

Australian/New Zealand Standard™

AS/NZS 4276.3.1:2007

Water microbiology**Method 3.1: Heterotrophic colony count methods—Pour plate method using yeast extract agar**

PREFACE

The Standard was prepared by the Joint Standards Australia/New Zealand Committee FT-020, Water microbiology, to supersede AS 4276.3.1—1995, *Water microbiology, Method 3.1: Heterotrophic colony count methods—Pour plate method using plate count agar*.

This Standard is identical with and reproduced from ISO 6222:1999, [Reconfirmed in 2004] *Water quality—Enumeration of culturable micro-organisms—Colony count by inoculation in a nutrient agar culture medium*.

The objective of this revision is to adopt ISO 6222:1999, as a joint Australian/New Zealand Standard to specify the method for the enumeration of culturable microorganisms in water by counting the colonies formed in a yeast extract agar medium.

In Clause 8.2, Incubation and examination, this Standard varies from the ISO Standard, in that it does not prescribe that aerobic incubation of yeast extract agar will be undertaken at both 22°C and 36°C. Instead, it allows for the incubation of plates to be undertaken at a temperature of 36 ±2°C for 44 ±4 h; and/or 22 ±2°C for 68 ±4 h.

The method is intended to measure the operational efficiency of the treatment process of public drinking water supplies and for general application to all types of water. It is particularly applicable to the examination of water intended for human consumption, including water in closed containers and to natural mineral waters.

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

- (a) Its number does not appear on each page of text and its identity is shown only on the cover and title page.
- (b) In the source text ‘this European Standard’ should read ‘this Australian/New Zealand Standard’.
- (c) A full point substitutes for a comma when referring to a decimal marker.

References to International Standards should be replaced by references to the following Australian and Australian/New Zealand Standards:

<i>Reference to International Standard or other publication</i>		<i>Australian/New Zealand Standard</i>	
ISO		AS	
6887	Microbiology—General guidance for the preparation of dilutions for microbiological examinations	5013 5013.11.1	Food microbiology Method 11.1: Microbiology of food and animal feeding stuffs—Preparation of test samples, initial suspension and decimal dilutions for microbiological examination—General rules for the preparation of the initial suspension and decimal dilutions
8199	Water quality—General guide to the enumeration of micro-organisms by culture	AS/NZS 4276 4276.1	Water microbiology Method 1: General information and procedures (ISO 8199:2005, MOD)
EN ISO			
5677 5677-3	Water quality—Sampling Part 3: Guidance on the preservation and handling of samples	2031	Selection of containers and preservation of water samples for microbiological analysis

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

The laboratory should have a clearly defined quality control system to ensure that the apparatus, culture media, reagents and technique are suitable for the test. The use of positive controls is part of this system.

Introduction

Waters of all kinds invariably contain a variety of micro-organisms derived from various sources, such as soil and vegetation, and estimation of the overall numbers provide useful information for the assessment and surveillance of water quality. Separate counts are usually made of the micro-organisms which are able to grow and form colonies on nutrient agar media at 36 °C and 22 °C.

Colony counts are useful for assessing the integrity of ground water sources and the efficiency of water treatment processes such as coagulation, filtration and disinfection and provide an indication of the cleanliness and integrity of the distribution system. They can also be used to assess the suitability of a supply for the preparation of food and drink, where the water supply should contain few micro-organisms to avoid contaminating the product with spoilage organisms.

The main value of colony counts lies in the detection of changes from those expected, based on frequent, long term monitoring. Any sudden increase in the count can be an early warning of serious pollution and calls for immediate investigation.

1 Scope

This European Standard specifies a method for the enumeration of culturable micro-organisms in water by counting the colonies formed in a nutrient agar culture medium after aerobic incubation at 36 °C and 22 °C.

The method is intended to measure the operational efficiency of the treatment process of public drinking water supplies and for general application to all types of water. It is particularly applicable to the examination of water intended for human consumption, including water in closed containers and to natural mineral waters.

2 Normative references

This European Standard incorporates provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed thereafter. For dated references, subsequent amendment to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the most recent edition of the publication referred to applies.

EN ISO 3696

Water for analytical laboratory use – Specification and test methods (ISO 3696:1987)

EN ISO 5667-3

Water quality – Sampling – Part 3: Guidance on the preservation and handling of samples (ISO 5667-3:1994)

EN 25667-2

Water quality – Sampling – Part 2: Guidance on sampling techniques (ISO 5667-2:1991)

ISO 6887

Microbiology – General guidance for the preparation of dilutions for microbiological examinations

ISO 8199

Water quality – General guide to the enumeration of micro-organisms by culture