AS 2031—2012

Australian Standard®

Water quality—Sampling for microbiological analysis (ISO 19458:2006, MOD)

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The following are represented on Committee FT-020:

- ACT Health
- Australian Society for Microbiology
- Department of Health, Vic.
- Department of Health, Western Australia
- Division of Analytical Laboratories, Health Reform Transitional Organisation Western
- National Association of Testing Authorities
- National Measurement Institute
- Plastics and Chemicals Industries Association
- Queensland Health Forensic and Scientific Services
- Queensland University of Technology
- University of Melbourne
- Water Services Association of Australia

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Standards Australia wishes to acknowledge the participation of the expert individuals that contributed to the development of this Standard through their representation on the Committee and through the public comment period.

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PREFACE

This Standard was prepared by the Australian members of Joint Standards Australia/Standards New Zealand Committee FT-020, Water Microbiology, to supersede AS/NZS 2031:2001, *Selection of containers and preservation of water samples for microbiological analysis.*

After consultation with stakeholders in both countries, Standards Australia and Standards New Zealand decided to develop this Standard as an Australian Standard rather than an Australian/New Zealand Standard.

This Standard is an adoption with national modifications and has been reproduced from, ISO 19458:2006, *Water quality—Sampling for microbiological analysis*.

The objectives of this revision are—

(a) to update the Standard; and

(b) to adopt ISO 19458:2006 with national modifications to supersede AS/NZS 2031:2001.

Australian technical variations have been made to the following Clauses of ISO 19458:

(i) Clause 4.2.2.1 (new) New glass containers.

(ii) Clause 4.2.3.

(iii) Clause 4.2.4.2.

(iv) Clause 5.1.

(v) Clause 5.2.

(vi) Annex B, Table B.1.

(vii) Bibliography.

These variations, which are necessary for Australian conditions, are listed in Appendix ZZ, which is added at the end of the source text.

As this Standard is reproduced from an International Standard, the following applies:

(A) In the source text 'this International Standard' should read 'this Australian Standard'.

(B) A full point substitutes for a comma when referring to a decimal marker.

(C) Substitute 'mL' for 'ml' wherever it appears.

The international normative references have not been adopted as Australian or Australian/New Zealand Standards.

The term 'normative' has been used in this Standard to define the application of the appendix to which it applies. A 'normative' appendix is an integral part of a Standard.

CONTENTS

INTRODUCTION

Appropriate sampling is essential to provide representative samples to the laboratory in charge of testing. Sampling features depend on the objective of sampling, but also on the nature of the sample. Microorganisms are living organisms. In addition, when they are introduced into water, they do not form a perfect solution, but a suspension with an inherent degree of variability.

Sampling objectives may serve different purposes, which are described in the ISO 5667 series of standards (ISO 5667-1, ISO 5667-2 and ISO 5667-3):

a) determination of the compliance of a water with a regulatory quality specification;

b) characterization of any contamination, its level (mean) and its variations:

   1) what is its random variation?

   2) is there a trend?

   3) are there cycles?

c) identification of the sources of pollution.

Regarding the number or frequency of samples, it will vary according to the aim of the sampling.

The minimum number of samples will be low if the mean concentration differs greatly from the specification (much lower or much higher), and the minimum number of samples will be higher if the mean concentration and the specification are close to one another. Similarly, in case b), when looking for a trend: the less obvious the trend, the higher the frequency of sampling (see also Annex A).

AUSTRALIAN STANDARD

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WARNING — 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 standard be carried out by suitably trained staff.

1 Scope

This International Standard provides guidance on planning water sampling regimes, on sampling procedures for microbiological analysis and on transport, handling and storage of samples until analysis begins. It focuses on sampling for microbiological investigations.

General information in respect to the sampling from distinct water bodies is given in the respective parts of ISO 5667.

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 5667-1, *Water quality — Sampling — Part 1: Guidance on the design of sampling programmes and sampling techniques*

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

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

3 Sampling point

The sampling site shall provide representative characteristics and account for any vertical, horizontal and temporal variations and shall be identified precisely following the general recommendations of ISO 5667-1 and ISO 5667-2, taking into account additional aspects specific to microbiology.

Sampling points where conditions are unstable should be avoided, and the heterogeneity of the hydraulic system shall be taken into consideration. In studies on the efficacy of disinfection, the sampling point shall be chosen to ensure that the reaction is complete.

EXAMPLE Examples of how the heterogeneity of the system may influence the results are given below.

— It is not equivalent to take a subsurface or a surface sample, or a subsurface sample “contaminated” during recovery through the surface film. In some instances (e.g. lakes, swimming pools), the concentration in the surface film can be 1 000 times higher than in the subsurface.

