued with a water-resistant adhesive (See F-5) with no excess of glue on the outside of container.

(3) The center line of the vertical score inside the carton at the glue flap, shall meet the adjoining end of the carton with a maximum clearance of 1/16 inch.

(4) The center line of the scores around each side or end or the top or bottom of the carton shall lie in a plane within 1/16 inch.

G-1k. The four inner sides and the top and bottom of the carton shall be lined with 3 separate pieces of 16-9-16 point kraft lined E flute corrugated, 175 point test board, snugly fitted. The vertical abutting joint of the side and end liner shall be near the center of one face. The direction of the flutes of the liners shall be vertical, and those of the top and bottom pads, parallel to their smaller dimension. The top and bottom pads shall have a size equal to the full inside dimensions of the box, the side and end liner fitting between these pads.

G-1l. The flaps of the carton shall be securely closed by means of a water-resistant adhesive (See F-5). The closure shall be given special attention

in order that it shall be as tight as possible.

G-1m. The sealed carton shall be dipped (completely submerged) for approximately 12 seconds (more or less depending on the nature of the board) in the wax described in G-1n, at approximately 195° F. After a short cooling period, the carton shall be dipped a second time (completely submerged) for approximately 5 seconds in a bath of the same wax at approximately 180° F. The first dip shall cause the wax to impregnate the board to a depth of approximately 65 percent of the thickness of the board, and the second dip shall build up a continuous film of wax on the board about 0.010 inch thick.

G-1n. The wax mentioned in paragraph G-1m, shall be of a microcrystalline type and may be a mixture of waxes, with or without a crystallization inhibitor which shall give as a final product, a microcrystalline type of wax having a melting point (ASTM D127-30) of not less than 140° F., and which shall not crack, chip, or become separated from the surface on which applied, when subjected to 20° F. below zero. The product shall be odorless, tasteless, and non-toxic. A list of approved waxes may be obtained from the Subsistence Research Laboratory, Chicago Quartermaster Depot, Chicago, Illinois.

G-2. Labeling.

No labeling is necessary on the carton described in G-1.

G-3. Packing.

G-3a. The carton described in paragraph G-1 shall be surrounded on the sides and ends with a 375 pound test A flute sleeve. The sides, top and bottom, shall be enclosed in a solid fiber container board sleeve not less than .090 inch thick, suitably scored with the ends of this sleeve meeting within 3/8 inch along the center of the top of the carton.

G-3b. The carton with sleeve shall be placed in the center, with the ends adjoining the sides, of a V1s -SL regular slotted solid fiber case and sleeve constructed in accordance with OQMG Specification No. 93. The case shall be provided with close fitting 200 pound B flute test pads, top and bottom. The case shall be of such a width as to snugly enclose the overall length of the carton and sleeves. The case shall be of such a length as to provide space on each side of the carton for the canned items. This will result in a case about 15-1/4 x 10-1/4 x 8-3/4 inches deep.

G-3c. The cans shall be suitably packed in the space between both sides of the carton and the ends of the case. Single faced corrugated pads or strips of suitable dimensions shall be used to wrap or snugly fill the voids between the cans so as to protect them during transit. The flaps of the carton shall be closed with a water insoluble adhesive (See F-5).

G-3d. The sleeve required for the case will go over the sides, top, and bottom, thus holding the sealed flaps in position; and the case shall be strapped with a single flat strap going around the center of the sleeve, over the ends, top, and bottom.

(The sleeve and strap will be at right angles to the direction called for in OQMG No. 93.)

G-4. Marking.

G-4a. The case and sleeve shall be marked as follows:

On one end of the sleeve (spaced about the center line so as to avoid being covered by the strap);

5-1 (in 2" high letters)
MENU - (in 3/4 to 7/8" high letters, the number of the menu being stamped in by the packer)
WT 28 CU 1.0 (the letters between 3/4 and 7/8" high)

On the right of this shall appear a solid crescent 3" high overall, 2" wide overall, and 7/8" wide at its center, with tips facing as in the letter "C" reversed.

The above marking shall be on only the upper two-thirds of the case, the lower third being left blank.

In the upper right-hand corner of the front of the case, with the marked ends of the sleeve on the right, in letters 1/2" high shall be printed the following information:

NAME (of Packer)
CONT W199 QM--- (Contract Number)
MONTH YEAR (Date Packed)

G-5. The ink used shall be either black or green unless the exterior of the case is black, when the ink used shall be white or yellow. The ink shall take on fiber, and be both waterfast and sun-fast.