



Standard Test Methods for Tensile Strength Characteristics of Oil Spill Response Boom¹

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1. Scope

1.1 These test methods cover static laboratory tests of the strength of oil spill response boom under tensile loading.

1.2 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.* For a specific hazard statement, see Section 7.

2. Referenced Documents

2.1 *ASTM Standards:*²

F818 Terminology Relating to Spill Response Barriers

F962 Specification for Oil Spill Response Boom Connector: Z-Connector

3. Terminology

3.1 *Definitions:*

3.1.1 The following definitions, quoted from Terminology F818, are used in these test methods.

3.1.2 *anchor point*—a structural point on the end connector or along the length of a boom section designed for the attachment of anchor or mooring lines.

3.1.3 *ballast*—weight applied to the skirt to improve boom performance.

3.1.4 *boom section*—the length of boom between two end connectors.

3.1.5 *boom segment*—repetitive identical portion of the boom section.

3.1.6 *curtain-type boom*—a boom consisting of a flexible skirt supported by flotation. See Appendix X1.

3.1.7 *end connector*—a device permanently attached to the boom used for joining boom sections to one another or to other accessory devices.

3.1.8 *fence-type boom*—a boom consisting of self-supporting or stiffened membrane supported by flotation. See Appendix X1.

3.1.9 *float*—that separable component of a boom that provides buoyancy.

3.1.10 *freeboard*—the vertical height of the boom above the water line.

3.1.11 *hinge*—location between boom segments at which the boom can be folded back 180° upon itself.

3.1.12 *skirt*—the continuous portion of the boom below the floats.

3.1.13 *tension member*—any component which carries horizontal tension loads imposed on the boom.

4. Summary of Test Method

4.1 A specimen of spill containment boom is tested by subjecting the specimen to cyclic tests to 100 % of the manufacturer's rated tensile strength, and by applying tensile loading which progressively deforms the specimen to the point of failure. Similarly, a typical anchor point and towing device are tested in an additional tensile test. For each phase of the test, values of tensile load and deformation are observed and recorded, and modes of failure are described.

5. Significance and Use

5.1 Boom sections are frequently combined into assemblages hundreds of meters in length prior to towing through the water to a spill site. The friction of moving long boom assemblages through the water can impose high tensile stresses on boom segments near the tow vessel.

5.2 Tensile forces are also set up in a boom when it is being towed in a sweeping mode. The magnitude of this tensile force can be related to the immersed depth of the boom, the length of

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.