INTERNATIONAL STANDARD

ISO 11711-2

First edition
2022-09

Ships and marine technology — Aquatic nuisance species —

Part 2: Ballast water sample collection and handling

Navires et technologie maritime — Espèces aquatiques nuisibles —

Partie 2: Prélèvement et manipulation des échantillons d'eau de ballast

Reference number
ISO 11711-2:2022(E)

COPYRIGHT PROTECTED DOCUMENT

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

Page

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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

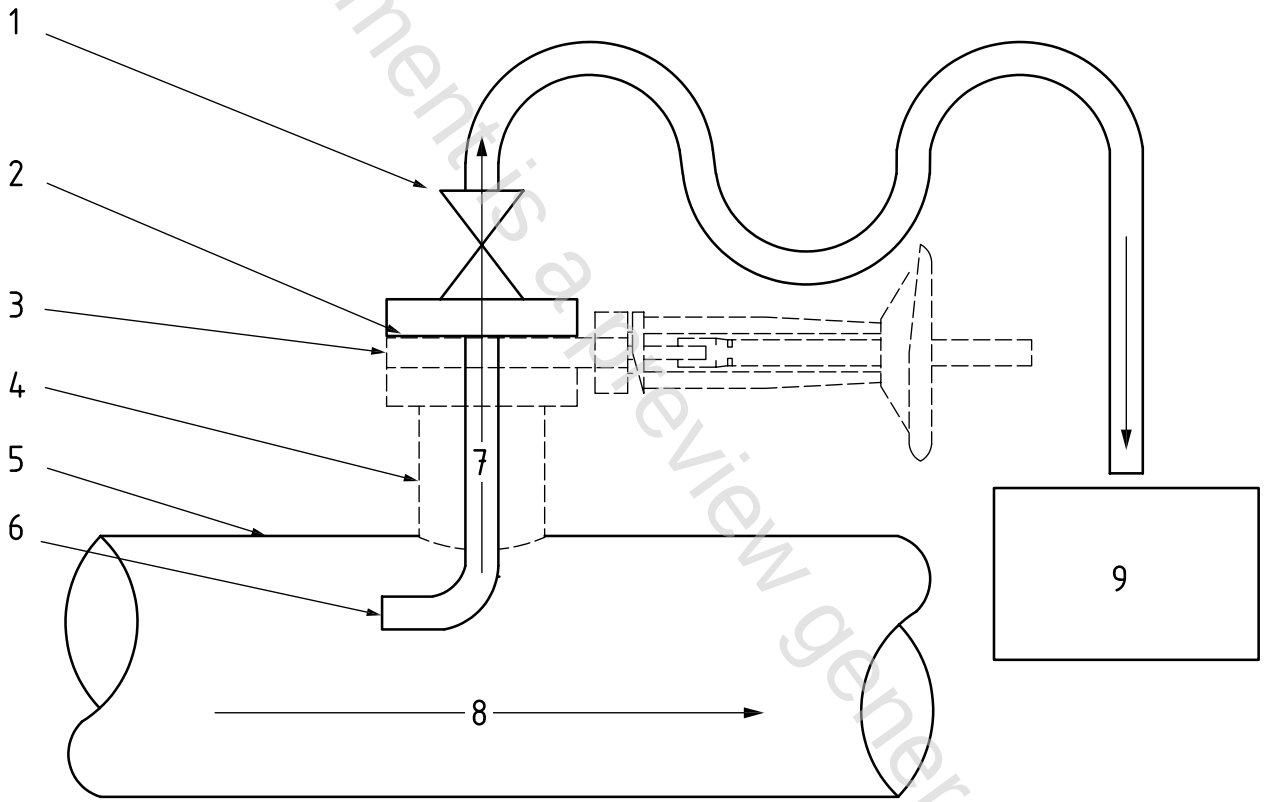
This document was prepared by Technical Committee ISO/TC 8, *Ships and marine technology*.

