

MIL-B-29163A(YD)

10 April 1981

SUPERSEDING

MIL-B-29163(YD)

9 April 1976

MILITARY SPECIFICATION

BUOYS, MARKER, PLASTIC (METRIC)

This specification is approved for use by the Naval Facilities Engineering Command, Department of the Navy, and is available for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification covers plastic marker buoys.

1.2 Classification. Marker buoys shall be of the following sizes, as specified (see 6.2)

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

Size 2 - Large, 45-kg buoyancy, 19-kg maximum weight.

2. APPLICABLE DOCUMENTS

2.1 Issues of documents. The following documents, of the issue in effect on date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein.

SPECIFICATIONS

FEDERAL

- L-P-1183 - Plastic Molding Material, Acrylonitrile-Butadiene-Styrene (ABS), Rigid.
- PPP-B-601 - Boxes, Wood, Cleated Plywood.
- PPP-B-621 - Boxes, Wood, Nailed and Lock Corner.

STANDARDS

MILITARY

- MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes.
- MIL-STD-129 - Marking for Shipment and Storage.

(Copies of specifications, standards, drawings, and publications required by contractors in connection with specific acquisition functions should be obtained from the contracting officer.)

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commanding Officer (Code 156), Naval Construction Battalion Center, Port Hueneme, CA 93043, by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

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2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless otherwise indicated, the issue in effect on date of invitation for bids or request for proposal shall apply.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

D2341 - Standard Specification for Rigid Urethane Foam.

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103)

Technical society and technical association specifications and standards are generally available for reference from libraries. They are also distributed among technical groups and using Federal agencies.

3. REQUIREMENTS

3.1 Description. The marker buoy shall include a plastic shell and a rigid closed cell plastic foam interior. The buoy shall be fitted with a tension rod with a retrieving eye on the upper end, and a swivel eye for pendant attachment on the opposite end.

3.2 First article. When specified (see 6.2), the contractor shall furnish a buoy for first article inspection and approval (see 4.3 and 6.4).

3.3 Standard commercial product. Marker buoys of the same classification shall, as a minimum, be in accordance with the requirements of this specification and shall be the manufacturer's standard commercial product. Additional or better features which are not specifically prohibited by this specification, but which are a part of the manufacturer's standard commercial product, shall be included in the buoy being furnished. A standard commercial product is a product which has been sold, or is currently being offered for sale, on the commercial market through advertisements or manufacturer's catalogs, or brochures, and represents the latest production model.

3.4 Identical items. All units of the same classification furnished under a specific contract shall be physically and mechanically identical. Parts, accessories, assemblies, and components are included in this requirement. Written approval for deviations must be obtained in advance from the contracting officer.

3.5 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. None of the above shall be interpreted to mean that the use of used or rebuilt products are allowed under this specification unless otherwise specified.

3.5.1 Shell. The shell shall be at least 2.5-millimeters (mm) thick acrylonitrile-butadiene-styrene (ABS) conforming to L-P-1183, type VI, ultraviolet inhibited. At the option of the contractor, a plastic material of properties equivalent to ABS may be substituted, provided the material is an ultraviolet inhibited grade and the assembled buoy passes the drop test of 4.5.3.

3.5.2 Foam interior. The buoy shall have a rigid, closed cell urethane foam interior conforming to ASTM D2341, type 300780000000. Alternative core foam may be provided if it possesses properties equivalent to those specified for the urethane foam.

3.5.3 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 shall have a steel tension rod bonded at both ends to the shell and 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 retrieving eye shall have a 153-mm interior nominal diameter if circular, or a 153-mm nominal diagonal if square. The swivel eye shall be 40-mm nominal diameter. The tension rod, eye, and swivel shall have corrosion resistance equal to, or greater than, hot dipped galvanized steel.

3.7 Performance.

3.7.1 Size 1. The buoy shall be of sufficient size to support 19 kg while submerging the buoy no more than one-half of its length. The buoy shall weigh no more than 10 kg. The tension rod shall be at least 12.7-mm diameter.

3.7.2 Size 2. The buoy shall be of sufficient size to support 45 kg while submerging the buoy no more than one-half of its length. The buoy shall weigh no more than 19 kg. The tension rod shall be at least 19-mm diameter.

3.8 Color. Finish color of the shell shall be of the manufacturer's standard bright orange, unless otherwise specified (see 6.2). The shell material shall contain the color pigment and shall be a homogeneous color. A surface coating is unacceptable.

3.9 Workmanship.

3.9.1 Plastic. The plastic shell shall be free from warpage, cracks, and chipped or blistered surfaces, and shall have a smooth surface with no burrs.

3.9.2 Bolted connections. Bolt holes shall be accurately punched or drilled and shall have the burrs removed. All bolts and fasteners shall be free from burrs, seams, laps, loose scale, irregular surfaces, and other defects. Washers or lockwashers shall be provided in accordance with good commercial practice, and all bolts, nuts, and screws shall be tight.

