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An American National Standard

Standard Specification for Shipboard Oil Pollution Abatement System[1]

This standard is issued under the fixed designation F2283; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This specification covers the design, manufacture, installation, performance, and operation of a shipboard oil pollution abatement system (OPAS) that collects, transfers, and processes all the oily waste generated from incidental operation of machinery spaces. This specification applies to commercial and public vessels and is intended for use by designers, manufacturers, purchasers, installers, and operators of shipboard OPAS to determine the requirements for system design, equipment manufacture, equipment purchase, system integration and installation, and system in-service operation. This specification and its supplementary sections may be tailored to meet the specific user's needs to cover from OPAS new construction to retrofitting of individual OPAS equipment.

1.2 OPAS is comprised of drain tanks, bilge suctions, transfer pumps, Oily Bilge Water Holding Tanks, Oil Residue (sludge) Tanks, 15 ppm Bilge Separator systems, 15 ppm Bilge Alarm, automatic stopping device, and deck connections. The 15 ppm Bilge Separator is considered to be applicable for use to separate oily bilge water and ballast water from fuel oil tanks. Treatment of ballast water is addressed in other regulations/standards and is not addressed herein.

1.3 This specification covers the system from the point of entering the OPAS until the oil-water mixture is treated, the clean water meeting the applicable discharge limits is discharged overboard, and the separated oil is contained for on shore disposal or further treatment. It also includes concepts for minimizing oily waste generation. This specification is intended to augment the existing regulations, provide the user options to meet their specific needs, and should not be considered a replacement for overriding regulation.

1.4 It is recognized that the development and testing of high capacity separating equipment designed for dealing with effluent from cargo tanks on tankers pose special problems and such equipment is not required to be tested under International Maritime Organization (IMO) Marine Environment Protection Committee (MEPC) resolution MEPC.107 (49) nor is it covered in this specification

1.5 There are means to reduce the volume of bilge or process oily waste, or both, that are not considered 15 ppm Bilge Separators systems. Examples include incinerators, evaporators, combinations thereof, and other technologies. Such processes may require addressing all potential issues with the system such as toxicology and emissions to atmosphere. Such means or processes, or both, are out of scope of this specification.

1.6 *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.*

1.7 *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.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

A530/A530M Specification for General Requirements for Specialized Carbon and Alloy Steel Pipe

A999/A999M Specification for General Requirements for Alloy and Stainless Steel Pipe

B165 Specification for Nickel-Copper Alloy (UNS N04400) Seamless Pipe and Tube

F992 Specification for Valve Label Plates

F993 Specification for Valve Locking Devices

F1155 Practice for Selection and Application of Piping System Materials

F1166 Practice for Human Engineering Design for Marine Systems, Equipment, and Facilities

F1323 Specification for Shipboard Incinerators

F1337 Practice for Human Systems Integration Program

[1] This specification is under the jurisdiction of ASTM Committee F25 on Ships and Marine Technology and is the direct responsibility of Subcommittee F25.06 on Marine Environmental Protection.

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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.

Requirements for Ships and Marine Systems, Equipment, and Facilities
F1510 Specification for Rotary Positive Displacement Pumps, Ships Use
F1511 Specification for Mechanical Seals for Shipboard Pump Applications
F2044 Specification for Liquid Level Indicating Equipment, Electrical
F2045 Specification for Indicators, Sight, Liquid Level, Direct and Indirect Reading, Tubular Glass/Plastic
F2446 Classification for Hierarchy of Equipment Identifiers and Boundaries for Reliability, Availability, and Maintainability (RAM) Performance Data Exchange

2.2 *ANSI/ASME Standards:*[3]
B16.1 Cast Iron Pipe Flanges and Flange Fittings
B16.5 Steel Pipe Flanges, Flanged Valves, and Fittings 150, 300, 400, 600, 900, 1500, and 2500 lb
B16.11 Forged Steel Fittings, Socket Welding, and Threaded
B16.24 Bronze Flanges and Flanged Fittings 150, 300 lb

2.3 *Code of Federal Regulations:*[4]
33 CFR Part 155 Department of Homeland Security, U.S. Coast Guard (USCG), Oil or Hazardous Material Pollution Prevention Regulations for Vessels
46 CFR Part 147 Department of Homeland Security, U.S. Coast Guard (USCG), Hazardous Ships' Stores
40 CFR Part 171 Department of Transportation (DoT), Research and Special Programs Administration (RSPA), General Information, Regulations, and Definitions

