

INCH-POUND

MIL-DTL-32240

1 March 2007

## DETAIL SPECIFICATION

## SUBMARINE WETBAG

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

## 1. SCOPE

1.1 Scope. This specification covers the requirements for the Submarine Wetbag for use with Trash Disposal Units installed aboard U.S. Navy submarines.

## 2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this specification 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.

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.

## COMMERCIAL ITEM DESCRIPTION

A-A-52094 - Thread, Cotton

(Copies of this document are available online at <http://assist.daps.dla.mil/quicksearch/> or <http://assist.daps.dla.mil> or from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

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.

U.S. Army Natick Soldier Center

2-3-0585 - Submarine Wetbag

2-3-0586 - Pattern, Submarine Wetbag

(Copies of these documents are available from Commander, U.S. Army Soldier Systems Center, Kansas Street, Natick, MA 01760 or online at <http://www.natick.army.mil/>.)

Comments, suggestions, or questions on this document should be addressed to: Commander, Naval Sea Systems Command, ATTN: SEA 05Q, 1333 Isaac Hull Avenue, SE, Stop 5160, Washington Navy Yard DC 20376-5160 or emailed to [commandstandards@navy.mil](mailto:commandstandards@navy.mil), with the subject line "Document Comment". Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at <http://assist.daps.dla.mil>.

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2.3 Non-Government publications. The following documents 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.

#### AMERICAN ASSOCIATION OF TEXTILE CHEMISTS AND COLORISTS (AATCC)

AATCC 135 - Dimensional Changes of Fabrics after Home Laundering

(Copies of this document are available from AATCC, PO Box 12215, Research Triangle Park, NC 27709 or online at [www.aatcc.org](http://www.aatcc.org).)

#### AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI/ASQ Z1.4 - Sampling Procedures and Tables for Inspection by Attributes

(Copies of this document are available from the American National Standards Institute, 25 W. 43rd St, 4th Floor, New York, NY 10036 or online at <http://webstore.ansi.org/>.)

#### ASTM INTERNATIONAL

ASTM D737 - Test Method for Air Permeability of Textile Fabrics (DoD adopted)

ASTM D1424 - Standard Test Method for Tearing Strength of Fabrics by Falling-Pendulum Type (Elmendorf) Apparatus (DoD adopted)

ASTM D1683 - Standard Test Method for Failure in Sewn Seams of Woven Apparel Fabrics (DoD adopted)

ASTM D3775 - Standard Test Method for Fabric Count of Woven Fabric (DoD adopted)

ASTM D3776 - Standard Test Methods for Mass Per Unit Area (Weight) of Fabric (DoD adopted)

ASTM D5034 - Standard Test Method for Breaking Strength and Elongation of Textile Fabrics (Grab Test) (DoD adopted)

ASTM D6193 - Standard Practice for Stitches and Seams (DoD adopted)

(Copies of these documents are available from ASTM International, 100 Barr Harbor Dr., PO Box C700, West Conshohocken, PA 19428-2959 or online at [www.astm.org](http://www.astm.org).)

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 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.

3.3 Materials and components. The bag and associated drawstring shall have no plastic or metal materials in its construction. The bags shall be made of biodegradable cotton woven cloth, and biodegradable cotton thread and cord.

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3.3.1 Fabric. The cloth shall be made from 100 percent cotton that is natural, unbleached, uniform natural color, and woven using single yarn for both the warp (see 6.4.5) and filling. The cloth shall conform to the physical requirements listed in Table I.

TABLE I. Physical requirements.

Physical Requirements	Limits
Fabric Count, yards per inch (YPI)	
Warp	70 (min)
Filling	42 (min)
Weight, oz./sq. yd.	8.5 – 9.0
Breaking Strength, lbs.	
Warp	120 (min)
Filling	130 (min)
Tearing Strength, lbs.	
Warp	6.5 (min)
Filling	8.0 (min)
Air Permeability, CFM	50 (max)

3.3.2 Dimensional stability. The fabric shall not stretch excessively when wet, so that the finished bag shall be capable of passing through the TDU when the bag is filled with trash. The fabric shall have an average dimensional change in the warp of no more than 15.0 percent, and not more than 5.0 percent in the fill (see 6.4.1) direction.

3.3.3 Thread. The thread shall be cotton conforming to A-A-52094, Type I, machine thread, soft finish, size ticket no. 30 (60 tex) / 3-ply with a minimum breaking strength of 3.0 pounds.

3.3.4 Cotton drawstring cord. The drawstring cord shall be cotton braid,  $\frac{3}{16}$ -inch diameter, 8 carriers with 3 double, 2-ply yarns/carrier (6 2-ply yarns/carrier), and shall have a minimum breaking strength of 105.0 pounds.

3.4 Physical properties of bag. The bag shall be constructed of one piece of cloth. The dimensions of the cut pieces and finished bag shall be as specified on Drawing 2-3-0586. The bag opening shall form a cuff over the open end of the pre-pack can and the bottom of the bag shall extend and fully contact the bottom of the pre-pack can simultaneously.

