

INCH-POUND

MIL-DTL-32235B

30 March 2021

SUPERSEDING

MIL-DTL-32235A

15 September 2010

DETAIL SPECIFICATION

UNITIZED GROUP RATION – EXPRESS (UGR-E) HEATER MODULE, GENERAL SPECIFICATION FOR

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

1. SCOPE

1.1 Scope. This specification describes the performance and design of self-contained heater modules consisting of polymeric food trays, Institutional Size Pouches (ISP) or Boil-In-Bag (BIB) modules, flameless heaters, activation fluid, heating trays, an activation mechanism and other components, as applicable. The heater module is used by the Department of Defense as a component of the Unitized Group Ration-Express (UGR-E) operational group ration to provide hot meals to eighteen individuals.

2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3, 4 or 5 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements of documents cited in sections 3, 4 or 5 of this specification, whether or not they are listed.

Comments, suggestions or questions on this document should be addressed to the Combat Capabilities Development Command (DEVCOM) Soldier Center, FCDD-SCD-SCR, 10 General Greene Avenue, Natick, MA 01760-5000 or emailed to elizabeth.r.painter2.civ@mail.mil. Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at <https://assist.dla.mil/>.

AMSC N/A

FSC 8970

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2.2 Government documents.

2.2.1 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 cited in the solicitation or contract.

DEPARTMENT OF DEFENSE SPECIFICATIONS

- MIL-PRF-44073 - Packaging of Food in Flexible Pouches
- MIL-PRF-32004 - Packaging of Food in Polymeric Trays
- MIL-DTL-32235/3 - Unitized Group Ration – Express (UGR-E) Heater Module: Boil-In-Bag (BIB) Module
- MIL-DTL-32235/4 - Unitized Group Ration – Express (UGR-E) Heater Module: Assembled

(Copies of these documents are available online at <https://quicksearch.dla.mil>.)

2.2.2 Other Government documents, drawings and 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 of these documents are those cited in the solicitation or contract.

COMBAT CAPABILITIES DEVELOPMENT COMMAND (DEVCOM)
SOLDIER CENTER

PCR-E-017 - Egg Mix, Reduced Cholesterol, Pasteurized, Uncooked, Dehydrated, Packaged in a Boil-In-Bag (BIB)

(Copies of this document are available from the Combat Capabilities Development Command (DEVCOM) Soldier Center, FCDD-SCD-SCR, 10 General Greene Avenue, Natick, MA 01760-5000)

U.S. ARMY

- Army Regulation 40-5 - Preventive Medicine
- Army Regulation 70-1 - Army Acquisition Policy
- Army Regulation 70-1 - Army Acquisition Procedures

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(Copies of this document are available online at <http://ww.apd.army.mil> or from U.S. Army Publishing Directorate)

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

Federal Food, Drug, and Cosmetic Act and regulations promulgated thereunder
(21 CFR Parts 170-189)

(Copies of this document are available from online at <http://www.govinfo.gov> or Superintendent of Documents, ATTN: New Orders, P.O. Box 371954, Pittsburgh, PA 15250-7954.)

U.S. DEPARTMENT OF LABOR

Occupational Safety and Health Administration (29 CFR Part 1910, Subpart H)

(Copies of this document are available online at <http://www.osha.gov> or U.S. Department of Labor Occupational Safety & Health Administration, 200 Constitution Avenue, N.W., Room Number N3626, Washington, D.C. 20210.

U.S. DEPARTMENT OF TRANSPORTATION

Research and Special Programs Administration (49 CFR Parts 171-180)

(Copies of this document are available online at <https://www.fmcsa.dot.gov> or Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402-0001.)

U.S. ENVIRONMENTAL PROTECTION AGENCY

Resource Conservation and Recovery Act (40 CFR, Parts 239-282)

(Copies of this document are available online at <http://www.epa.gov> or from the Superintendent of Documents, ATTN: New Orders, P.O. Box 371954, Pittsburgh, PA 15250-7954.)

