BS ISO 17325-2:2014

BSI Standards Publication

Ships and marine technology — Marine environment protection — Oil booms

Part 2: Strength and performance requirements

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National foreword

This British Standard is the UK implementation of ISO 17325-2:2014.

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Part 2: Strength and performance requirements

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ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 8, *Ships and marine technology*, Subcommittee SC 2, *Marine environment protection*.

ISO 17325 consists of the following parts, under the general title *Ships and marine technology — Marine environment protection — Oil booms*:

— *Part 1: Design requirements*

— *Part 2: Strength and performance requirements*

The following parts are under preparation:

— *Part 3: End connectors*

Auxiliary equipment will form the subject of future Part 4.

Introduction

Oil booms can be classified in two major types:

— Fence booms typically provide a stiffened barrier designed to float vertically in the water.

— Curtain booms are provided with flexible material for the underwater portion of the membrane (called the skirt).

There are other types of booms, such as special purpose booms and sorbent booms, which are not the subject of this part of ISO 17325.

This International Standard gives some general guidelines for manufacturers as well as users with regard to subjects associated with producing, purchasing, and using such types of equipment. It does not define any specific type and size of boom for a particular application, as many variables have to be taken into consideration. This part of ISO 17325 specifies the strength and performance requirements of booms and relevant test methods.

This International Standard has been developed after considering the below standards and national legislative requirements.

The American Society for Testing and Materials (ASTM) Committee F-20 has prepared two standards relating to boom connectors. ASTM F1093-99 specifies static laboratory tests of the strength of an oil spill response boom under tensile loading. ASTM F1523-94 provides a guide on the selection of a containment boom that can be used to control spills of oil and other substances that float on the water.

The Japanese Industrial Standard JIS F 9900-1 and JIS F 9900-2 provide the necessary conditions and specifications for the design, manufacture, etc. of oil booms.

This part of ISO 17325 incorporates and acknowledges use and refers to many elements provided in ASTM F1093-99, ASTM F1523-94, JIS F 9900-1, and JIS F 9900-2. However, it also contains changes and additional details on strength and performance requirements for oil booms.

INTERNATIONAL STANDARD **ISO 17325-2:2014(E)**

Ships and marine technology — Marine environment protection — Oil booms —

Part 2: Strength and performance requirements

1 Scope

In addition to ISO 17325-1, this part of ISO 17325 specifies the particular strength and performance requirements of oil booms and associated test methods. It does not purport to address the safety concerns, if any, associated with their use. It is the responsibility of the user of this International Standard to establish the appropriate safety and health practices and determine applicability of regulatory limitations prior to use.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 34-1, *Rubber, vulcanized or thermoplastic — Determination of tear strength — Part 1: Trouser, angle and crescent test pieces*

ISO 175, *Plastics — Methods of test for the determination of the effects of immersion in liquid chemicals*

ISO 505, *Conveyor belts — Method for the determination of the tear propagation resistance of textile conveyor belts*

ISO 3011, *Rubber- or plastics-coated fabrics — Determination of resistance to ozone cracking under static conditions*

ISO 16165, *Ships and marine technology — Marine environment protection — Terminology relating to oil spill response*

ISO 17325-1:2014, *Ships and marine technology — Marine environment protection — Oil booms — Part 1: Design requirements*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 16165 and the following apply.

3.1
fresh water
water with less than 0,5 ppt salinity

3.2
salt water
marine water with greater than 32 ppt salinity

4 General requirements of performance

The following requirements apply to booms.

— The main materials that constitute the body of booms shall be oil-resistant and water-resistant, and shall not be susceptible to deterioration during long term storage under normal conditions.

— Booms shall have sufficient structural strength to withstand normal applications including towing, deployment and withdrawals.

— Booms to be mounted on board oil tankers and used in explosive atmospheres shall be protected so as not produce a spark if they come in contact with the hull or other metal components.

— Booms shall be easy to store and shall not injure operators when deploying, unfolding, or withdrawing.

— Connection parts shall not have an effect on the floating stability of booms, and shall be safe in use. Connection parts shall suit the breaking strength of the entire boom under any condition. See ISO 17325-3[1)].

5 Material performance and test

The boom manufacturer shall prove that all materials for bodies, components, connection parts, and especially tension members, are suitable. This shall be provided by manufacturer test certificates. However, because the breaking strength of the boom assembly depends on proper production, the complete boom shall undergo a breaking strength test as stated in 5.3.4.

The following provides information to determine the suitability of components. All the test results shall be recorded in the manufacturers' certificates.

5.1 Strength verification

The manufacturer shall provide calculations of oil boom strength and dimensions taking into consideration the forces expected at the intended application. See ISO 17325-1:2014, Clause 8. Major components to be taken into consideration include but are not limited to the following.

— tension members, such as chains, ropes, and belts;

— boom wall material;

— floatation material; and

— end connectors.

NOTE See ISO 17325-3[1)].

5.2 Tests (component)

Testing of oil boom components is to be conducted and certified by manufacturers as follows.

5.2.1 Oil resistance

Test results shall be proven by manufacturers' certificates and in accordance with ISO 175.

5.2.2 Weathering resistance

Test results shall be proven by manufacturers' certificates and in accordance with ISO 3011.

1) To be published.

5.2.3 Tear resistance of boom wall

Test results shall be proven by manufacturers' certificates and in accordance with ISO 34-1 and ISO 505.

5.3 Tests (assembled boom)

The following tests are to be conducted on the complete assembled boom by a recognized body.

