



SLOVENSKI STANDARD
SIST ISO 19250:2011

01-junij-2011

Nadomešča:
SIST ISO 6340:1998

Kakovost vode - Določanje prisotnosti Salmonella spp.

Water quality - Detection of Salmonella spp.

iTeh STANDARD PREVIEW
Qualité de l'eau - Recherche de Salmonella spp.
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Ta slovenski standard je istoveten z: ISO 19250:2010

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ICS:

07.100.20 Mikrobiologija vode Microbiology of water

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INTERNATIONAL
STANDARD

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2010-07-15

**Water quality — Detection of *Salmonella*
spp.**

Qualité de l'eau — Recherche de Salmonella spp.

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ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. 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.

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

ISO 19250 was prepared by Technical Committee ISO/TC 147, *Water quality*, Subcommittee SC 4, *Microbiological methods*.

This edition cancels and replaces ISO 6340:1995, which has been technically revised.

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Introduction

Salmonella species are bacteria which are widely distributed all over the world. They are usually classified as pathogens, although their virulence and pathogenesis vary widely. The natural hosts of *Salmonella* include humans, agricultural and domestic livestock, and wild animals including birds. Humans and animals can excrete these bacteria while carrying them asymptotically as well as during disease. It is therefore impossible to eliminate them from the environment. Following the infection of humans, the transmission of *Salmonella* can cause severe disease.

Since water is a recognized vehicle of infection, the presence or absence of *Salmonella* is monitored in water where there is perceived to be a risk of infection. *Salmonella* can be present in all types of domestic and agricultural waste water, freshwaters, including ground and drinking waters, as well as sea water.

The detection of *Salmonella* in water usually requires a concentration step. Since *Salmonella* cells can be present in low numbers and injured in the aqueous environment, their detection in water usually requires a pre-enrichment step.

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Water quality — Detection of *Salmonella* spp.

WARNING — In order to safeguard the health of laboratory personnel, it is essential that tests for detecting *Salmonella*, and especially *S. enterica* subsp. *enterica* ser. Typhi (*Salmonella* ser. Typhi) and *S. enterica* subsp. *enterica* ser. Paratyphi (*Salmonella* ser. Paratyphi), be undertaken only in properly equipped laboratories, under the control of a skilled microbiologist, and that great care be taken in the disposal of all incubated materials.

Persons using this International Standard should be familiar with normal laboratory practice. This standard 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 according to this International Standard be carried out by suitably trained staff.

1 Scope

This International Standard specifies a method for the detection of *Salmonella* spp. (presumptive or confirmed) in water samples. It is possible that, for epidemiological purposes or during outbreak investigations, other media are also required.

WARNING — It is possible that the method does not recover all *Salmonella* ser. Typhi and ser. Paratyphi.

NOTE For a semi-quantitative approach, most probable number (MPN) tests can be performed using appropriate sample volumes. For these cases, the volume of the buffered peptone water is adjusted accordingly.

2 Normative references

The following referenced documents are indispensable for the application 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 6579, *Microbiology of food and animal feeding stuffs — Horizontal method for the detection of Salmonella spp.*

ISO 6887-1, *Microbiology of food and animal feeding stuffs — 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 7218, *Microbiology of food and animal feeding stuffs — General requirements and guidance for microbiological examinations*

ISO 7704, *Water quality — Evaluation of membrane filters used for microbiological analyses*

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

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

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3 Terms and definitions

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

3.1 presumptive *Salmonella* spp.
bacteria which grow in the selective enrichment medium specified, and form typical or atypical colonies on the solid selective media

3.2 confirmed *Salmonella* spp.
bacteria which grow in the selective enrichment medium specified, and form typical and suspicious colonies on the solid selective media, and which display specific biochemical and serological characteristics

NOTE The specific biochemical and serological characteristics are determined by tests specified in this International Standard.

3.3 *Salmonella* detection
determination of the presence or absence of *Salmonella* (3.4)

**3.4 *Salmonella* spp.
*Salmonella***
microorganisms which form typical or atypical colonies on solid selective media and which display specific biochemical and serological characteristics

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4 Principle

4.1 General [SIST ISO 19250:2011
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The detection of *Salmonella* necessitates four successive stages (see also Annex A).

Pre-enrichment is often necessary to permit detection of low numbers of *Salmonella* or injured *Salmonella*. Some *Salmonella* and those which are sublethally injured may require additional incubation time (4.3). Furthermore, *Salmonella* can be present in small numbers and are often accompanied by considerably larger numbers of other members of Enterobacteriaceae or of other families. Therefore, selective enrichment is necessary.

4.2 Pre-enrichment in non-selective liquid medium

Buffered peptone water (B.1) is inoculated at ambient temperature with a known volume of the sample or its dilutions, then incubated at $(36 \pm 2) ^\circ\text{C}$ for (18 ± 2) h. Larger volumes can be concentrated using membrane filtration and the membrane filter is then added to buffered peptone water.

NOTE For waste water it has been shown that shorter incubation times or direct inoculation of the sample in selective medium (4.3) produce better results.

For a semi-quantitative approach, MPN tests can be performed using appropriate sample volumes. In these cases, adjust the volumes of the buffered peptone water accordingly.

4.3 Enrichment in selective liquid media

Rappaport-Vassiliadis medium with soya (RVS broth) and Muller-Kauffmann tetrathionate-novobiocin broth (MKTTn) are inoculated with the culture obtained in 4.2.

The RVS broth is incubated at $(41,5 \pm 1) ^\circ\text{C}$ for (24 ± 3) h and the MKTTn broth at $(37 \pm 1) ^\circ\text{C}$ for (24 ± 3) h.