2.3 Non-Government publications. The following documents, drawings, and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

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AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

- D1974/D1974M - Standard Practice for Methods of Closing, Sealing, and Reinforcing Fiberboard Boxes
- D5118/D5118M - Standard Practice for Fabrication of Fiberboard Shipping Boxes

(Copies of these documents are available at www.astm.org or from ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959)

2.4 Order of precedence. Unless otherwise noted herein or in the contract, in the event of a conflict between the text of this document and the references cited herein (except for related specification sheets) 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 Specification sheets. The individual item requirements shall be as specified herein and in accordance with the applicable specification sheet. In the event of any conflict between the requirements of this specification and the specification sheet, the latter shall govern.

3.2 First article. When specified (see 6.2), a sample shall be subjected to first article inspection in accordance with 4.2.

3.3 Materials. Note that the terms bag and pouch are used interchangeably.

3.3.1 Components and ingredients. The contractor shall select materials capable of meeting the interface, interoperability, environmental, operating and support requirements. The active ingredients, additives and activation fluids shall be uniform chemicals and compounds and shall meet all requirements of this document. The materials cited are recommended.

3.3.1.1 Recycled, recovered, or environmentally preferable materials. Recycled, recovered, or environmentally preferable materials should be used to the maximum extent possible, provided that the material meets or exceeds the operational and maintenance requirements, and promotes economically advantageous life cycle costs.

3.4 Interface and interoperability requirements.

3.4.1 Heater. The heater, its materials and design, shall be evaluated and designated by the criteria of the Environmental Protection Agency (EPA) Resource Conservation and Recovery Act (RCRA). The individual unused heater shall meet the criteria to be unregulated according to RCRA regulations. The assembled heater module shall meet the criteria to be unregulated according to RCRA regulations. It is preferable that multiple unused heaters (such as a bulk container of heaters or pallet of packed heaters) also meet the criteria to be unregulated according to RCRA regulations.

3.4.1.1 Heater elements. The active ingredients and additives shall be uniformly blended and distributed in a matrix that, when the heater is triggered by the activation fluid, shall allow for safe and uniform heating of the polymeric trays or pouches of food. (See 3.1)

3.4.1.2 Heater design. The heater elements shall be contained in a gas and water permeable material which, upon the introduction of the activation fluid, shall initiate and propagate the heating process. (See 3.1)

3.4.1.3 Protection of the heater. The heater(s) shall be packaged or sealed in barrier material to avoid premature chemical reaction or degradation of the heater. (See 3.1)

3.4.2 Activation fluid. The activation fluid shall be of a chemical constitution and adequate volume which, when combined with the heater, shall safely initiate and propagate an exothermic reaction. (See 3.1)

3.4.2.1 Protection of the activation fluid unit. Activation fluid shall be packaged in a barrier material to avoid premature release or degradation of the fluid. (See 3.1)

3.4.3 Polymeric food tray. The polymeric food trays shall be in accordance with MIL-PRF-32004.

3.4.4 Institutional size pouch (ISP). The ISP shall be in accordance with MIL-PRF-44073.

3.4.5 Boil-In-Bag (BIB) module. The BIB module shall be in accordance with MIL-DTL-32235B/3A.

3.4.6 Boil-In-Bag (BIB). The BIB shall be in accordance with the applicable food document. Note that the eggs in a BIB are cited in PCR-E-017.

3.4.7 Construction of heater module. All components shall be constructed into a heater module that facilitates ease of use, optimum performance and allows venting of gases. Instructions shall be included with each heater module. The design shall promote and ensure

operator safety. The components shall be compatible. The heater module, when used according to instructions, shall heat the food properly. (See 3.1)

3.4.7.1 UGR-E Heater module. The UGR-E heater module (see 3.1) shall consist of:

- (1) One or more heaters
- (2) One or more activation fluid units
- (3) One or more activation mechanisms, as applicable
- (4) One or more polymeric food trays or ISPs, as applicable. The preferred stacking orientation is main entrée, starch, vegetable, and dessert (or least dense food tray or ISP), from bottom to top. When used, the BIB module shall be on top.
- (5) Three or four heating trays, as applicable
- (6) BIB module, when applicable
- (7) Additional components, as applicable

