
International Standard



7899/1

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

**Water quality — Detection and enumeration of
faecal streptococci —
Part 1: Method by enrichment in a liquid medium**

Qualité de l'eau — Recherche et dénombrement des streptocoques fécaux — Partie 1: Méthode par enrichissement en milieu liquide

First edition — 1984-12-15

UDC 579.68 : 579.862.1

Ref. No. ISO 7899/1-1984 (E)

Descriptors : water, quality, tests, detection, bacteria, water pollution.

Price based on 3 pages

Foreword

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Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 7899/1 was prepared by Technical Committee ISO/TC 147, *Water quality*.

Water quality — Detection and enumeration of faecal streptococci —

Part 1: Method by enrichment in a liquid medium

0 Introduction

Worldwide, opinions differ as to which streptococci should be regarded as indicators of faecal pollution. In this part of ISO 7899, a method is described for the isolation of streptococci possessing the group D antigen. For water examination purposes these organisms can be regarded as indicators of faecal pollution. It must be realized, however, that small numbers of group D streptococci found in water could also originate from other habitats. The selectivity of the media used is such that a reliable count of group D streptococci will be obtained for most practical purposes. Because serological confirmation is not included, the term "faecal streptococci" is used. In special circumstances, however, further identification and serological grouping of the streptococci isolated may be required.

ISO 7899 consists of the following parts:

Part 1: Method by enrichment in a liquid medium.

Part 2: Method by membrane filtration.

1 Scope

This part of ISO 7899 specifies a reference method for the detection and enumeration of faecal streptococci in water by enrichment in a liquid medium.

2 Field of application

The method can be applied to all types of water, including turbid water.

3 References

ISO 5667, *Water quality — Sampling —*

Part 1: Guidance on the design of sampling programmes.

Part 2: Guidance on sampling techniques.

Part 3: Guidance on the preservation and handling of samples.

4 Definition

faecal streptococci: Bacteria that give a positive reaction with the media (6.2.1 and 6.2.2) specified in this part of ISO 7899, and that give a negative reaction in the catalase test.

5 Principle and reactions

The detection of faecal streptococci in a specified volume of sample requires the following two steps.

5.1 Enrichment culture

Incubation of the sample in the selective liquid medium azide glucose broth for 44 ± 4 h at 35 or 37 °C. Faecal streptococci grow in this medium and ferment glucose with the formation of acid, which causes a change in the colour of the pH indicator from purple to yellow.

5.2 Confirmation

All enrichment tubes showing positive reactions after 24 or 48 h are subcultured on a confirmatory medium to eliminate false positive reactions such as those by other Gram-positive cocci or rods. The confirmation medium, bile-aesculin-azide agar, is then incubated at 44 °C for 48 h. Faecal streptococci grow on this medium and hydrolyse aesculin; the end-product, 6,7-dihydroxycoumarin, combines with iron(III) ions to give a tan-coloured to black compound which diffuses into the medium. Additionally, a catalase test is performed on suspect colonies on the confirmatory medium.

Colonies which give a positive aesculin reaction and are catalase negative may be regarded as faecal streptococci.