METRIC

MIL-PRF-29163C
15 September 1997
SUPERSEDING
MIL-B-29163B(YD)
21 March 1991

PERFORMANCE SPECIFICATION

BUOYS, MARKER (METRIC)

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

1. SCOPE

1.1 Scope. This specification covers marker buoys that are used with and without mooring (see 6.1).

1.2 Classification. Marker buoys should be of the following sizes and shapes as specified (see 6.2). When specified, (see 6.2) two size 1 buoys may be linked and used instead of a size 2 buoy (see 3.7.2 and 6.2):

Size

Size 1 - Small, 19-kilogram (kg) buoyancy, 10-kg maximum weight.
Size 2 - Large, 45-kg buoyancy, 19-kg maximum weight.

Shape

Shape A - Peanut shaped marker buoy (see figure 1).
Shape B - Barrel (or cylinder) shaped marker buoy (see figure 1).
Shape C - Mooring shaped marker buoy (see figure 1).

See figure 1 at the end of this specification for a drawing of the buoy shapes.

Beneficial comments, recommendations, additions, deletions, clarifications, etc. and any data which may improve this document should be sent to: Commanding Officer (Code 15E2), Naval Construction Battalion Center, 1000 23rd Avenue, Port Hueneme, CA 93043-4301, by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A FSC 2050

2. APPLICABLE DOCUMENTS

2.1 General. The document listed in this section is specified in section 4 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 documents cited in sections 3 and 4 of this specification, whether or not they are listed.

2.2 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents which are DoD adopted are those listed in the issue of the DoDISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DoDISS are the issues of the documents cited in the solicitation (see 6.2).

AMERICAN NATIONAL STANDARDS INSTITUTE, INC. (ANSI)

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

(Application for copies should be addressed to the American National Standards Institute, Inc., 11 West 42nd Street, New York, NY 10036.)

2.3 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 will take precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 Physical characteristics. The buoys shall have an interior and an exterior. All buoys shall be fitted with a tension rod with a retrieving eye on the upper end and a swivel eye for a pendant attachment on the lower end.

3.1.1 Interior foam. The interior shall have a uniform center of gravity which can be rigid or flexible and energy absorbing depending on the buoy design. The interior foam of the buoy shall make up the bulk of the buoy mass.

3.1.2 Exterior surface. The exterior surface shall be either a shell which protects the interior foam or a denser version of the interior foam. When the exterior surface is a shell, the shell shall be ultraviolet inhibited. When the exterior surface is a denser version of the interior foam, end caps shall be sealed to the buoy so that the buoy sheds water. In either case, the exterior surface shall inhibit marine fouling. When specified (see 6.2), an epoxy antifoulant shall be added to the exterior surface for extended marine use.

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

3.3 Materials. Materials used shall be free from defects which would adversely affect the performance or maintainability of individual components or of the overall assembly. Materials not specified herein shall be of the same quality used for the intended purpose in commercial practice. Unless otherwise specified herein, all equipment, material, and articles incorporated in the work covered by this specification are to be new and fabricated using materials produced from recovered materials to the maximum extent possible without jeopardizing the intended use. The term "recovered materials" means materials which have been collected or recovered from solid waste and reprocessed to become a source of raw materials, as opposed to virgin raw materials. Unless otherwise specified, none of the above shall be interpreted to mean that the use of used or rebuilt products is allowed under this specification.

3.3.1 Interior foam and exterior surface. The interior foam and the exterior surface shall function indefinitely in the ocean environment and shall have a high degree of fade and sunburn resistance. When specified (see 6.2), proof of prior marine use of the buoy materials shall be required.

3.4 Interchangeability. All units of the same classification furnished with similar options under a specific contract shall be identical to the extent necessary to ensure interchangeability of component parts, assemblies, accessories, and spare parts.

3.5 Dissimilar metals. Intimate contact between dissimilar metals which can be expected to cause galvanic corrosion shall be avoided. When such contact cannot be avoided, an interposing insulating material shall be provided to minimize the corrosive effect.

3.6 Construction. The buoy(s) shall have a tension rod running along the entire length of the vertical axis of the buoy. A retrieving eye shall be firmly attached to the upper end of the rod and a swivel eye shall be attached to the lower end. The tension rod, eye, and swivel shall be corrosion-resistant.

3.7 Performance.

3.7.1 Size 1. The buoy shall be of sufficient size to support 19 kg without being submerged more than one half of its length from top to bottom.

3.7.2 Size 2. The buoy(s) shall be of sufficient size to support 45 kg without being submerged more than one half of its length from top to bottom. If two size 1 buoys are used in combination instead of a size 2 buoy (see 1.2 and 6.2), the same requirements apply.

3.8 Color. The exterior surface of the buoy shall be pigmented and ultraviolet/antioxidant protected. The color shall be of the manufacturer's standard bright orange, unless otherwise specified (see 6.2). The exterior surface shall contain the color pigment and shall be a homogeneous color. A surface coating is unacceptable.