3.5 Opening of bag. The opening of the bag shall have a tunnel with a cotton, closed loop drawstring to close the bag. The drawstring shall be as specified in 3.3.4 and shall be attached to the bag so it may be used to close and lift the bag without tearing.

3.6 Bag density. The filled bags shall be designed to be denser than seawater when filled to their maximum volume and weighted to no more than 40.0 pounds.

3.7 Workmanship. The bags shall be uniformly made; neatly trimmed; and free from holes, stains, tears, or other defects which may impair their serviceability or appearance. Bags shall be free from excessive lint.

3.8 Seams. The bag shall be inverted so that the seams are located on the inside of the bag. All stitch lines shall be backstitched as specified on Drawing 2-3-0585. Seams shall be straight and even, and shall be secured at the ends to prevent unraveling.

3.8.1 Side seam. The single seam of the bag shall conform to ASTM D6193, seam type SSa-2 with 301 or 401 stitch type at 7-9 stitches per inch (SPI).

3.8.2 Seam strength. The seams strength shall be 70.0 pounds or greater when tested in accordance with ASTM D1683 and ASTM D5034.

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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. First article inspection shall be performed on 12 submarine cloth wetbags when a first article sample is required (see 3.1). This inspection shall include the tests and examinations of Table II.

4.3 Conformance inspection. Conformance inspection shall include the tests and examinations of Table II. Unless otherwise specified (see 6.2), sampling for inspection of each lot (see 6.4.2, 6.4.3, and 6.4.4) shall be performed in accordance with ANSI/ASQ Z1.4.

TABLE II. First article and conformance inspections.

Inspection	Requirement Paragraph	Test Paragraph	First Article Inspection	Conformance Inspection
Fabric	3.3.1	4.4	X	X
Dimensional Stability	3.3.2	4.5	X	X
Drawstring Tensile Strength	3.3.4	4.6	X	X
Finished Bag Pre-Pack Can Fit	3.4	4.7.1	X	
Finished Bag Pipe Slide	3.4	4.7.2	X	
Bag Density	3.6	4.8	X	
End Item Visual Examination	3.3.1, 3.3.3, 3.4, 3.5, 3.7, 3.8, and 3.8.1	4.9	X	X
Seam Strength	3.8.2	4.10	X	
Packaging	5.1	4.11, 4.11.1, and 4.11.2	X	X

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4.4 **Fabric tests.** The tests of Table III shall be conducted for the cloth fabric prior to the use of a new lot of cloth (see 6.4.3) to ensure compliance with the requirements of 3.3.1.

TABLE III. Fabric tests.

Physical Requirements	Limits	Test Method
Fabric Count, yards per inch (YPI)		
Warp	70 (min)	ASTM D3775
Filling	42 (min)	
Weight, oz./sq. yd.	8.5 – 9.0	ASTM D3776 Option C
Breaking Strength, lbs.		
Warp	120 (min)	ASTM D5034
Filling	130 (min)	
Tearing Strength, lbs.		
Warp	6.5 (min)	ASTM D1424
Filling	8.0 (min)	
Air Permeability, CFM	50 (max)	ASTM D737

4.5 **Dimensional stability test.** The dimensional stability of the fabric shall be tested in accordance with AATCC 135 with the washing machine set at permanent press and a wash and rinse cycle of 80 °F, with no detergent or ballast. Measurements shall be taken after one laundering while wet. Failure of the fabric to meet the requirements of 3.3.2 shall constitute failure of the test.

4.6 **Drawstring tensile test.** Five specimens of a lot of drawstrings, or lot of drawstring (see 6.4.4) material, prior to cutting, shall be subjected to tensile testing. Tensile testing shall be conducted with an Instron Machine crosshead speed of 20 inches per minute with a starting jaw separation of 4 inches. Specimens shall be cut 12 inches long. The cut length of the drawstring, specified on Drawing 2-3-0585, shall be measured when laid straight and flat in a relaxed state.

4.7 **Bag tests.** The tests of 4.7.1 and 4.7.2 shall be conducted for each new lot of cloth fabric. Corrective measures shall be instituted to prevent the failure(s) in subsequent tests.

4.7.1 **Finished bag pre-pack can fit test.** Five finished sample bags shall be tested. A pre-pack can, NSN 5342-00-371-8594 or equivalent, without strainer in the bottom of the can, shall be used (some cans are provided with removable strainer which will need to be removed). The bag shall be placed in the pre-pack can such that the bag opening forms a cuff over the open end of the pre-pack can and the bottom of the bag extends and fully contacts the bottom of the pre-pack can. Inability of any of the five bags to form a cuff over the can and simultaneously the bottom of the bag to extend and fully contact the bottom of the can shall constitute failure of the test. Different cloth fabric and/or upper limit on bag width shall be used.

4.7.2 **Finished bag pipe slide test.** Five finished sample bags shall be tested. A vertically oriented pipe, at least 3 feet long, with the bottom opening at least 22 inches off of the floor shall be used. The pipe shall be smooth on the inside with a 9- to 9¼-inch inside diameter circular cross-section. Each bag shall be filled with at least 29.0 pounds of damp or wet shredded paper and immersed in water for full saturation. Each bag shall be removed from the water and allowed to sit on a hard level surface for 2 to 4 hours. Each bag, with the drawstring on top, shall be placed with the bottom no lower than 6 inches below the top of the pipe opening, and allowed to fall through from its own weight. If any of the 5 bags cannot fall through the pipe because the filled bag has an excessively large cross-sectional diameter, the bags have failed this test. A different cloth fabric and/or upper limit on bag width shall be used.

