

QUARTERMASTER CORPS
TENTATIVE
SPECIFICATIONC.Q.D. NO. _____
October 26, 1942.UNITED STATES ARMY JUNGLE 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, QCMG No. 93, "Boxes, Fibreboard, Corrugated and Solid."

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

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

B. TYPES AND GRADES.

B-1. The Jungle Ration Unit Package shall consist of food for one man for four (4) days.

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.



2. DETAIL REQUIREMENTS.

E-1. The U. S. Army Jungle Ration shall contain the following components:

Product	No. of Units	Minimum Net Wt. of Unit <u>Ounces</u>	Maximum Measurement of Container	Related Specifications
Meat	4	3-3/4	300 x 106	*C.Q.D. 20
Milk, dry, whole, spray dried	1	16	404 x 404	**Q.C.T.S. dated Aug. 20, 1942. Type II, Class A.
Peanuts	1	16	404 x 404	See E-2.
Biscuits, "C" square	4	5-1/2		C.Q.D. 55
Cereal, pre-cooked	1	8		C.Q.D. 92
Chewing Gum, Sugar coated	8	2 sticks		None
Cigarettes	8	5 cigarettes		None
Candy, hard	4	1-3/8		None
Cocoa beverage powder	4	1-1/2		C.Q.D. 57
Coffee product, soluble	4	1/5		C.Q.D. 23, Type I
Fruit bar	8	2		C.Q.D. 22
Lemon powder	4	1/4		C.Q.D. 43
Raisins, seedless	1	15		**Q.C.T.S. dated Aug. 3, 1942.
Salt	20	10-grain tablets		SS-S-31
Sugar	4	2		JJJ-S-791, Type I
Toilet tissue	1	100 sheets		***J.C.Q.D. 10

Bag, waterproof, for cigarettes and matches.

* Chicago Quartermaster Depot Specification

** Quartermaster Corps Tentative Specification

*** Jersey City Quartermaster Depot Specification

Others are Federal Specifications.



E-2. The peanuts shall be freshly roasted, unsalted, U. S. No. 1 Grade Virginia or Spanish type peanuts, blanched or unblanched. They shall be free from dirt, grit and other extraneous matter and free from bitter, musty, rancid, charred or other undesirable flavors and odors.

E-3. The other components shall comply with the requirements of the specifications given in E-1. Where no specifications are cited the material shall be of good commercial quality and shall have been approved by the Quartermaster Corps Subsistence Research Laboratory.

E-4. 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.

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 paragraph E-1.

E-4a. Milk, dry, whole, spray dried. - Sixteen ounces shall be packaged in a hermetically sealed, cylindrical, key-opening can with key attached. The cans shall be manufactured from hot-dipped tin plate having a coating of not less than 1.25 pounds per base box, or electrolytic tin plate. The ends may be manufactured from chemically treated plate suitably enamelled on both sides. If electrolytic plate is used, the outer surface shall be coated with a suitable enamel. The air in the can shall be replaced by an inert gas so that the contents shall have the minimum commercially attainable quantity of free oxygen.

E-4b. Peanuts. - Sixteen ounces shall be packaged in a can in accordance with E-4a.

E-4c. Biscuits, "C" square. - Five and one-half ounces shall be packed in a Peters style carton, approximately 8 x 2-1/8 x 2-1/8 inches, lined with waxed unbleached glassine paper, and overwrapped with a sheet of waxed paper.

(1) The glassine liner shall be made from unbleached glassine of at least 25 pounds per ream (24 x 36 - 500) having a grease resistance (TAPPI T 454 m-42) of over 600 seconds, waxed with 3 pounds per ream (24 x 36 - 599) of fully-refined wax (1-1/2 pounds per ream each side) having a melting point (ASTM D87-37) of not less than 150° F. The wax shall be odorless and tasteless. This liner shall overlap itself sufficiently to insure adequate protection of the contents from the board.

(2) The carton shall be neatly fabricated from a bending board not less than 0.022 inch thick, weighing not less than 85 pounds per 1000 square feet, and preferably heavily treated on its inner surface with sodium silicate. The board shall be clean and shall have a uniform dark color. It shall conform in all respects with the best commercial quality board used for cracker shells.

(3) Each carton shall be over-wrapped with a single layer of unbleached waxed paper having a basis weight of not less than 25 pounds (24 x 36 - 500), and a tearing resistance (TAPPI D87-37) in any direction of not less than 22 grams per sheet and bearing sufficient wax to effect a good heat-seal. Not less than the equivalent of 15 lbs. of wax per ream (24 x 36 - 500) shall be used. This wrapper shall have an overlap at the seam of at least one-half inch, and a continuous heat-seal shall be effected along the seam and closures. If the wrapper is sufficiently transparent, the required labeling may be printed on the face of the carton.