3.4.7.2 BIB heater module. The BIB heater module (see 3.1) shall consist of:

- (1) One BIB heater
- (2) One activation fluid unit
- (3) One BIB of food
- (4) One rehydration pouch
- (5) One serving tray in a polyethylene bag
- (6) Additional components, as applicable

3.4.7.3 Activation of heater module. The activation, either manually or mechanically as applicable, shall initiate the heating of the food.

3.4.7.4 Design and dimensions of heater module box. The heater module box shall accommodate the components. The heater module box shall fit in the UGR-E box. The BIB module, when used, shall fit in the heater module box. (See 3.1)

3.4.7.5 Activated heater module. The by-products of the activated heater module shall be non-toxic and safe. Disposal of the activated heater module shall be unrestricted. Activated heaters shall be safe for disposal as unregulated consumer waste.

3.5 Environmental requirements.

3.5.1 Shelf life. The shelf life of all heater module components (except polymeric food trays, ISPs or BIBs) shall be not less than 24 months at 80°F.

3.5.2 Temperature range of operation. The heater module shall be capable of withstanding extreme temperatures in storage and transport ranging from -20°F to 160°F. At the time of use, the module shall be capable of operating at temperatures ranging from 10°F

to 160°F. At ambient temperatures ranging from 35°F to 120°F, the heater module shall perform as intended and raise the temperature of the food in the polymeric food trays, ISPs or BIBs by no less than 160°F. The heater module components shall exhibit no failures, major deformities or degradation as a result of the heating process.

3.6 Operating requirements.

3.6.1 Chemical and physical properties. The heater module shall be capable of heating one, three or four polymeric food trays, ISPs or BIBs, as applicable; each containing approximately 6 pounds of food. The heater module shall be self-contained and shall be activated without requiring additional materials.

3.6.2 Heater module use. The heater module shall require no specific training to use. Instructions located on the top of the heater module, shall provide guidance and the sequence of actions. The heater module shall be easily activated and opened, and shall allow food to be easily served from the polymeric food trays, ISPs, BIBs or serving trays, as applicable. (See 3.1)

3.6.3 Food safety. The materials used in the heater module and their by-products shall be safe for use with food in accordance with 21 CFR, Parts 170-189, applicable material safety data sheets, or other recognized health standards and regulations.

3.6.4 Heating performance for the UGR-E heater module. The activated UGR-E heater module shall be capable of providing a 100°F minimum temperature rise in the bottom three water filled polymeric food heating trays in 45 minutes or less and a 75°F minimum temperature rise in the top water filled polymeric food heating tray in 45 minutes or less.

3.6.5 Heating performance for BIB heater module. The activated BIB heater module shall be capable of heating a BIB of food from 40°F to 170°F in 30 minutes.

3.7 Support requirements.

3.7.1 Heater by-products. The heater module shall operate without emission of any objectionable odors such as burning plastic or metal or sulfurous odors. After the polymeric food trays, ISPs or BIBs are removed, there shall be no evidence of precipitate or residue, except on the bottom of polymeric food trays, ISPs or BIBs that have been in direct contact with the heater. There shall be no more than 10 ml of fluid remaining in each heating tray or module after the heating reaction. The heater module shall be designed to allow escape of gases generated by the heating reaction. The heater by-products shall be of an amount and nature that incidental contact with food shall not render food unsafe.