3.9 Workmanship.

3.9.1 Exterior surface. The exterior surface of the buoy shall be free from warpage, cracks, and chipped or blistered surfaces, and shall have a surface with no burrs.

3.9.2 Bolted connections. Bolt holes shall be accurately punched or drilled and shall have the burrs removed. Washers or lockwashers shall be provided in accordance with good commercial practice, and all bolts, nuts, and screws shall be tight.

4. QUALITY ASSURANCE PROVISIONS

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 inspection shall be performed on one buoy when a first article is required (see 3.2, 6.2, and 6.3). This inspection shall include the examination of 4.6 and the tests of 4.7. The first article may be either a first production item or a standard production item from the supplier's current inventory provided the item meets the requirements of the specification and is representative of the design, construction, and manufacturing technique applicable to the remaining items to be furnished under the contract.

4.3 Conformance inspection. The quality conformance inspection shall include the examination of 4.6 and the tests of 4.7. This inspection shall be performed on the samples selected in accordance with 4.5.

4.4 Component and material inspection. Components and materials shall be inspected in accordance with all the requirements specified herein and in applicable referenced documents.

4.5 Sampling. Sampling and inspection procedures shall be in accordance with ANSI-Z1.4. The unit of product shall be one buoy or, if two size 1 buoys are used instead of a size 2 buoy, two buoys. All buoys offered for delivery at one time shall be considered a lot for the purpose of inspection.

4.6 Examination. Each sample selected shall be examined for compliance with the requirements in section 3 of this document. This element of inspection shall encompass all visual examinations and dimensional measurements. Noncompliance with any specified requirement shall constitute one defect.

4.7 Tests. The first article shall be tested as specified in 4.7.1. Each production unit selected shall be tested as specified in 4.7.1 through 4.7.3. Failure to pass any test shall constitute one defect.

4.7.1 Buoyancy test. The swivel shall be loaded with 19 or 45 kg, as required by the size of buoy(s) (see 3.7.1 and 3.7.2), and then placed in a tank of water. Submergence of the buoy(s) more than one-half of its length from top to bottom shall be cause for rejection. Failure of the swivel, eye, or rod to stay attached to the buoy(s) shall also be cause for rejection.

4.7.2 Total submergence. The swivel shall be sufficiently loaded to cause total submergence of the buoy(s) in the test tank. The buoy(s) shall be left in this condition for not less than one hour. Failure of the swivel, eye, or tension rod to stay attached to the buoy, or cracking of the exterior surface anywhere on the buoy(s), shall be cause for rejection.

4.7.3 Drop test. The buoy(s) of each size shall be hoisted to a height of 3 048 millimetre (mm) allowing buoy(s) to fall freely to a hard surface. Damage to the exterior surface or fittings rendering the buoy(s) unusable or reducing their function shall be cause for rejection. This test shall be performed at 0 degrees Celsius (°C) ± 3 °C.

5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When actual packaging of materiel is to be performed by DoD personnel, these personnel need to contact the responsible packaging activity to ascertain requisite packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activity within the Military Department or Defense Agency, or within the Military Department's System Command. 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 which is helpful, but is not mandatory.)

6.1 Intended use. The marker buoys are intended for use as markers for anchors around pontoon causeways and buoyant fuel lines. When used around pontoon causeways, the marker buoys are used with mooring. When used around buoyant fuel lines, the marker buoys are used without mooring.

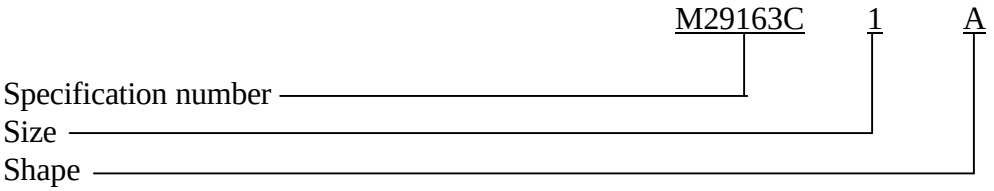
6.2 Acquisition requirements. Acquisition documents must specify the following:

a. Title, number, and date of this specification.
b. Size and shape required (see 1.2).
c. When two size 1 buoys in combination are requested instead of a size 2 buoy (see 1.2 and 3.7.2).
d. Issue of DoDISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.2.1 and 2.3).
e. When epoxy antifoulant is added to the exterior surface (see 3.1.2).

f. When a first article is required for inspection and approval (see 3.2 and 4.2).
g. When proof of prior marine use for buoy materials is required (see 3.3.1).
h. When the finish color of the exterior surface is other than as specified (see 3.8).
i. Packaging requirements (see 5.1).

6.3 First article. When a first article inspection is required, the item will be tested and should be a first article sample or it may be a standard production item from the contractor's current inventory as specified in 4.2. The first article should consist of one unit. The contracting officer should include specific instructions in acquisition documents regarding arrangements for examination, test, and approval of the first article.

