Australian/New Zealand Standard™

Water microbiology

Method 5: Coliforms—Membrane filtration method

PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee FT-020, Water Microbiology, to supersede AS 4276.5—1995.

The objective of this revision is to extend the applicability of the membrane filtration method when used with samples containing different levels of competing non-target bacterial flora.

The merits of ISO 9308-1:2000, *Water quality—Detection and enumeration of Escherichia coli and coliform bacteria,* Part 1: *Membrane filtration method* are acknowledged for waters containing very low numbers of background organisms. Should waters for analysis universally have a high likelihood of containing only few background organisms (e.g. high quality food processing waters, highly treated waters, etc), the ISO 9308-1:2000 method is a suitable choice. ISO 9308-1:2000 has been adopted as AS/NZS 4276.22: *Water microbiology*, Method 22: *Packaged water—Coliform bacteria and Escherichia coli—Membrane filtration method* and has been published concurrently with this Standard.

The Committee has restricted application of ISO 9308-1:2000 to packaged waters because this method is only applicable to waters with low background microflora and many waters in Australia and New Zealand contain background organisms at concentrations too high for the ISO method to be widely applicable.

Therefore, this Standard applies to testing for coliforms in all waters other than packaged waters. For packaged waters use AS/NZS 4276.22. Where waters are expected to contain low to moderate numbers of bacteria, use of membrane lauryl sulfate medium (m-LS medium) is recommended as the primary isolation medium. Where waters have a likelihood of containing high numbers of background microorganisms (e.g. some ambient untreated waters, untreated drinking waters), this Standard includes the option to employ an alternative selective medium (m-Endo medium) that is generally more inhibitory and can be expected to a greater extent to restrict the number and size of background colonies.

Coliforms are gram-negative, non-spore-forming, rod shaped bacteria capable of aerobic and facultative anaerobic growth. They metabolize lactose at 36°C, expressing the enzyme β-galactosidase and are cytochrome oxidase negative. Coliforms comprise several species from genera within the family Enterobacteriaceae, including *Escherichia coli*, and some species of *Enterobacter*, *Klebsiella*, *Citrobacter*, *Serratia* and *Hafnia*. The Coliform group includes species of both faecal and environmental origin.

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.

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