3.7.2 Health hazard assessment. The item shall not present a health hazard when used as intended. Department of the Army Regulation (AR) 40-5, Preventive Medicine, AR 70-1,

Acquisition Policy, and Department of the Army Pamphlet 70-3, Acquisition Procedures require that all new chemicals and materials being added to the Army supply system have a Toxicity Clearance. A Toxicity Clearance involves a toxicological evaluation of materials prior to introduction into the Army supply system. The Army Program Manager is responsible for identifying materials and requesting a Toxicity Clearance for use of that material within their program. All chemicals (including proprietary materials) shall be identified and accompanied by the appropriate Material Safety Data Sheet (MSDS). If requested, the contractor shall furnish the formulation of the heater and the activation fluid to the Army Public Health Center ATTN: MCHB-TS-O, 8252 Blackhawk Road, Aberdeen Proving Ground, MD 21010-5403. The formulation shall detail the exact percentages of the chemicals and compounds used in the heater and the activation fluid, including the chemical composition of trade name ingredients.

3.7.3 Workmanship. The end item shall be free of defects that could adversely affect performance or durability and shall have a good general appearance. The end item shall conform to the quality established by this document.

3.8 Labeling requirements.

3.8.1 Heater. Each heater (heater elements in a matrix) shall be correctly and legibly labeled. The label shall contain the following information:

- (1) Name and type of heater
- (2) Contractor's name and address
- (3) "Do Not Eat" pictogram. The pictogram shall be printed in three colors; a black figure of a person on a white background with a red circle and a bar (prohibition sign). The minimum outside diameter of the pictogram circle shall be 7/8 inch. (See Figure 1)

3.8.2 Packaged heater. The heater(s) in a barrier package or material shall be correctly and legibly labeled. The label shall contain the following information:

- (1) Name
- (2) Quantity and contents
- (3) Active ingredients with proper chemical names in accordance with Occupational Safety and Health Administration (OSHA), U.S. Environmental Protection Agency (USEPA) and U.S. Department of Transportation (USDOT)
- (4) Net weight
- (5) Date of pack 1/
- (6) Contractor's name and address and emergency phone number, as required by OSHA, USEPA and USDOT

1/ Each packaged heater(s) shall have the date of pack noted by using a four digit code beginning with the final digit of the current year followed by the three digit Julian day code. For example, 14 February 2030 would be coded as 0045. The Julian day code shall represent the day the heater(s) was packaged.

3.8.3 Activation fluid unit. Each activation fluid unit shall be correctly and legibly labeled. The label shall contain the following information:

- (1) Name
- (2) Active ingredients with proper chemical names in accordance with Occupational Safety and Health Administration (OSHA), U.S. Environmental Protection Agency (USEPA) and U.S. Department of Transportation (USDOT)
- (3) Net volume
- (4) Date of pack 1/
- (5) Contractor's name and address and emergency phone number, as required by OSHA, USEPA and USDOT

1/ Each activation fluid unit shall have the date of pack noted by using a four digit code beginning with the final digit of the current year followed by the three digit Julian day code. For example, 14 February 2030 would be coded as 0045. The Julian day code shall represent the day the activation fluid was packaged.

3.8.4 Heater module box. One side of the heater module box shall be correctly and legibly printed or labeled. The label shall contain the following information:

- (1) Name, type and style, as applicable (see 3.1)
- (2) Contents
- (3) UGR-E menu number, if applicable
- (4) Date of pack 1/
- (5) Instructions for use and caution statements shall be on top of module (See 3.1)

1/ Each heater module shall have the date of pack noted by using a four digit code beginning with the final digit of the current year followed by the three digit Julian day code. For example, 14 February 2030 would be coded as 0045. The Julian day code shall represent the day the heater module was assembled.

4. VERIFICATION

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

- a. First article inspection (see 4.2).

b. Conformance inspection (see 4.3).

4.2 First article inspection. The first article shall be inspected in accordance with the provisions of this document and evaluated for overall performance. Any failure to conform to the requirements shall be cause for rejection of the lot. Defense Logistics Agency (DLA) Troop Support - Subsistence shall select sample units during production of contracts and submit them to the following address for evaluation:

COMBAT CAPABILITIES DEVELOPMENT COMMAND (DEVCOM)
SOLDIER CENTER
FCDD-SCD-SCR
10 GENERAL GREENE AVENUE
NATICK, MA 01760-5000

Three (3) sample units (heater modules) produced shall be randomly selected from that one production lot. The three (3) sample units shall be shipped to Natick within five (5) working days from the end of the production month and upon completion of all inspection requirements. The sample units shall be evaluated for materials, interface, interoperability, environmental, operating, support and labeling requirements.

