

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+ ISO 21872-1:2017/Amd 1:2023)

EESTI STANDARDI EESSÕNA**NATIONAL FOREWORD**

See Eesti standard EVS-EN ISO 21872-1:2017+A1:2023 sisaldab Euroopa standardi EN ISO 21872-1:2017 ja selle muudatuse A1:2023 ingliskeelset teksti.	This Estonian standard EVS-EN ISO 21872-1:2017+A1:2023 consists of the English text of the European standard EN ISO 21872-1:2017 and its amendment A1:2023.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas. Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 12.07.2017, muudatus A1 08.03.2023.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation. Date of Availability of the European standard is 12.07.2017, for A1 08.03.2023.
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ISO 21872 1:2017/Amd 1:2023)

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
+ ISO 21872 1:2017/Amd 1:2023)

Mikrobiologie der Lebensmittelkette – Horizontales
Verfahren zur Bestimmung von *Vibrio* spp. - Teil 1:
Nachweis von potentiell enteropathogenen *Vibrio*
parahaemolyticus, *Vibrio cholerae* und *Vibrio*
vulnificus (ISO 21872-1:2017 + ISO 21872
1:2017/Amd 1:2023)

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CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 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of an identical text or by endorsement, at the latest by January 2018 and conflicting national standards shall be withdrawn at the latest by January 2018.

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A1 Amendment A1 European foreword

This document (EN ISO 21872-1:2017/A1:2023) has been prepared by Technical Committee ISO/TC 34 "Food products" in collaboration with Technical Committee CEN/TC 463 "Microbiology of the food chain" the secretariat of which is held by AFNOR.

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Endorsement notice

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Foreword

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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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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.

A1 Amendment A1 foreword

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This document was prepared by Technical Committee TC 34, *Food products*, Subcommittee SC 9, *Microbiology*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 463, *Microbiology of the food chain*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

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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.

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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.