

Microbiology of the food chain - Horizontal method for the determination of *Vibrio* spp. - Part 1: Detection of potentially enteropathogenic *Vibrio parahaemolyticus*, *Vibrio cholerae* and *Vibrio vulnificus* (ISO 21872-1:2017)

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN ISO 21872-1:2017 sisaldab Euroopa standardi EN ISO 21872-1:2017 ingliskeelset teksti.	This Estonian standard EVS-EN ISO 21872-1:2017 consists of the English text of the European standard EN ISO 21872-1:2017.
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English Version

Microbiology of the food chain - Horizontal method for the
determination of *Vibrio* spp. - Part 1: Detection of
potentially enteropathogenic *Vibrio* parahaemolyticus,
Vibrio cholerae and *Vibrio vulnificus* (ISO 21872-1:2017)

Microbiologie de la chaîne alimentaire - Méthode
horizontale pour la détermination des *Vibrio* spp. -
Partie 1: Recherche des espèces de *Vibrio*
parahaemolyticus, *Vibrio cholerae* et *Vibrio vulnificus*
potentiellement entéropathogènes (ISO 21872-1:2017)

Mikrobiologie von Lebensmitteln und Futtermitteln -
Horizontales Verfahren zum Nachweis von potentiell
enteropathogenen *Vibrio* spp. - Teil 1: Nachweis von
vibrio parahaemolyticus und *vibrio cholerae* (ISO
21872-1:2017)

This European Standard was approved by CEN on 14 May 2017.

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EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

European foreword

This document (EN ISO 21872-1:2017) has been prepared by Technical Committee ISO/TC 34 “Food products” in collaboration with Technical Committee CEN/TC 275 “Food analysis - Horizontal methods” the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by January 2018 and conflicting national standards shall be withdrawn at the latest by January 2018.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

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Endorsement notice

The text of ISO 21872-1:2017 has been approved by CEN as EN ISO 21872-1:2017 without any modification.

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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.

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).

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

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 World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by the European Committee for Standardization (CEN) Technical Committee CEN/TC 275, *Food analysis — Horizontal methods*, in collaboration with ISO Technical Committee TC 34, *Food products*, Subcommittee SC 9, *Microbiology*, in accordance with the agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This first edition cancels and replaces ISO/TS 21872-1:2007, which has been technically revised. It also incorporates ISO/TS 21872-1:2007/Cor.1:2008.

The main changes are as follows:

- introduction of optional molecular identification methods for major food borne *Vibrio* spp. (*V. parahaemolyticus*, including potentially enteropathogenic strains, *V. vulnificus* and *V. cholerae*);
- performance characteristics of the method have been added in [Annex E](#).

A list of all parts in the ISO 21872 series can be found on the ISO website.

Introduction

Because of the large variety of food and feed products, the horizontal method described in this document may not be appropriate in every detail for certain products. In this case, different methods, which are specific to these products may be used if absolutely necessary for justified technical reasons. Nevertheless, every attempt will be made to apply this horizontal method as far as possible.

The main changes, listed in the foreword, introduced in this document compared to ISO/TS 21872-1:2007 are considered as major (see ISO 17468).

When this document is next reviewed, account will be taken of all information then available regarding the extent to which this horizontal method has been followed and the reasons for deviations from this method in the case of particular products.

The harmonization of test methods cannot be immediate and, for certain groups of products, International Standards and/or national standards may already exist that do not comply with this horizontal method. It is hoped that when such standards are reviewed they will be changed to comply with this document so that eventually the only remaining departures from this horizontal method will be those necessary for well-established technical reasons.

Microbiology of the food chain — Horizontal method for the determination of *Vibrio* spp. —

Part 1:

Detection of potentially enteropathogenic *Vibrio parahaemolyticus*, *Vibrio cholerae* and *Vibrio vulnificus*

WARNING — In order to safeguard the health of laboratory personnel, it is essential that tests for detection of *Vibrio* spp., and particularly toxigenic *Vibrio cholerae*, be conducted only in laboratories equipped for this purpose and under the supervision of an experienced microbiologist, and that great care is exercised in the disposal of contaminated material.