In place of waxed wrapper, a sheet of water-vapor resistant heat-sealing regenerated cellulose film may be used. The closures of each overwrap shall be tightly heat-sealed.

(4) Four of these wrapped cartons shall be placed in a tuck-in style bending chip board container, approximately 9-1/8 x 6-1/4 x 2-3/8 inches. The board shall not be less than 0.024 inch thick with a weight of 90 pounds per 1000 square feet and shall have a dark color. This carton shall be over-wrapped with a sheet of waxpaper as described in E-4c (3).

E-4d. Cereal, precooked. - Shall be packaged and overwrapped in a bending solid fiber board container made from solid kraft or sulphite pulp having a thickness of not less than 0.018 inch (75 pounds per 1000 square feet) or from solid manila or double kraft lined chip having a thickness of not less than 0.022 inch (80 lbs. per 1000 square feet) and containing not less than 65 percent of coniferous chemical pulp.

E-4e. Chewing Gum. - Twelve pieces shall be packaged in a kraft or dull-colored carton, and overwrapped with a sheet of moistureproof heat-sealing regenerated cellulose film, the seams and closures being tightly made.

E-4f. Cigarettes. - Cigarettes shall be packaged in one or two rows of five in a tuck-in or slide carton made from good quality cigarette carton board or a suitable paper. The outer liner or paper shall be colored khaki, olive or drab or similar in color to the outer liner. Each carton shall be individually and neatly wrapped with a sheet of heat-sealing, moisture-vapor proof regenerated cellulose film not less than 0.0009 inch in thickness. The moisture protection thus afforded the cigarettes shall be equal to that provided in standard commercial packages.

E-4g. Cocoa beverage powder. - One and one-half ounces shall be packaged in a bag constructed from a laminated film consisting of a sheet of water-vapor

resistant heat-sealing regenerated cellulose film not less than 0.0009 inch thick or a sheet of glassine paper having a turpentine test (TAPPI T 454 m-42) of not less than 300 seconds, laminated to one of the following sheets, with a permanently plastic water-vapor resistant laminating material having a weight per ream (24 x 36 - 500) of not less than 8 pounds: glassine made from kraft pulp; heavily calendered kraft paper; vegetable parchment; or a sheet of regenerated cellulose film having a thickness of not less than 0.012 inch. The bursting strength of the finished sheet shall not be less than 35 points. The bag shall be either of the flat or gusset style, and shall have all seams and closures completely sealed by the application of heat or a water-vapor proof adhesive.

E-4h. Candy, hard. - Each piece shall be wrapped with a suitable waxed paper or regenerated cellulose film of such a nature as to prevent undue adherence of the paper to the candy. One and three-eighths ounces of the wrapped pieces shall be overwrapped with a heat-sealing, moisture-vapor resistant regenerated cellulose film of a moisture resistant and otherwise suitable wrapper to protect the contents of the package both in the assembled unit and when carried in the pocket.

E-4i. Fruit bars. - Either two or four ounces shall be sealed in a moisture-vapor resistant heat-sealing regenerated cellulose film bag, the film being at least 0.0009 inch thick, and placed in a carton or tray 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 regenerated cellulose film 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 greasproof or glassine paper, 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 the fruit 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 regenerated cellulose film not less than 0.0009 inch thick, then pasteurized and overwrapped as required in the preceding paragraph.

E-4j. Lemon Juice Powder. - The powder shall be packaged in a water-vapor resistant envelope constructed of a sheet of water-vapor resistant heat-sealing regenerated cellulose film 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 8 lbs. per ream (24 x 36 - 500) of a permanently plastic water-vapor resistant laminating agent.

E-4k. Raisins. - Shall be packaged in a carton insuring the proper processing to withstand prolonged storage. The carton shall be constructed from single manila lined 0.020 inch thick folding news board or the equivalent, with full overlapping outer flaps. After closure, the cartons shall be wrapped either with a metal foil coated paper or a film of water-vapor resistant material in accordance with E-4g. Seams and closures shall be completely sealed by means of heat or water-vapor resistant adhesive.

E-4l. Salt. - Twenty 10-grain tablets shall be packaged in a bag constructed from a laminated sheet, composed of an inner sheet of moisture-resistant anchored-coated regenerated-cellulose film not less than 0.0009 inch thick, laminated with a permanently plastic adhesive to a sheet of No. 1 wet-strength treated kraft paper heavily calendered, and which has a basis weight of not less than 25 pounds (24 x 36 - 500). The equivalent weight of the wax laminating material shall be not less than 18 pounds (24 x 36 - 500). Alternatively, the bag may be constructed in accordance with E-4g.