A list of all parts in the ISO 11711 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

The sampling guidance provided by the ISO 11711 series is intended to standardize the measurement of organism concentrations through sampling of a ship's ballast discharge consistent with the requirements of the International Maritime Organization (IMO) Regulation D-2[1]. The ISO 11711 series currently includes two parts, where ISO 11711-1 provides guidance on the shipboard arrangements for piping and fittings necessary for sampling and return ports, and standardizes the presentation of the sampling port to accommodate various sampling probe configurations. This document addresses the process of collecting and processing ballast water samples for subsequent analysis such as required for type approval, according to IMO Resolution MEPC.300(72) (BWM Code)[2]. It provides guidance to ballast water sampling teams and other concerned parties on the apparatus, installation, and procedures required to obtain representative samples of ballast water discharges from sample ports on a ship. These concepts are illustrated in Figure 1.



Key

1	sample collection device isolation valve	6	sample probe
2	sample port access flange	7	sample water flow
3	sample port valve	8	ballast water flow
4	sample port	9	sample collection device
5	ballast discharge pipe		

– – – – ISO 11711-1 Ballast water sample port - fitting arrangements

——— ISO 11711-2 On-board ballast water sampling and sample processing

NOTE 1 Figure not to scale.

NOTE 2 The figure shows a sample port arranged perpendicular to the main ballast flow.

NOTE 3 See Annex A for examples of configurations of sample collection devices and their connection to ballast piping.

Figure 1 — Illustration of the scopes of ISO 11711-1 and 11711-2

Specifically, this document defines appropriate sample probe and sample flow control to achieve representative sampling and minimize measurement uncertainty consistent with measurement requirements. Appropriate sample volumes and collection times provide statistical confidence for viable organism counts at the discharge limit. Regulation D-2[1] requires the measurement of two organism size classes: ≥10 µm and <50 µm (<10 organisms ml^{-1}) and ≥50 µm (<10 organisms m^{-3}), and three indicator microbes: toxigenic *Vibrio cholera*e (serotypes O1 and O139, <1 cfu 100 ml^{-1} or <1 cfu g^{-1} wet weight zoopl.), *Escherichia coli* (<250 cfu 100 ml^{-1}), and intestinal enterococci (<100 cfu 100 ml^{-1}). Sampling approaches for each are provided, where both indicative and detailed analyses of viable organisms are supported, as defined by BWM.2/Circ.42/Rev.2 [3], as may be amended, and considering the criteria in ISO 17025 for quality management, measurement uncertainty, and standardized procedures. The ISO 11711 series does not intend to add any requirements to the BWM Convention or related documents of IMO but provides supplemental guidance for sampling of ballast water.

Ships and marine technology — Aquatic nuisance species —

Part 2: Ballast water sample collection and handling

1 Scope

This document provides requirements and recommendations to ballast water sampling teams or other concerned parties on the selection and use of sampling apparatus to collect and process ballast water discharge samples aboard a ship from sample ports installed in accordance with ISO 11711-1. It includes an overview of the sampling process, and a discussion on the design and maintenance of sample probes, the necessary sample flow rates, the sample collection devices that incorporate sample flow control to maintain representative sampling conditions, and the handling of samples for subsequent analyses.

This document primarily addresses the collection of ballast water discharge samples. However, it can also be applied to uptake samples with consideration of appropriate sample volumes given anticipated organism concentrations in ambient (as opposed to treated) waters.

NOTE While this document is focused on installations aboard a ship, it can be used for land-based facilities.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

MEPC.173(58), *Guidelines for Ballast Water Sampling* (G2)

ISO 5667-3, *Water quality — Sampling — Part 3: Preservation and handling of water samples*

ISO 11711-1:2019, *Ships and marine technology — Aquatic nuisance species — Part 1: Ballast water discharge sample port*

ISO 17602, *Ships and marine technology — Metal valves for use in flanged pipe — Face-to-face and centre-to-face dimensions*

ISO/IEC 17025, *General requirements for the competence of testing and calibration laboratories*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
absolute pore size
pore size based on empirical measurements of the pores in a *filter* (3.9)