6.4 Part or Identifying Numbers (PINs). The specification number, size, and shape are combined to form PINs for each item covered by this document (see 1.2). PINs for the buoys are established as follows:



The above identifies a size 1 (small, 19 kg buoyancy, 10 kg maximum weight), shape A (peanut shaped marker buoy) buoy.

6.5 Metric conversion tables. The following tables list the English equivalents to the metric quantities specified in the text. Values given in the specification might not be converted literally, but are rounded for convenience and to correspond to the accuracy of available measuring instruments.

Length	
Metric quantity	English equivalent
2.5 mm	0.10-inch
12.7 mm	0.50-inch
19.0 mm	0.75-inch
40.0 mm	1.50-inch
153.0 mm	6.00-inch

Mass	
Metric quantity	English equivalent
10 kg	22 lb
19 kg	42 lb
45 kg	100 lb

6.6 Supersession data. This specification replaces Military Specification MIL-B-29163B(YD) dated 21 March 1991.

6.7 Cross reference of classification. Classifications used in this specification (see 1.2) are identical to those found in Military Specification MIL-B-29163B(YD).

6.8 Subject term (key word) listing.

Barrel shaped
Mooring
Mooring shaped
Peanut shaped

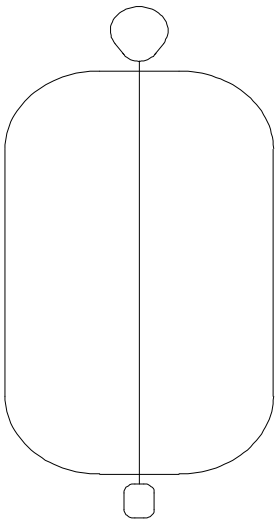
6.9 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to previous issue due to the extent of the changes.

Custodians:
Air Force - 99
Navy - YD1

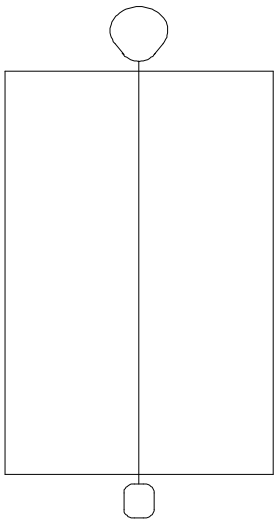
Review Activities:
Navy - AS, CG

Preparing Activity:
Navy - YD1

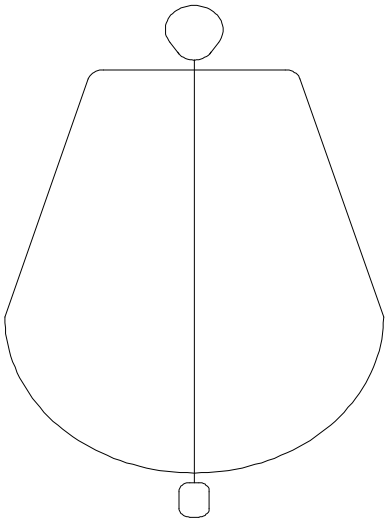
(Project 2050-N039)



PEANUT SHAPED



BARREL SHAPED



MOORING SHAPED

FIGURE 1. Marker buoy shaped

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

INSTRUCTIONS

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.
2. The submitter of this form must complete blocks 4, 5, 6, and 7.
3. The preparing activity must provide a reply within 30 days from receipt of the form.

NOTE: This form may not be used to request copies of documents, nor to request waivers, or clarification of requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

I RECOMMEND A CHANGE:	1. DOCUMENT NUMBER	2. DOCUMENT DATE (YYMMDD)
	MIL-PRF-29163C	970915

3. DOCUMENT TITLE

BUOYS, MARKER (METRIC)

4. NATURE OF CHANGE *(Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)*

5. REASON FOR RECOMMENDATION

6. SUBMITTER

a. NAME *(Last, First, Middle Initial)*	b. ORGANIZATION	
c. ADDRESS *(Include Zip Code)*	d. TELEPHONE (Include Area Code) (1) Commercial (2) AUTOVON *(if applicable)*	**7.DATE SUBMITTED** (YYMMDD)

8. PREPARING ACTIVITY

a. NAME	b. TELEPHONE *Include Area Code)*
ROBERT J. BRICKEY	(1) Commercial 805-982-5593 (2) AUTOVON 551-5593
c. ADDRESS *(Include Zip Code)* COMMANDING OFFICER, NCBC CODE 15E2B 1000 23RD AVENUE PORT HUENEME, CA 93043-4301	**IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT:** DEFENSE QUALITY AND STANDARDIZATION OFFICE 5203 Leesburg Pike, Suite 1403, Falls Church, VA 22401-3466 Telephone (703) 756-2340 AUTOVON 289-2340