4.3 Conformance inspection. Conformance inspection shall include the tests specified in Table I and the examination of 4.4.

TABLE I. Verification methods

Title	Requirement	Verification
Interface and interoperability	3.4	4.5.2
Heater	3.4.1	4.4
Heater elements	3.4.1.1	4.5.4.1, 4.5.4.3, 4.5.4.4
Heater design	3.4.1.2	4.4, 4.5.4.1, 4.5.4.3, 4.5.4.4
Protection of the heater	3.4.1.3	4.4
Activation fluid	3.4.2	4.5.4.3, 4.5.4.4
Protection of the activation fluid unit	3.4.2.1	4.4, 4.5.4.1, 4.5.4.3, 4.5.4.4
Polymeric food tray	3.4.3	4.5.2.1
Institutional size pouch (ISP)	3.4.4	4.5.2.2
Boil-In-Bag (BIB) module	3.4.5	4.5.2.3
Boil-In-Bag (BIB)	3.4.6	4.5.2.4
Construction of heater module	3.4.7	4.4
UGR-E Heater module	3.4.7.1	4.5.4.3
BIB heater module	3.4.7.2	4.5.4.4
Activation of heater module	3.4.7.3	4.4
Design and dimensions of heater module box	3.4.7.4	4.4
Activated heater module	3.4.7.5	4.5.2.5
Environmental	3.5	4.5.3
Shelf life	3.5.1	4.5.3.1
Temperature range of operation	3.5.2	4.5.3.2
Operating	3.6	4.5.4
Chemical and physical properties	3.6.1	4.5.4.3, 4.5.4.4
Heater module use	3.6.2	4.5.4.1, 4.5.4.3, 4.5.4.4
Food safety	3.6.3	4.5.4.2
Heating performance for UGR-E heater module	3.6.4	4.5.4.3
Heating performance for BIB heater module	3.6.5	4.5.4.4
Support	3.7	4.5.5
Heater by-products	3.7.1	4.4
Health hazard assessment	3.7.2	4.5.5.1
Workmanship	3.7.3	4.4
Labeling	3.8	
Heater	3.8.1	4.4
Packaged heater	3.8.2	4.4
Activation fluid unit	3.8.3	4.4
Heater module	3.8.4	4.4

4.4 Heater module examination. Each heater module shall be examined for conformance to the requirements specified in 3.3 through 3.8. Defects and defect classifications are listed in Table II.

TABLE II. Heater module defects 1/ 2/ 3/ 4/

Category			Defect
<u>Critical</u>	<u>Major</u>	<u>Minor</u>	
1			Missing polymeric tray or ISP or BIB or BIB module.
2			Polymeric tray or ISP or BIB damaged to expose food.
3			Missing or severely damaged heater.
	101		Incomplete heater or slightly damaged heater.
		201	Heater elements not uniformly blended and distributed in a matrix.
		202	Heater elements not contained in a gas and water permeable material.
		203	Heater(s) not packaged or sealed in barrier material.
4			Activation fluid missing or leaking.
	102		Activation fluid not of adequate volume.
	103		Activation fluid unit not properly installed or damaged.
		204	Activation fluid not packaged or sealed in barrier material.
	104		Heater module design does not facilitate ease of use.
		205	Heater module does not allow venting of gases.
		206	Heater module design does not promote and ensure operator safety.
	105		Activation does not initiate heating of food. <u>5/</u>
	106		Heater module box or component not clean.
	107		Heater module box not as specified or damaged.
	108		Heater module not constructed properly.
		207	Heater module not self-contained.