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4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.2 Classification of inspection. Inspection shall be classified as follows:

- (a) First article inspection (see 4.3).
- (b) Quality conformance inspection (see 4.4).
- (c) Packaging inspection (see 4.6).

4.3 First article inspection. First article inspection shall be performed on one buoy when a first article sample is required (see 3.2). This inspection shall include the examination of 4.4 and the tests of 4.5. The first article may be a first production item or a standard production item from the contractor's current inventory provided the buoy meets the requirements of the specification and is representative of the design, construction, and manufacturing technique applicable to the remaining buoy to be furnished under the contract.

4.4 Quality conformance inspection.

4.4.1 Sampling. A random sample of marker buoys shall be selected from each lot offered to the Government in accordance with inspection level S-4 of MIL-STD-105. The acceptable quality level shall be 2.5 percent defective.

4.4.2 Examination. Each sample selected in accordance with 4.4.1 shall be examined for compliance with the requirements specified in Section 3 of this specification. This element of inspection shall encompass all visual examinations and dimensional measurements.

4.5 First article test. The marker buoy shall be placed in a tank filled with water of sufficient depth to completely cover the buoy during the tests of 4.5.2.

4.5.1 Buoyancy test. The swivel shall be loaded with nineteen or 45 kg, as required by the size of buoy, and then placed in the tank of water. Submergence of the buoy more than one-half of its length shall be cause for rejection. Failure of the swivel, eye, or rod to stay attached to the buoy shall also be cause for rejection.

4.5.2 Total submergence. The swivel shall be sufficiently loaded to cause total submergence of the buoy in the test tank. The buoy shall be left in this condition for a minimum of 1 hour. Failure of the swivel, eye, or tension rod to stay attached to the buoy, or cracking of the shell in the area of these attachments, shall be cause for rejection.

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4.5.3 Drop test. One complete buoy of each size shall be hoisted to a height of 10 feet (measured between the deck and lowermost point of the buoy), released and allowed to fall freely to the deck. Damage to the shell or fittings rendering the buoy unusable or reducing its function shall be cause for rejection.

4.6 Packaging inspection. The packing and marking of the buoys and tension bars shall be inspected to verify conformance to the requirements in Section 5.

5. PACKAGING

5.1 Packing. Packing shall be level A, B, or commercial as specified (see 6.2).

5.1.1 Level A. The buoys shall be packed in close-fitting boxes conforming to PPP-B-601, overseas type or PPP-B-621, class 2. The contents shall be cushioned, blocked, and braced to prevent movement.

5.1.2 Level B. The buoys shall be packed as specified for level A, except the boxes shall be domestic type or class 1, as applicable.

5.1.3 Commercial. The buoys shall be packed in a manner which will insure arrival at destination in satisfactory condition. Containers and packing shall conform to the applicable carrier rules and regulations.

5.1.4 Marking. The buoys and shipping containers shall be marked in accordance with MIL-STD-129.

6. NOTES

6.1 Intended use. The plastic marker buoys are used to mark anchors around pontoon causeways and buoyant fuel lines.

6.2 Ordering data. Acquisition documents should specify the following:

- (a) Title, number and date of this specification.
- (b) Size of buoy (see 1.2).
- (c) When a first article is required for inspection and approval (see 3.2, 4.3, and 6.4).
- (d) When finish color of shell shall be other than specified (see 3.8).
- (e) Level of packing required (see 5.1).

6.3 Contract data requirements. When this specification is used in an acquisition which incorporates a DD Form 1423 and invokes the provisions of paragraph 7-104.9(n) of the Defense Acquisition Regulations (DAR), the data requirements will be developed as specified by an approved Data Item Description (DD Form 1664) and delivered in accordance with the Contract Data Requirements List (DD Form 1423) incorporated into the contract. When the provisions of DAR 7-104.9(n) are not invoked, the data shall be delivered in accordance with the contract requirements.

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6.4 First article. When a first article is required, it shall be tested and approved under the appropriate provisions of paragraph 7-104.55 of the DAR. The first article should be a first production item consisting of one complete marker buoy or it may be a standard production item from the contractor's current inventory as specified in 4.3. The contracting officer should include specific instructions in all acquisition instruments, regarding arrangement for examinations, tests, and approval of the first article.

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.

<u>Length</u>		<u>Mass</u>	
<u>Metric quantity</u>	<u>English equivalent</u>	<u>Metric quantity</u>	<u>English equivalent</u>
2.5 mm	.1 inch	10 kg	22 lb
12.7 mm	.5 inch	19 kg	42 lb
19 mm	.75 inch	45 kg	100 lb
40 mm	1.5 inches		
153 mm	6 inches		

Preparing activity:

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