



## Standard Guide for Installation and Application of Type C Portable Tanks for Marine LNG Service<sup>1</sup>

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### 1. Scope

1.1 This guide is intended to identify and define the minimum requirements for the best practices in the design, installation, and application of Type C portable tanks in marine liquefied natural gas (LNG) fuel tank service used on LNG-fueled vessels.

1.2 This guide comprises the necessary guidance for regulatory compliance in addition to the requirements of the IMO IGF Code, along with the risk assessment considerations to detail the criteria for design, location, configuration, associated safety systems, and periodic system inspections. Included in the safety systems criteria would be leakage/spill detection and containment, water spray protection, emergency shutdown, grounding requirements, pressure relief to a fixed venting system, associated alarms, and color code markings for system identification. The locating and securing of suitable tank types with associated systems for marine service that will ensure compliant vessel stability with appropriate access to critical systems and connections for emergency response and vessel egress will also be addressed in this guide.

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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.4 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

<sup>1</sup> This guide is under the jurisdiction of ASTM Committee F25 on Ships and Marine Technology and is the direct responsibility of Subcommittee F25.11 on Machinery and Piping Systems.

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### 2. Referenced Documents

#### 2.1 *EN Standard:*<sup>2</sup>

EN 1474-2 Installation and Equipment for Liquefied Natural Gas—Design and Testing of Marine Transfer Systems—Part 2: Design and Testing of Transfer Hoses

#### 2.2 *IMO Standards:*<sup>3</sup>

IGF Code IMO MSC 95/22/Add. 1 Annex 1 International Code of Safety for Ships Using Gases or Other Low Flashpoint Fuels

IMDG Code International Maritime Dangerous Goods Code

#### 2.3 *ISO Standards:*<sup>2</sup>

ISO 1496-3 Series 1 Freight Containers—Specification and Testing—Part 3: Tank Containers for Liquids, Gases and Pressurized Dry Bulk

ISO 14726 Ships and Marine Technology—Identification Colors for the Content of Piping Systems

#### 2.4 *Federal Standard:*<sup>4</sup>

49 CFR 393.134 What Are the Rules for Securing Roll-On/Roll-Off or Hook Lift Containers?

### 3. Terminology

#### 3.1 *Definitions:*

3.1.1 *green seas, n*—solid waves of water coming aboard a ship.

3.1.2 *holding time, n*—means the time that will elapse from the establishment of the initial filling condition until the pressure has risen due to heat influx to the lowest set pressure of the pressure-limiting device(s).

3.1.3 *Type C portable tanks, n*—pressure vessels meeting the requirements of 6.4.15.3 of the IGF Code, which are also designed to be safely disconnected and removed from the

<sup>2</sup> Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.

<sup>3</sup> Available from International Maritime Organization, 4, Albert Embankment, London, SE1 7SR, UK, <http://www.imo.org>.

<sup>4</sup> Available from U.S. Government Printing Office, Superintendent of Documents, 732 N. Capitol St., NW, Washington, DC 20401-0001, <http://www.access.gpo.gov>.