5.3.1 Visual inspection

Bodies and connection parts of the booms shall be visually checked and shall not have any defects.

5.3.2 Buoyancy test

Both freeboard and draught of booms floating in fresh water or salt water are to be measured at three arbitrary points near the centre part of booms. These data are to be recorded for classification according to ISO 17325-1:2014, Table 1.

5.3.3 Air chamber leakage test (inflatable type only)

Air chamber shall be expanded to maximum working pressure and left in that condition for one hour. Afterwards, the loss of the internal pressure shall be less than 10 % of the maximum working pressure.

5.3.4 Breaking strength test

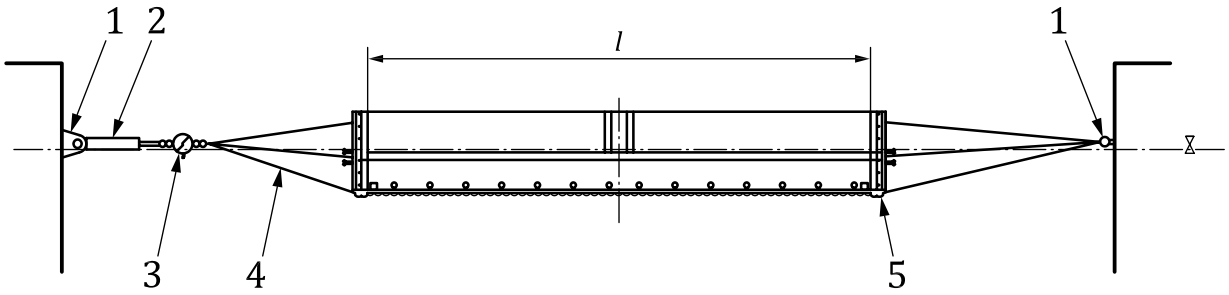
In order to verify the functionality of the entire boom assembly, a breaking strength test shall be carried out on one full-scale test specimen taken from ongoing production. It shall include all accessories such as end connectors and towing gear. This test shall be carried out afloat in the operational position of the boom.

The final product shall be identical to that which was tested.

The breaking strength test shall be carried out under the following test requirements.

5.3.4.1 Test facility

The test facility shall provide sufficient clearance for the (full-scale) boom specimen, one tensioning device, and testing equipment as shown in Figure 1, where the boom is launched in a straight position, floating in the absence of current and waves. It is exposed to longitudinal tension until breaking or structural failure. A suitable tension-meter is needed to measure and record the load on the boom specimen.



Key

1	mooring point	4	towing line
2	hydraulic cylinder	5	boom connector
3	dynamometer	*l*	full boom length

Figure 1 — Test arrangement

5.3.4.2 Test specimen

The test is to be carried out on one complete section of the boom specimen. It shall include a towing gear at each end, connected by the type of end connector supplied or recommended by the manufacturer, as well as all accessories needed for operation of the boom.

Only if the size of one section exceeds the size of the test facility, the length of the boom may be reduced, but using complete full-scale segments only. This shall be recorded in the test report.

5.3.4.3 Test procedures

The specimen is attached between the end-support of the test facility and the tension meter with the individual towing devices attached to each end connector.

A load shall be placed on the boom and tension increased in a linear manner. It shall be noted when failure is indicated. The test is to be continued until complete structural failure occurs.

5.3.4.4 Multiple tests

If a manufacturer wants to test several test specimens, which are identical in design and way of production, but only different in size, the number of individual tests may be carried out only on one-third of all test specimen, but not less than three. The particular sizes to be tested shall be randomly selected by the test institute.

In case one of the multiple tests fails, then individual tests shall be conducted for all other test specimen.

5.3.4.5 Records

Prior to the test, the boom test specimen has to be specified by design drawings, parts lists, quality certificates of components (e.g. belts, ropes, chains) suppliers, and classification according to ISO 17325-1. Data including a description of the test rig and the force at which partial and complete failure occurred shall be reported.

5.3.4.6 Validity

The certificate issued on basis of this test shall not be limited in time. But it becomes automatically invalid if any structural member (e.g. wall material, tension members) or applied production methods are changed.

Bibliography

[1] ISO 1432, *Rubber, vulcanized or thermoplastic — Determination of low-temperature stiffening (Gehman test)*

[2] ISO 1817, *Rubber, vulcanized or thermoplastic — Determination of the effect of liquids*

[3] ISO 2411, *Rubber- or plastics-coated fabrics — Determination of coating adhesion*

[4] ISO 4649, *Rubber, vulcanized or thermoplastic — Determination of abrasion resistance using a rotating cylindrical drum device*

[5] ISO 4675, *Rubber- or plastics-coated fabrics — Low-temperature bend test*

[6] ISO 5470-1, *Rubber– or plastics-coated fabrics — Determination of abrasion resistance — Part 1: Taber abrader*

[7] ISO 17325-3[2)], *Ships and marine technology – Marine environment protection – Oil booms – Part 3: End connectors*

[8] ASTM D4157-13, *Standard Test Method for Abrasion Resistance of Textile Fabrics (Oscillatory Cylinder Method)*

[9] ASTM F1093-99, *Standard Test Methods for Tensile Strength Characteristics of Oil Spill Response Booms*

[10] ASTM F1523-94, *Standard Guide for Selection of Booms in Accordance With Water Body Classifications*

[11] JIS F 9900-1, *Specification for boom — Part 1: Body*

[12] JIS F 9900-2, *Specification for boom — Part 2: Connectors*

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