TABLE II. Heater module defects 1/ 2/ 3/ 4/ - Continued

Category			Defect
<u>Critical</u>	<u>Major</u>	<u>Minor</u>	
	109		Any other component missing or damaged.
	110		Components do not fit in module or are incompatible.
		208	Precipitate or residue remaining after heating reaction.
		209	More than 10 ml of fluid remaining in heater tray or module box after heating reaction.
		210	Instructions missing or incorrect or illegible.
		211	Labels missing or incorrect or illegible.
		212	Pictogram on heater missing or incorrect or illegible.

1/ Presence of any foreign materials such as, but not limited to dirt, insect parts, hair, glass, wood or metal, or any foreign odors such as, but not limited to burnt, scorched, rancid, sour, stale, musty, or moldy shall be cause for rejection of the lot.

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

3/ Individual heater designation as unregulated by OSHA, EPA RCRA, and USDOT shall be verified by Certificate of Conformance (CoC). Any hazard markings required for OSHA, USEPA and USDOT compliance are to be labeled on the heater, activation fluid unit, and all boxes, as appropriate.

4/ By-products of the activated heater module shall be non-toxic, safe and unregulated waste, and shall be verified by CoC.

5/ BIB Eggs must be cooked to an internal temperature of 145°F (63°C) for fifteen seconds. Polymeric food trays must be reheated to an internal temperature of at least 135°F (57°C).

4.5 Verification methods. The types of methods included in this section are visual inspection and measurement, sample tests, full-scale demonstration, engineering evaluation, component properties analysis and similarity to previously approved designs.

4.5.1 Verification alternatives. The manufacturer may propose alternative test methods, techniques or equipment, including application of statistical process control, tool control or cost effective sampling procedures to verify performance.

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4.5.2 Interface and interoperability verification.

4.5.2.1 Polymeric food tray. The polymeric food trays shall demonstrate conformance to 3.4.3, when examined in accordance with MIL-PRF-32004.

4.5.2.2 Institutional size pouch (ISP). The ISPs shall demonstrate conformance to 3.4.4, when examined in accordance with MIL-PRF-44073.

4.5.2.3 Boil-In-Bag (BIB) module. The BIB module shall demonstrate conformance to 3.4.5, when examined in accordance with MIL-DTL-32235B/3A.

4.5.2.4 Boil-In-Bag (BIB). The BIB shall demonstrate conformance to 3.4.6, when examined in accordance with the applicable food document.

4.5.2.5 Activated heater module. The activated heater module shall demonstrate conformance to 3.4.7.5, when all applicable disposal standards are verified.

4.5.3 Environmental verification.

4.5.3.1 Shelf life. All heater module components (except polymeric food trays, ISPs or BIBs) shall demonstrate conformance to 3.5.1, when tested in a storage study.

4.5.3.2 Temperature range of operation. The heater module shall demonstrate conformance to 3.5.2, when heater module is exposed to temperature extremes.

4.5.4 Operating verification.

4.5.4.1 Heater module use. The heater module shall demonstrate conformance to 3.6.2 when tested. The heater module shall be activated by following the instructions. Any unclear instructions, failure for heater module to perform, or any unsafe conditions shall be a failure.

4.5.4.2 Food safety. The heater module shall demonstrate conformance to 3.6.3, when all applicable health standards are verified.

4.5.4.3 Heating performance for UGR-E heater module. The activated UGR-E heater module shall be capable of providing a 100°F minimum temperature rise in the bottom three water filled polymeric food heating trays in 45 minutes or less and a 75°F minimum temperature rise in the top water filled polymeric food heating tray or ISP in 45 minutes or less. Thermocoupled polymeric trays (filled and sealed in accordance with MIL-PRF-32004) containing 96 ounces (2720 grams) of water shall be used. The UGR-E heater module, conforming to 3.4.7 (water trays in lieu of food trays), shall be assembled and conditioned at 35°F to 40°F for a minimum of 24 hours prior to testing. The test shall be conducted at an

ambient temperature of $72^{\circ}\text{F} \pm 2^{\circ}\text{F}$ in an explosion-proof exhaust fume hood or sufficiently ventilated environment, away from open flame or potential ignition sources. The thermocouples shall be connected to a data recorder or computer and the initial temperatures of the trays recorded prior to activating the heater module. The UGR-E heater module shall be activated by following the instructions on the UGR-E heater module. The temperature rise at minimum time intervals of 1 minute shall be recorded and observation continued through 45 minutes.