1 Scope

This document specifies a horizontal method for the detection of enteropathogenic *Vibrio* spp., which causes human illness in or via the intestinal tract. The species detectable by the methods specified include *Vibrio parahaemolyticus*, *Vibrio cholerae* and *Vibrio vulnificus*.

It is applicable to the following:

- products intended for human consumption and the feeding of animals;
- environmental samples in the area of food production and food handling.

NOTE 1 This method may not be appropriate in every detail for certain products (see Introduction).

NOTE 2 The World Health Organization (WHO) has identified that *V. parahaemolyticus*, *V. cholerae* and *V. vulnificus* are the major food-borne *Vibrio* spp. However, the method in this document can also be appropriate for the identification of other *Vibrio* spp. causing illness in humans. [\[1\]](#)

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.

ISO 6887-1:2017, *Microbiology of the food chain — Preparation of test samples, initial suspension and decimal dilutions for microbiological examination — Part 1: General rules for the preparation of the initial suspension and decimal dilutions*

ISO 6887-3, *Microbiology of the food chain — Preparation of test samples, initial suspension and decimal dilutions for microbiological examination — Part 3: Specific rules for the preparation of fish and fishery products*

ISO 7218, *Microbiology of food and animal feeding stuffs — General requirements and guidance for microbiological examinations*

ISO 11133, *Microbiology of food, animal feed and water — Preparation, production, storage and performance testing of culture media*

ISO 22118, *Microbiology of food and animal feeding stuffs — Polymerase chain reaction (PCR) for the detection and quantification of food-borne pathogens — Performance characteristics*

ISO 22119, *Microbiology of food and animal feeding stuffs — Real-time polymerase chain reaction (PCR) for the detection of food-borne pathogens — General requirements and definitions*

ISO 22174, *Microbiology of food and animal feeding stuffs — Polymerase chain reaction (PCR) for the detection of food-borne pathogens — General requirements and definitions*

3 Terms and definitions

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

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

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1
potentially enteropathogenic *Vibrio* spp.
microorganism which forms typical colonies on solid selective media and which possesses the described biochemical or molecular characteristics when the test is performed in accordance with this document

Note 1 to entry: This document describes specific procedures for *V. parahaemolyticus*, *V. cholerae* and *V. vulnificus*.

3.2
detection of potentially enteropathogenic *Vibrio* spp.
determination of the presence or absence of potentially enteropathogenic *Vibrio* spp. (3.1) (*V. parahaemolyticus*, *V. cholerae* and *V. vulnificus*) in a determined quantity of product, when the test is performed in accordance with this document

4 Principle

4.1 General

The detection of potentially enteropathogenic *Vibrio* spp. (*V. parahaemolyticus*, *V. cholerae* and *V. vulnificus*) requires four successive phases, as shown in the procedure diagram in [Annex A](#).

Recovery of certain *Vibrio* spp. from foodstuffs may be improved by the use of different incubation temperatures depending upon the target species or state of the food matrix. For example, recovery of *V. parahaemolyticus* and *V. cholerae* in fresh products is enhanced by enrichment at 41,5 °C whereas for *V. vulnificus*, and for *V. parahaemolyticus* and *V. cholerae* in deep frozen (<−18 °C), [2] dried or salted products, recovery is enhanced by enrichment at 37 °C. If detection of *V. parahaemolyticus*, *V. cholerae* and *V. vulnificus* is required, all specified incubation temperatures should be used. If detection of *V. parahaemolyticus*, *V. cholerae* and *V. vulnificus* together is not required, the specific procedure(s) may be selected according to the species being sought. Such a selection should be clearly specified in the test report.

NOTE *V. parahaemolyticus*, *V. cholerae* and *V. vulnificus* may be present in small numbers and are often accompanied by a much larger number of other microorganisms belonging to the *Vibrionaceae* family or to other families.

4.2 Primary enrichment in a liquid selective medium

Inoculation of the test portion in the primary enrichment medium alkaline saline peptone water (ASPW) (5.1) at ambient temperature, followed by incubation at 41,5 °C for 6 h and/or 37 °C for 6 h.

The incubation conditions are determined by the target species and food product state.

For detection of all target species in deep frozen, dried or salted products, primary enrichment should be at 37 °C.