



Microbiology of food, animal feed and water—Preparation, production, storage and performance testing of culture media (ISO 11133:2014, MOD)



This Australian Standard® was prepared by Committee FT-035, Food Microbiology. It was approved on behalf of the Council of Standards Australia on 12 October 2017. This Standard was published on 5 December 2017.

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- ACT Health
- Australian Institute of Food Science and Technology
- Australian Society for Microbiology
- CSIRO
- Dairy Industry Association of Australia
- Department of Agriculture and Water Resources (Australian Government)
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- Department of Health and Human Services, Tas.
- Department of Health Western Australia
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- Queensland Health Forensic and Scientific Services
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Additional Interests:

- Australian Water Association
 - NSW Forensic and Analytical Science Service
 - Plastics and Chemicals Industries Association
 - VicWater
 - WaterNSW
 - Water Research Australia
 - Water Services Association of Australia
-

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Australian Standard®

**Microbiology of food, animal feed and
water—Preparation, production, storage
and performance testing of culture
media (ISO 11133:2014, MOD)**

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PREFACE

This Standard was prepared by the Standards Australia Committee FT-035, Food Microbiology.

This Standard is an adoption with national modifications and has been reproduced from ISO 11133:2014, *Microbiology of food, animal feed and water—Preparation, production, storage and performance testing of culture media*.

The objectives of this Standard are—

- (a) to define terms related to quality assurance of culture media intended for the microbiological analysis of food, animal feed, and food or animal feed environment;
- (b) to define terms related to quality assurance of culture media intended for the microbiological analysis of all water samples, including potable, recreational, industrial, waste and natural waters; and
- (c) to provide requirements for the preparation of all categories of culture media prepared for use in microbiological analyses.

The technical variations are provided for Australian conditions, and are listed in Appendix ZZ, which is added at the end of the source text. The following Clauses and Annexes of ISO 11133 have been modified:

- (i) Clause 2, Normative references.
- (ii) Clause 6.3.3, Microbial contamination.
- (iii) Annex E, Test microorganisms and performance criteria for culture media commonly used in food microbiology.
- (iv) Annex F, Test microorganisms and performance criteria for culture media commonly used in water microbiology.

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.

References to International Standards should be replaced by references to Australian Standards, as follows:

<i>Reference to International Standard</i>		<i>Australian/New Zealand Standard</i>	
ISO		AS	
6887	Microbiology of food and animal feed—Preparation of test samples, initial suspension and decimal dilutions for microbiological examination	5013	Food microbiology
6887-1	Part 1: General rules for the preparation of the initial suspension and decimal dilutions	5013.11.1	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

ISO		AS	
6887-2	Part 2: Specific rules for the preparation of meat and meat products	5013.11.2	Method 11.2: Microbiology of food and animal feeding stuffs— Preparation of test samples, initial suspension and decimal dilutions for microbiological examination— Specific rules for the preparation of meat and meat products
6887-3	Part 3: Specific rules for the preparation of fish and fish products	5013.11.3	Method 11.3: Microbiology of food and animal feeding stuffs— Preparation of test samples, initial suspension and decimal dilutions for microbiological examination— Specific rules for the preparation of fish and fishery products (ISO 6887-3:2003, MOD)
6887-4	Part 4: Specific rules for the preparation of products other than milk and milk products, meat and meat products and fish and fishery products	5013.11.4	Method 11.4: Microbiology of food and animal feeding stuffs— Preparation of test samples, initial suspension and decimal dilutions for microbiological examination— Specific rules for the preparation of products other than milk and milk products, meat and meat products and fish and fishery products
6887-5	Part 5: Specific rules for the preparation of milk and milk products	5013.11.5	Method 11.5: Microbiology of food and animal feeding stuffs— Preparation of test samples, initial suspension and decimal dilutions for microbiological examination— Specific rules for the preparation of milk and milk products (ISO 6887-5:2010, MOD)
7218	Microbiology of food and animal feeding stuffs—General requirements and guidance for microbiological examinations	5013.14.1	Method 14.1: Microbiology of food and animal feeding stuffs—General requirements and guidance for microbiological examinations (ISO 7218:2007, MOD)
		AS/NZS	
8199	Water quality—General guidance on the enumeration of micro-organisms by culture	4276	Water microbiology
		4276.1	Method 1: General information and procedures (ISO 8199:2005, MOD)

ISO 6887-6, *Microbiology of food and animal feed—Preparation of test samples, initial suspension and decimal dilutions for microbiological examination*, Part 6: *Specific rules for the preparation of samples taken at the primary production stage*, and ISO 7704, *Water quality—Evaluation of membrane filters used for microbiological analyses*, have not been adopted as Australian Standards.