2.4 *International Maritime Organization (IMO):*[5]
MARPOL 73/78 International Convention for the Prevention of Pollution from Ships, 1973 as modified by the Protocol of 1978, Annex I—Prevention of Pollution by Oil
MEPC.107 (49) Resolution Revised Guidelines and Specifications for Pollution Prevention Equipment for Machinery Space Bilges of Ships
IMO MEPC.187 (59) Amendments to the Annex of the Protocol of 1978 Relating to the International Convention for the Prevention of Pollution from Ships, 1973
IMO MEPC.1/Circ.759 Guidelines for a Shipboard Oil Waste Pollution Prevention Plan
IMO MEPC.1 Circ 642 2008 Revised Guidelines for Systems for Handling Oily Waste in Machinery Spaces of Ships Incorporating Guidance Notes for an Integrated Bilge water Treatment System (IBTS)
IMO MEPC.1/Circ.760 Amendments to the 2008 Revised Guidelines for Systems for Handling Oily Wastes in Machinery Spaces of Ships Incorporating Guidance Notes for an Integrated Bilge Water Treatment System (IBTS) (MEPC.1/CIRC.642, as amended by MEPC.1/CIRC.676)
IMO MEPC.1 Circ 677 Guide to Diagnosing Contaminants in Oily Bilge Water to Maintain, Operate, and Trouble-shoot Bilge Water Treatment Systems

2.5 *Other Documents:*
ANSI/ISA 60079-13 or IEC 60079-1 Electrical Apparatus for Explosive Gas Atmospheres—Part 1: Flameproof Enclosures "d"[3]
ANSI/NEMA MG 1 Motors and Generators[3]
IEC 60085 Electrical Insulation—Thermal Evaluation and Designation[6]
IEC 60092-350 Electrical Installations in Ships—Part 350: General Construction and Test Methods of Power, Control, and Instrumentation Cables for Shipboard and Offshore Applications[6]
IEC 60092-353 Electrical Installations in Ships—Part 353: Single and Multicore Non-Radial Field Power Cables with Extruded Solids Insulation for Rated Voltages 1 KV and 3 KV[6]
IEC 60529 Degrees of Protection Provided by Enclosures, International Protection Rating (IP Codes)[6]
64 Federal Register Number 173, 8 September 1999 Contiguous Zone Proclamation ANSI/NFPA No. 70 National Electrical Code[4]
IEEE 1580 Recommended Practice for Marine Cable for Use on Shipboard and Fixed or Floating Marine Platforms[7]
NFPA 70 National Electrical Code[8]
Public Law 92-500 Federal Water Pollution Control Act, October 18, 1972, as amended by Public Law 95-217, Clean Water Act, December 27, 1977, as amended Underwriters Laboratories Standard 913 (as revised April 8, 1976)[4]
UL 913 Standard for Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, III, Division 1, Hazardous (Classified) Locations[9]
UL 1309 Standard for Safety Marine Shipboard Cable[9]
UL 1203 Explosion-Proof and Dust-Ignition Electrical Equipment for Use in Hazardous (Classified) Locations[9]
ISO 9377–2:2000 Water Quality—Determination of Hydrocarbon Oil Index—Part 2: Method Using Solvent Extraction and Gas Chromatography[10]

3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

3.1.1 *15 ppm bilge alarm*—an instrument that is designed to measure the oil content of oily mixtures from machinery space bilges and fuel oil tanks that carry ballast and activate an alarm at a set concentration limit. Also, referred to in this specification as Oil Content Monitor (OCM).

[3] Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, http://www.ansi.org.
[4] Available from U.S. Government Printing Office, Superintendent of Documents, 732 N. Capitol St., NW, Washington, DC 20401-0001, http://www.access.gpo.gov.
[5] Available from International Maritime Organization (IMO) Publishing, 4 Albert Embankment, London SE1 7SR, United Kingdom, http://www.imo.org.
[6] Available from International Electrotechnical Commission (IEC), 3, rue de Varembé, 1st Floor, P.O. Box 131, CH-1211, Geneva 20, Switzerland, http://www.iec.ch.
[7] Available from Institute of Electrical and Electronics Engineers, Inc. (IEEE), 445 Hoes Ln., Piscataway, NJ 08854-4141, http://www.ieee.org.
[8] Available from National Fire Protection Association (NFPA), 1 Batterymarch Park, Quincy, MA 02169-7471, http://www.nfpa.org.
[9] Available from Underwriters Laboratories (UL), 2600 N.W. Lake Rd., Camas, WA 98607-8542, http://www.ul.com.
[10] Available from International Organization for Standardization (ISO), ISO Central Secretariat, BIBC II, Chemin de Blandonnet 8, CP 401, 1214 Vernier, Geneva, Switzerland, http://www.iso.org.