4.5.4.4 Heating performance for BIB heater module. The activated BIB heater module shall be capable of heating a BIB of food (or dummy load of paraffin wax and water) from 40°F to 170°F in 30 minutes. A BIB module or a re-usable apparatus that mimics the module may be used. A thermocoupled BIB of food or a thermocoupled BIB containing 56 ounces (1580 grams) of paraffin wax and 17.6 ounces (500 grams) of water may be used. The filled BIB shall be equilibrated to 40°F . The test shall be conducted at an ambient temperature of $72^{\circ}\text{F} \pm 2^{\circ}\text{F}$ in an explosion-proof exhaust fume hood or sufficiently ventilated environment, away from open flame or potential ignition sources. After initiation of the exothermic reaction, the filled BIB shall attain a temperature of 170°F in 30 minutes. The temperature of 170°F shall be maintained for a minimum of 15 minutes. Cooling of the product (a drop from the maximum temperature attained) shall be evident 60 minutes after initiation of the exothermic reaction.

4.5.5 Support verification.

4.5.5.1 Health hazard assessment. Health hazard assessment shall demonstrate conformance to 3.7.2, when all applicable hazardous material standards are verified.

5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When packaging of materiel is to be performed by DoD or in-house contractor personnel, these personnel need to contact the responsible packaging activity to ascertain packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activities within the Military Service or Defense Agency, or within the military services' system commands. Packaging data retrieval is available from the managing Military Department or Defense Agency's automated packaging files or by contacting the responsible packaging activity.

6. NOTES

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

6.1 Intended use. The heater modules covered by this specification are intended for use as a component in the UGR-E operational group ration. The UGR-E heater module is used for direct heating of polymeric trays, ISPs of food, and, when applicable, as a container for the BIB module. The BIB heater module is used for the cooking of food in BIBs. The heater modules are military unique since they must withstand high temperatures when heated, be capable of heating food to an acceptable temperature in an austere environment and be easily operated by the user.

6.2 Acquisition requirements. Acquisition documents should specify:

- a. Title, number and date of this specification.
- b. Type and style of heater module, as applicable.
- c. When first article is required (see 3.2).
- d. Packaging requirements (see 5.1).

6.3 Shelf-life. This specification covers items where the assignment of a Federal shelf-life code is a consideration. Specific shelf-life requirements should be specified in the contract or purchase order, and should include, as a minimum, shelf-life code, shelf life package markings in accordance with MIL-STD-129 or FED-STD-123, preparation of a materiel quality storage standard for type II (extendible) shelf-life items, and a minimum of 85 percent shelf-life remaining at time of receipt by the Government. These and other requirements, if necessary, are in DoD 4140.27-M, *Shelf-life Management Manual*. The shelf-life codes are in the Federal Logistics Information System Total Item Record. Additive information for shelf-life management may be obtained from DoD 4140.27-M, or the designated shelf-life Points of Contact (POC). The POC should be contacted in the following order: (1) the Inventory Control Points that manage the item and (2) the DoD Service and Agency administrators for the DoD Shelf-Life Program. Appropriate POCs for the DoD Shelf-Life Program can be contacted through the DoD Shelf-Life Management website: <https://www.dla.mil/HQ/InformationOperations/DLMS/elibrary/manuals/regulations/>.

6.4 Subject term (key word) listing.

Ration
Self-heating

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



FIGURE 1. "DO NOT EAT" Pictogram

MIL-DTL-32235B

Custodians:

Army – GL
Navy – SA
Air Force – 35

Preparing activity:

Army – GL
(Project 8970-2021-001)

Review activities:

Army – MD, QM
Navy – MC
DLA – SS

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using ASSIST Online database at <https://assist.dla.mil>.