

INCH-POUND

MIL-PRF-32176

22 October 2004

## PERFORMANCE SPECIFICATION

### BAG, HOT BEVERAGE

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

#### 1. SCOPE

1.1 Scope. This specification covers a hot beverage bag, to be used in conjunction with a flameless ration heater (FRH), a beverage powder and potable water. This item is for use by the Department of Defense as a supplement to operational rations.

#### 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 US Army Research, Development and Engineering Command, Natick Soldier Center, AMSRD-NSC-CF-F, 15 Kansas St., Natick, MA 01760-5018 or emailed to [Donald.Hamlin@natick.army.mil](mailto:Donald.Hamlin@natick.army.mil). Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at [www.dodssp.daps.mil](http://www.dodssp.daps.mil).

AMSC N/A

FSC 8970

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### 2.2 Government documents, drawings and publications.

#### 2.2.1 Specifications, standards and handbooks. None.

2.2.2 Other government documents. 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.

## U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

Federal Food, Drug and Cosmetic Act and regulations (21 Code of Federal Regulations (CFR), Parts 170-189)

(Copies of this document are available from [www.access.gpo.gov/nara](http://www.access.gpo.gov/nara) or Superintendent of Documents, ATTN: New Orders, P.O. Box 371954, Pittsburgh, PA 15250-7954.)

#### 2.3 Non-government publications. None.

2.4 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 6.2), a sample shall be subjected to first article inspection in accordance with 4.2.

3.2 Material. The contractor shall select materials capable of meeting all operating, interface, interoperability, and environmental requirements specified herein.

#### 3.3 Operating requirements.

3.3.1 Chemical and physical properties. The material shall show no evidence of degradation or foreign odor when heat sealed or fabricated into bags. The material shall be suitably formulated for hot beverage packaging and shall not impart an odor or flavor to the product.

3.3.2 Color. The material shall be clear or translucent so that the water level is visible through the bag.

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3.3.3 Food safety. The material used in the hot beverage bag itself shall be safe for use with food by reference to, and in accordance with 21 CFR, Parts 170-189, applicable material safety datasheets, or other recognized health standards and regulations.

3.3.4 Bag.

3.3.4.1 Bag integrity. The bag body, bottom and sides shall not leak.

3.3.4.2 Heat seals. Heat seals shall have an effective seal width. Seals shall be free of wrinkles or misalignment.

3.3.5 Interlocking closure.

3.3.5.1 Closure integrity. The interlocking closure and sides shall not leak more than 20 ml of water.

3.3.5.2 Closure operation. The interlocking closure shall be aligned as observed visually and shall open and close with ease without damage to the closure or bag.

3.4 Interface and interoperability requirements.

3.4.1 Bag. The bag shall conform to design and dimensions of Figure 1 that will allow it to fit in the FRH and Meal, Ready-to-Eat (MRE) entrée carton.

3.4.2 Interlocking closure. The interlocking closure shall conform to design of Figure 1 that will allow it to be used for drinking or pouring a beverage from an MRE entrée carton.

3.4.3 Labeling. One side of the plastic heating bag shall be correctly and legibly printed with permanent black ink or other, dark, contrasting color which is free of carcinogenic elements. The instructions printed on the bag shall not obscure the fill lines. The following information shall be printed on the bag:

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## **HOT BEVERAGE BAG**

### **WARNING**

To avoid a burn, beverage heating time  
should not exceed 6 minutes.  
Use caution when handling HOT beverage bag.

### **DIRECTIONS**

1. Open beverage bag. Fill with water to appropriate fill line. Add beverage powder.
2. Remove air from bag, then secure closure.
3. Place beverage bag in FRH as you would an MRE entrée.
4. Activate FRH.
5. Load FRH/beverage bag into an MRE carton.
6. Heat 4 to 6 minutes. Remove HOT beverage bag. Discard FRH. Save carton.
7. Place beverage bag back in carton. Carton insulates hot beverage and protects hands from heat.
8. Open beverage bag. Drink beverage.

3.5 Environmental requirement. The bag shall operate after exposure to the FRH thermal process. The bag shall exhibit no failures, deformities or degradation.

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### 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 appearance and performance. Any failure to conform to the performance requirements or any appearance or performance failure, shall be cause for rejection of the lot. The approved first article shall be used as the product standard for periodic review evaluations. Defense Supply Center Philadelphia (DSCP) shall select sample units during production of contracts and submit them to the following address for evaluation:

US Army Research, Development and Engineering Command  
Natick Soldier Center  
AMSRD-RCF-F(N)  
15 Kansas Street  
Natick, MA 01760-5018

Six (6) sample units of each item produced shall be randomly selected from that one production lot. The six (6) sample units shall be shipped to Natick within five working days from the end of the production month and upon completion of all inspection requirements. The sample units shall be evaluated for the characteristics of appearance, odor, performance and overall quality.