E-4m. Sugar. - Two ounces shall be packaged in a lined newsboard carton with full overlapping flaps, having a thickness of not less than 0.024 inch (90 lbs. per 1000 square feet). The inner overlapping flap shall be glued to the side flaps and the outer overlapping flap glued to the inner so as to provide a sift-free package. The sealed carton shall be overwrapped with waxed paper in accordance with E-4c. (3).

E-5. Labeling of components.

E-5a. All components shall be labeled plainly with the following information:

NAME of Product
NET WEIGHT
 Instructions for preparation, if necessary.
NAME * 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-5b. 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 G-1c shall be determined as follows: A 6-inch square section of the board shall be weighed, immersed for ten (10) minutes in water at $73 \pm 3^{\circ}$ 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 then be trimmed into two square pieces cut from the interior, approximately 2 inches by 2 inches and 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. Packing.

The components of this ration 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 biscuit package shall be placed against the side of the carton. Between the biscuit package and approximately the center of the opposite side of the carton shall be placed a vertical B flute pad, snugly fitting, and of the same height as the liner surrounding the carton. On one side of this shall be placed the raisin and cereal packages and other components, preferably sub-assembled in an open fiberboard carton. On the other side of this pad shall be placed the can of peanuts and the milk and cans of meat, snugly fitted, using B flute pads placed or folded so as to protect the cans and the carton from damage.

G-1b. The carton shall be of special slotted construction with all flaps meeting. The outside dimension of the carton shall be approximately $10\frac{1}{2} \times 7 \times 7$ inches. No overlap of the inner and outer flaps shall be permissible, nor shall they gap more than $\frac{1}{16}$ inch. Each side of the outer flaps shall be tapered inwards at an angle of about 70° from a point about $\frac{5}{8}$ 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 of the board (TAPPI T 403 m-36) 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-11) 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 paragraph G-1n, to an average depth of about 65 percent of the thickness of the board when one side is held in contact with the wax heated to $190^{\circ} \pm 5^{\circ} \text{ C.}$, 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 glued 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 three pieces of 16-9-16 point kraft-lined B 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 liner for the sides and ends 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-11. 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 wax described in G-1n, at approximately 190° 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 about 160° F. The first dip shall cause the wax to impregnate the board to an average 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 an amorphous 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 wax shall be odorless, tasteless, and non-toxic. A list of approved waxes may be obtained from the Quartermaster Corps, Subsistence Research Laboratory, Chicago, Illinois.

G-2. Labeling.

Each carton shall bear on the front panel the following information printed in 36 point bold face Gothic capital letters;

U. S. ARMY JUNGLE RATION
4 RATIONS

G-3. Packing.

Three cartons shall be packed in a row with their sides, on which the cans are situated, down; and their major panels vertical and adjoining, in a corrugated fiber carton with single full overlapping flaps and tapped joints, then overpacked in a solid fiber case and a nailed wooden box. In place of the corrugated carton, the case may be lined with test corrugated board.

G-3a. Each carton shall be separated from the other by a vertical pad of container board at least 0.090 inch thick (two pads required).

G-3b. The corrugated board for the carton or liners shall be double faced B or C flute material, and shall have a minimum bursting strength of 175 points.

G-3c. The solid fiber case shall be V3s in accordance with OCMO Specification No. 93. Snug fitting pads of 0.090 inch thick container board shall be placed at the top and bottom of the case over and under the corrugated carton or liners.

G-3d. The flaps of the case shall be closed with a water-resistant glue (See F-5) and the case shall be packed and strapped in a snug fitting nailed wooden box in accordance with OMC Specification No. 12A

G-4. Marking.

On one end of both the solid fiber case and wooden box shall appear the following in block letters between 1/2 inch and 1-1/2 inches high, all lettering being of the same height:

J S (in letters about 2 inches high)
12 RATIONS (in letters 3/4 to 7/8 inches high)
WT - CU (Actual gross weight in lbs. and cubic
displacement to the nearest 1/10th
cubic foot. The letters shall be
from 3/4 to 7/8 inch high.)

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

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

G-4b. On the upper right-hand corner of the front of the case and box with the marked end on the right, shall be printed in letters 1/2 inch high, the following information:

NAME (of Packer)
CONT -- (Contract Number)
MONTH YEAR (Date packed)

No marking other than the above shall appear.

G-4c. The ink used for marking shall be either black or green unless the exterior of the cases is black, then the ink used shall be white or yellow. The ink shall take on the fiber or the wood and be both waterfast and sun-fast.

