

Water quality - Enumeration of *Clostridium perfringens*
- Method using membrane filtration (ISO 14189:2013)

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN ISO 14189:2016 sisaldab Euroopa standardi EN ISO 14189:2016 ingliskeelset teksti.	This Estonian standard EVS-EN ISO 14189:2016 consists of the English text of the European standard EN ISO 14189:2016.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
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English Version

Water quality - Enumeration of *Clostridium perfringens* -
Method using membrane filtration (ISO 14189:2013)

Qualité de l'eau - Dénombrement de *Clostridium*
perfringens - Méthode de filtration sur membrane (ISO
14189:2013)

Wasserbeschaffenheit - Zählung von *Clostridium*
perfringens - Verfahren mittels Membranfiltration (ISO
14189:2013)

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European foreword

The text of ISO 14189:2013 has been prepared by Technical Committee ISO/TC 147 “Water quality” of the International Organization for Standardization (ISO) and has been taken over as EN ISO 14189:2016 by Technical Committee CEN/TC 230 “Water analysis” 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of an identical text or by endorsement, at the latest by February 2017, and conflicting national standards shall be withdrawn at the latest by February 2017.

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Endorsement notice

The text of ISO 14189:2013 has been approved by CEN as EN ISO 14189:2016 without any modification.

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Introduction

Clostridium perfringens is widely recognized as a valuable indicator for faecal pollution. Within the intestinal tract of animals and man, these Gram-positive bacteria form spores which are resistant to heating compared with vegetative cells. *C. perfringens* in the intestine exists both as spores and vegetative cells, spores are also found in environmental samples. The spores of *C. perfringens* survive in water for months, much longer than vegetative faecal indicator bacteria and consequently their presence may indicate remote or intermittent faecal pollution. Monitoring of *C. perfringens* has proven useful for the assessment of the quality of water resources and to check the stages of water treatment to evaluate the treatment-works performance. The spores are not always inactivated by routine disinfection procedures (e.g. chlorination).

Water quality — Enumeration of *Clostridium perfringens* — Method using membrane filtration

WARNING — Persons using this document should be familiar with normal laboratory practice. This document does not purport to address all of the safety problems, if any, associated with its use. It is the responsibility of the user to establish appropriate safety and health practices and to ensure compliance with any national regulatory conditions.

IMPORTANT — It is absolutely essential that tests conducted in accordance with this document be carried out by suitably qualified staff.

1 Scope

This International Standard specifies a method for the enumeration of vegetative cells and spores of *Clostridium perfringens* by the membrane filtration method in samples of water intended for human consumption. However, the method can be applied to all types of water samples provided they do not contain particulate or colloidal matter that interferes with filtration.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 8199, *Water quality — General guidance on the enumeration of micro-organisms by culture*

ISO/TS 11133-1, *Microbiology of food and animal feeding stuffs — Guidelines on preparation and production of culture media — Part 1: General guidelines on quality assurance for the preparation of culture media in the laboratory*

ISO 19458, *Water quality — Sampling for microbiological analysis*

ISO/IEC Guide 2:2004, *Standardization and related activities — General vocabulary*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC Guide 2 and the following apply:

3.1

presumptive *Clostridium perfringens*

bacteria which produce all shades of black or grey to yellow brown colonies on tryptose-sulfite-cycloserine agar, even if the colour is faint, after anaerobic incubation at $(44 \pm 1)^\circ\text{C}$ for (21 ± 3) h

Note 1 to entry: Unlike colonies growing directly on the agar medium, colonies on the membrane do not always display a distinct blackening, so faint colonies are included in the count.

3.2

confirmed *Clostridium perfringens*

bacteria that produce characteristic colonies on tryptose-sulfite-cycloserine agar and possess the enzyme acid phosphatase