INTERNATIONAL STANDARD

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Water quality — Detection and enumeration of intestinal enterococci in surface and waste water —

Part 1:
Miniaturized method (Most Probable Number) by inoculation in liquid medium

Qualité de l'eau — Recherche et dénombrement des entérocoques intestinaux dans les eaux de surface et résiduaires —

Partie 1: Méthode miniaturisée (nombre le plus probable) par ensemencement en milieu liquide

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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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 7899-1 was prepared by Technical Committee ISO/TC 147, *Water quality*, Subcommittee SC 4, *Biological methods.*

This second edition cancels and replaces the first edition (ISO 7899-1:1984), which has been technically revised.

ISO 7899 consists of the following parts, under the general title *Water quality — Detection and enumeration of intestinal enterococci in surface and waste water*:

— *Part 1: Miniaturized method (Most Probable Number) by inoculation in liquid medium*

— *Part 2: Method by membrane filtration*

Annexes E and F form an integral part of this part of ISO 7899. Annexes A, B, C, D and G are for information only.

Introduction

The aim of this part of ISO 7899 is to enumerate the major intestinal enterococci, namely *E. faecalis*, *E. faecium*, *E. durans* and *E. hirae*, which occur frequently in faeces of humans and homeothermic animals. Other faecal *Enterococcus* species, namely *E. avium*, *E. cecorum*, *E. columbae* and *E. gallinarum*, and *Streptococcus bovis*/*equinus* strains may occasionally be included, but they occur rarely in the environmental samples. Their recovery tends to be low. *Enterococcus casseliflavus* and *E. mundtii* are non-faecal species which, when present in water samples (e.g. because of influence of plant material and some industrial effluents), are enumerated as faecal enterococci. These species and other rare non-faecal species tend to produce yellow pigment on a non-selective medium. The possible interference of non-faecal *Enterococcus* species should therefore be considered in the interpretation of results.

Water quality — Detection and enumeration of intestinal enterococci in surface and waste water —

Part 1:
Miniaturized method (Most Probable Number) by inoculation in liquid medium

1 Scope

This part of ISO 7899 specifies a miniaturized method for the detection and enumeration of major intestinal enterococci in surface and waste water by inoculation in a liquid medium. The method is applicable to all types of surface and waste waters, particularly those rich in suspended matter.

This method is not suitable for drinking water and any other type of water for which the guideline count is less than 15 per 100 ml.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 7899. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 7899 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 3951:1989, *Sampling procedures and charts for inspection by variables for percent nonconforming*.

ISO 5667-1:1980, *Water quality — Sampling — Part 1: Guidance on the design of sampling programmes.*

ISO 5667-2:1991, *Water quality — Sampling — Part 2: Guidance on sampling techniques.*

ISO 5667-3:1994, *Water quality — Sampling — Part 3: Guidance on the preservation and handling of samples.*

ISO 8199:1988, *Water quality — General guide to the enumeration of microorganisms by culture*.

ISO/IEC Guide 2:1996, *Standardization and related activities — Vocabulary.*

3 Definitions

For the purposes of this part of ISO 7899, the definitions given in ISO/IEC Guide 2 and the following definition apply.

3.1
intestinal enterococci
microorganisms capable of aerobic growth at 44 °C and of hydrolysing the 4-methylumbelliferyl-β-D-glucoside (MUD), in the presence of thallium acetate, nalidixic acid and 2,3,5-triphenyltetrazolium chloride (TTC), in the liquid medium specified