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4.8 Bag density. Five finished sample bags shall be tested. Each bag shall be filled to the maximum volume of the bag with damp or wet shredded paper and weighted to make the bag weigh no more than 38.9 pounds (38.9 pounds is the equivalent weight of freshwater for the volume of 40.0 pounds of saltwater). The filled bags must be fully closed using the drawstring. Each bag shall be placed in fresh water at room temperature, deeper than 27 inches and released. If any one of the five bags does not immediately sink to the bottom and/or floats on the surface, the bags have failed the test.

4.9 End item visual examination. The end items shall be examined for defects (i.e., nonconformities) listed in Table IV as specified (see 6.2). The lot size shall be expressed in number of bags. The sample unit shall be one finished bag with one drawstring attached.

TABLE IV. End item visual defects.

Classification Examination	Defect	Major	Minor
Fabric	Wrong material, hole, cut, tear, smash, broken or missing yarn	101	
	More than one piece of fabric used.	102	
Drawstring	Wrong material, hole, cut, tear, smash, broken or missing yarn	103	
	Defects which may cause breakage in use	104	
	Not closed loop		201
Stitching, seam, and stitch type	Wrong thread, thread breaks, skipped stitches, or run-offs. Thread breaks shall be overstitched.	105	
	Wrong seams or stitch type	106	
	Not uniform and complete over entire area of seams		202
	Not within edge tolerances		203
	Open seams	107	
Construction and workmanship	Hole, cut, or tear in bag	108	
	Bag improperly trimmed		204
	Excessive lint		205
	Stain on bag		206
Dimensions	Bag dimensions not within tolerances of drawings and/or determined from pipe slide tests	109	

4.10 Seam strength. The seams shall be tested in accordance to ASTM D1683 and ASTM D5034. Seven specimens shall be tested. The mean of the 7 tests shall be 70.0 pounds or greater.

4.11 Packaging examination. The fully packaged end items shall be examined for the defects (i.e., nonconformities) listed in 4.11.1 and 4.11.2 as specified (see 6.2). The lot size for sampling purposes shall be expressed in the number of packages of 25 bags.

4.11.1 Packaging defects. The packaging defects are:

- Improper box
- Use of plastic or metallic packaging and packing materials
- Box not properly sealed
- Missing or incomplete instructions

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- e. Improper number of bags per box

4.11.2 Marking defects. The marking defects are incorrect, illegible, and missing information.

## 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 service's system commands. Packaging data retrieval is available from the managing Military Department's 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. Submarine wetbags are intended for use in packaging non-grindable food waste for disposal through Trash Disposal Units installed aboard U.S. Navy submarines.

6.2 Acquisition requirements. Acquisition documents should specify the following:

- a. Title, number, and date of the specification.
- b. When first article inspection is required. (see 3.1)
- c. When sampling for inspection of each lot is performed in accordance with other than ANSI/ASQ Z1.4. (see 4.3)
- d. That the end item visual examination is level II and that the acceptable quality level (AQL), expressed in terms of defective bags per hundred bags, is 1.0 for bags with major defect(s) and 2.5 for bags with total (major and minor combined) defect(s). (see 4.9)
- e. That the packaging inspection is level I and that the AQL, expressed in terms of defective packages per 100 packages, is 2.5. (see 4.11)
- f. Packaging requirements. (see 5.1 and 6.5)

6.3 Subject term (key word) listing.

Drawstring

Pre-pack can

Seam

6.4 Definitions. The following terms used throughout this specification refer to submarine wetbags.

6.4.1 Fill. The yarn running from selvage edge to selvage edge at right angles to the warp.

6.4.2 Lot of bags. A production run with uniform cloth fabric, stitching method, stitching and drawstring materials, and dimensional tolerances, or a production run of drawstrings or cloth.

6.4.3 Lot of cloth. Ten (10) yards of fabric.

6.4.4 Lot of drawstrings. Five (5) yards of cord.

6.4.5 Warp. The set of yarns running lengthwise and parallel to the selvage and interwoven with the fill yarns.

6.5 Bundling of bags for packaging. Bags should be bundled 24 into one bag with the drawstring pulled closed to contain the bags for a total of 25 bags in one bundle. Bags should be packaged four bundles of 25 bags to a close fitting fiberboard box for a total of 100 bags and securely closed with water-activated, gummed paper tape.

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Custodians:

Army – GL  
Navy – SH  
Air Force – 11

Preparing Activity:

Navy – SH  
(Project 8105-2006-003)

Review Activities:

Army – GL3, SM  
Navy – AS, CG, SA  
Air Force – 03  
DLA – DH  
CIV – FGI, FSS  
MISC – MP

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 the ASSIST Online database at <http://assist.daps.dla.mil>.