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4.3 Conformance inspection. Conformance inspection shall include the examination of 4.4 and tests from Table I, performed on specified samples (see 6.2).

TABLE I. Verification methods 1/

Title	Requirement	Verification
<b>Operating requirements</b>	3.3	4.5.1
Chemical and physical properties	3.3.1	4.4
Color	3.3.2	4.5.1.1
Food safety	3.3.3	4.4
Bag	3.3.4	4.5.1.2
Bag integrity	3.3.4.1	4.5.1.2.1
Heat seals	3.3.4.2	4.5.1.2.2
Interlocking closure	3.3.5	4.5.1.3
Closure integrity	3.3.5.1	4.5.1.3.1
Closure operation	3.3.5.2	4.5.1.3.2
<b>Interface and interoperability requirements</b>	3.4	4.5.2
Bag	3.4.1	4.5.2.1
Interlocking closure	3.4.2	4.5.2.2
Labeling	3.4.3	4.4
<b>Environmental requirement</b>	3.5	4.5.3

1/ Compliance to these requirements may be verified by certificate of conformance.

4.4 Bag examination. The bag shall be examined for compliance with the requirements in 3.3.1, 3.3.3, 3.4.2 and 3.4.3. Defects and defect classifications are listed in Table II.

TABLE II. Bag defects 1/ 2/

Category		Defect
<u>Major</u>	<u>Minor</u>	
101		Tear, hole, or open seal.
102		Unclean bag.

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- 103            Bag has foreign odor.
- 104            Interlocking closure missing.
- 201            Label missing, incorrect, or illegible.
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1/ Presence of any foreign materials such as, but not limited to dirt, insect parts, hair, wood, glass, metal, or any foreign odors such as, but not limited to burnt, scorched, shall be cause for rejection of the lot.

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

#### 4.5 Tests.

##### 4.5.1 Operating requirements.

4.5.1.1 Color. Fill the bag with minimum 4 oz. of water. The water level in the bag shall be easily discernible through the bag material. Inability to discern the water level shall constitute a test failure.

##### 4.5.1.2 Bag.

4.5.1.2.1 Bag integrity. Fill the bag to the 12 oz. line with minimum 140°F ( $\pm$  5°F) water. Seal the bag at the closure. Wipe any water off exterior of bag. Suspend bag in upright position for 10 minutes above a clean pan. The collection of any water in the pan shall constitute a test failure.

4.5.1.2.2 Heat seals. Visually examine the heat seals. Heat seals with severe wrinkles, that are misaligned or that are improperly formed shall constitute a test failure.

##### 4.5.1.3 Interlocking closure.

4.5.1.3.1 Closure integrity. Fill the bag to the 12 oz. line with minimum 140°F ( $\pm$  5°F) water. Seal the bag at the closure. Wipe any water off exterior of bag. Suspend bag in upside down position for 15 seconds above a clean pan. Collect and measure leaked water. Leaked water in excess of 20 ml shall constitute a test failure.

4.5.1.3.2 Closure operation. The interlocking closure shall be aligned and the closure shall easily open and close without excessive care or force when applying pressure with the fingers. Misalignment or difficulty opening or closing the bag shall constitute a test failure.

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4.5.2 Interface and interoperability requirements.

4.5.2.1 Bag. Visually examine the bag design and measure the dimensions. Fill the bag with 12 oz. of water. Place filled bag into an FRH. Then place filled bag in an MRE entrée carton. A bag that does not fit in the FRH or the MRE entrée carton shall constitute a test failure.

4.5.2.2 Interlocking closure. Visually examine the bag to confirm that the design complies with Figure 1. Any nonconformance shall constitute a test failure.

4.5.3 Environmental requirement. Fill the bag with 12 oz. of minimum 70°F water. Heat the filled bag with an FRH in accordance with the directions. Remove from FRH and put filled bag in an MRE entrée carton. Hold for 5 minutes. Remove bag from carton and inspect for leakage, deformities or degradation. Open the interlocking closure and pour the water out. Again inspect for leakage, deformities, degradation or another defect that hampers bag operation. Leakage, deformities, degradation or another defect that hampers bag operation shall constitute a test failure.

## 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, 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's system commands. Packaging data retrieval is available from the managing Military Department or Defense Agency's automated packaging files, CD-ROM products 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 hot beverage bag covered by this specification is intended for use as a supplement in operational rations. The bag may be used for direct drinking of a hot beverage when the heated beverage in the bag is placed in an MRE entrée carton. The bag is also used as a hydrating bag. The hot beverage bag is military unique since it must withstand high temperatures when heated in the FRH, and interface with the FRH and the MRE entrée carton.

