

Australian/New Zealand Standard™

AS/NZS 4276.19

Water microbiology

Method 19: Examination for thermophilic *Campylobacter* spp.—Membrane filtration

PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee FT-020, Water Microbiology, as part of a series of methods for the microbiological examination of waters for domestic and industrial use.

The genus *Campylobacter* comprises two main groups according to growth temperature. The first group will grow at 42°C and are referred to as thermophilic *Campylobacter*s. The second group will grow at 25°C but not at 42°C. Thermophilic *Campylobacter*s include the important human pathogens *C.jejuni* and *C.coli* and details of their method of isolation from waters are covered by this Standard.

The development and availability of PCR systems for the detection and identification of *Campylobacter* may lead to the use of a standardized PCR technique as an adjunct to this method. These tests would not be within the capability of an otherwise well-equipped microbiological laboratory and are not included in this Standard. Laboratories that cannot perform these specialized tests should consult a laboratory with the necessary facilities if further testing, beyond the scope of this Standard, is required to establish the identity of an organism isolated by this method.

The term 'informative' has been used in this Standard to define the application of the appendix to which it applies. An 'informative' appendix is only for information and guidance.

METHOD

1 SCOPE

This Standard sets out a method for detecting thermophilic *Campylobacter*s in water using culture in enrichment broth and on selective agar media.

NOTE: A flow diagram of the procedure is shown in Appendix A.

2 REFERENCED DOCUMENT

The following document is referred to in this Standard:

AS	
4276	Water microbiology
4276.1	Method 1: General information and procedures

3 PRINCIPLE

Bacteria in the genus *Campylobacter* are micro-aerobic, requiring an oxygen tension of around 5% and a carbon dioxide tension of around 10%. Isolation of thermophilic *Campylobacter*s is achieved by concentration and isolation of organisms on a membrane followed by broth enrichment and subculture to a selective agar. The broth and agar are both incubated micro-aerobically at 42°C. Confirmation of thermophilic *Campylobacter*s is by cell morphology, Gram stain and oxidase test.

4 CULTURE MEDIA, REAGENTS AND REFERENCE CULTURES

4.1 Culture media (See Appendix B)

4.1.1 *Preston enrichment broth*

4.1.2 *Prestons selective agar or a blood free modification of this medium*

4.1.3 *Blood agar*

4.2 Reagent

Kovacs' oxidase reagent

4.3 Reference cultures

4.3.1 *Campylobacter jejuni* NCTC 11351 or ACM 3393 or NZRM 2397. This organism gives positive reactions for thermophilic *Campylobacter* spp.

4.3.2 *Escherichia coli* NCTC 9001 or ATCC 11775 or ACM 1803 or NZRM 3309. This organism gives negative reactions for thermophilic *Campylobacter* spp.

NOTES:

- 1 NCTC—National Collection of Type Cultures
ACM—Australian Collection of Microorganisms
NZRM—New Zealand Reference Culture Collection (Medical Section)
ATCC—American Type Culture Collection
- 2 The cultures referenced in Clauses 4.3.1 and 4.3.2 are obtainable from the following laboratories:

In Australia:

Australian Collection of Microorganisms (ACM)
Department of Microbiology
The University of Queensland
BRISBANE QLD 4072

In New Zealand:

New Zealand Reference Culture Collection (Medical Section) (NZRM)
ESR Kenepuru Science Centre
Kenepuru Drive
Porirua

4.3.3 *Use of reference cultures*

When testing a sample of water by this standard method, cultures of positive reference cultures shall be submitted to the test procedures at the same time to demonstrate and ensure that typical growth characteristics are exhibited by the reference culture.

5 APPARATUS

5.1 Gas cylinders or kits

To produce a micro-aerobic incubation atmosphere.