6.2 Acquisition requirements. Acquisition documents should specify the following:

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- a. Title, number and date of this specification.
- b. When first article is required (see 3.1).
- c. Packaging requirements (see 5.1).

6.3 Bag material and design. During the developmental work for this item, it was determined that a high density polyethylene film (HDPE) of a minimum 0.002 inch thickness performed adequately. The bag was constructed with 1/8 inch wide heat sealed sides and a folded bottom (a heat sealed bottom would also be acceptable). Figure 1 shows the basic design and dimensions of the bag tested during the developmental efforts.

6.4 Shelf life. Not applicable.

6.5 Subject term (key word) listing.

Ration

Meal, Ready-to-Eat

Custodians:

Army - GL

Navy - SA

Air Force - 35

Preparing activity:

Army-GL

(Project 8970-0185)

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 currency of the information above using ASSIST Online database at [www.dodssp.daps.mil](http://www.dodssp.daps.mil).

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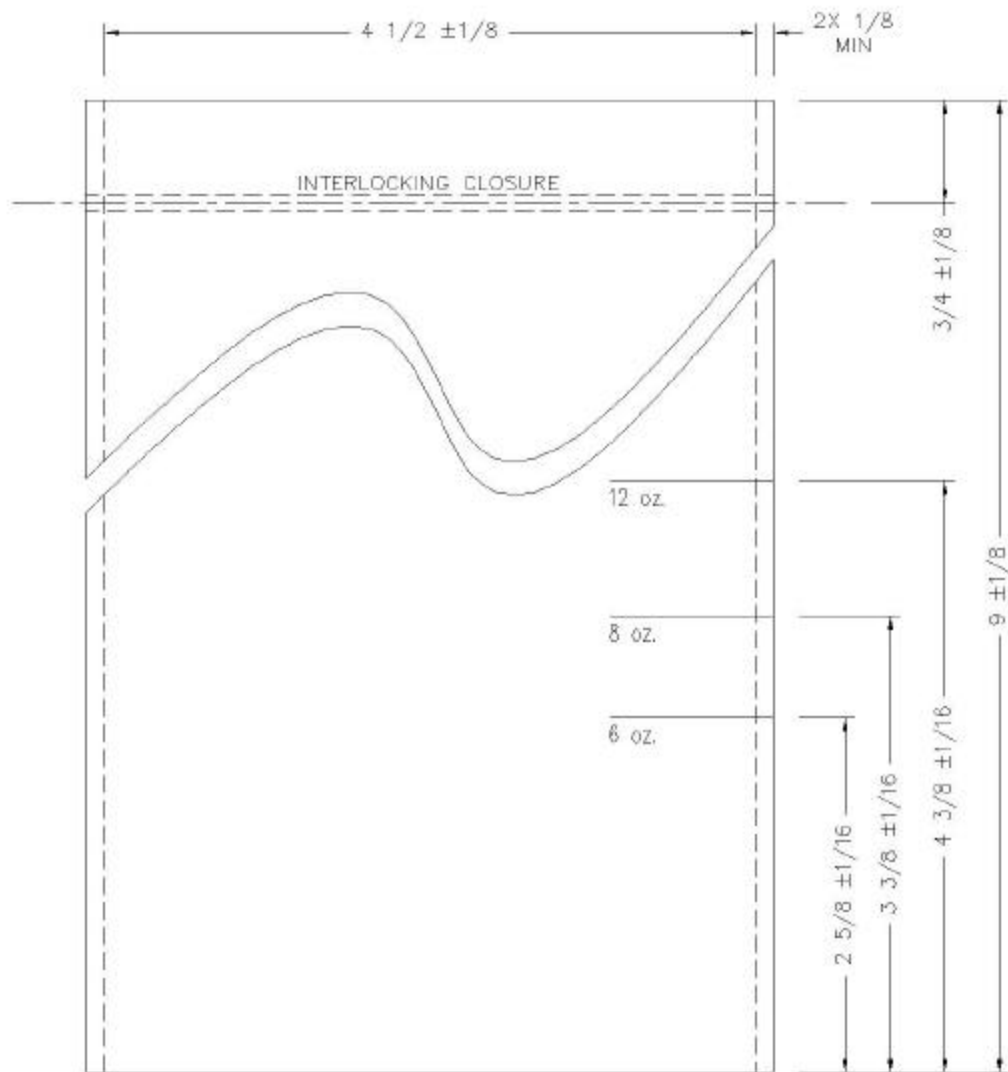


FIGURE 1. Hot Beverage Bag  
(Not actual size)