The terms ‘normative’ and ‘informative’ have been used in this Standard to define the application of the annex or appendix to which they apply. A ‘normative’ annex or appendix is an integral part of a Standard, whereas an ‘informative’ annex is only for information and guidance.

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2. www.iso.org/directives

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received. www.iso.org/patents

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword - Supplementary information](#)

The committee responsible for this document is ISO/TC 34, *Food products*, Subcommittee SC 9, *Microbiology*, in collaboration with Technical Committee ISO/TC 147 *Water quality*, Subcommittee SC 4, *Microbiological methods*.

This first edition of ISO 11133 replaces the second edition of ISO/TS 11133-1 (ISO/TS 11133-1:2009) and the first edition of ISO/TS 11133-2:2003, which have been technically revised. It also incorporates the Amendment ISO/TS 11133-2:2003/Amd.1:2011. In particular, it also includes requirements for microbiology media for water testing. It supersedes ISO 9998:1991.

This corrected version of ISO 11133:2014 incorporates the following corrections:

— In [Annex E](#)

Selective media for enumeration of microorganisms

- DG18 column Incubation: d was replaced with days;
- EC column control strain: E was deleted after *Pseudomonas*;
- mCCDA: ^d was deleted after both species of *Campylobacter*; ^b was added after 000156;
- mCCDA: the criteria “Total or partial inhibition (0-1)” was added to the control stain *E. coli* and “Total inhibition (0)” was added to *S. aureus*;
- TSC: the row with *Pseudomonas aeruginosa* and the WDCM number 00025 was deleted.

Selective enrichment media

- Bolton productivity: the cocktails of control strains were split into 2 separate cells;
- EE: ^d was added before ⁱ, after both stains of *Salmonella*;
- ITC: a new cocktail of strains was introduced for Productivity;
- PBS selectivity: ^b was added after 00025;

- RVS Productivity: added ^d to *E. coli*.

Non-selective liquid media

- mCCDA: ^d was deleted after both species of *Campylobacter*; ^b was added after 000156;
- mCCDA column Characteristic reactions: “colonies” was added after “moist”;
- PEMBA lane productivity: ⁱ was deleted after “good growth (2)”;
- Media TCBS was added after TBX;
- VRBG: one *Salmonella* Typhimurium was replaced by *Salmonella* Enteritidis WDCM 00030 and ^{d,i} was added to both *Salmonella*;

Non-selective isolation media

- Nutrient agar: the WDCM numbers were inverted between *S. Typhimurium* and *S. Enteritidis*;
- TSYEA: name and WDCM were corrected to *Listeria monocytogenes* 4b WDCM 00021b;

Multipurpose media

- Pre-enrichment for Enterobacteriaceae: added ^d to both *Salmonella* and deleted “or” between the 2 WDCM numbers.

Reference media for enumeration of microorganisms

- TSA: deleted “*Escherichia coli* O157:H7 WDCM 00014 (non-toxigenic)”;
- SDA: added WDCM number 00053^b to *Aspergillus*;

- In [Annex F](#)

Selective media for enumeration of microorganisms by comparing with a non-selective reference medium

- Colilert was replaced by Colilert-18 and the WDCM number 00207 was replaced by 00024.

Selective media for enumeration of microorganisms by comparing with a previously accepted batch (for use in special cases)

- Colilert was replaced by Colilert-18 and the WDCM number 00207 was replaced by 00024;
- Lactose TTC: a line was added between *Enterococcus faecalis* and *Pseudomonas aeruginosa* and the WDCM number corresponding.

Selective enrichment media

- Bolton/Preston Productivity: cocktails of control strains were split in 2 separate cells;

Non-selective liquid media

- “Saline salt” was replaced by “Saline solution”, and a ^b was added after 00034;
- mCCDA: ^d was deleted after both species of *Campylobacter*; ^b was added after 000156.

INTRODUCTION

In laboratories carrying out microbiological examinations, the main objectives are to maintain, resuscitate, grow, detect and/or enumerate a wide variety of microorganisms. Culture media are used in all traditional microbiological culture techniques and also for many alternative techniques. Many formulae of culture media are commercially available and many more, designed for specific growth purposes, are described in the literature.

Many tests and procedures depend upon culture media being capable of providing consistent and reproducible results. The requirements for media may be specific to both the sample and the organisms to be detected. Culture media meeting established performance criteria are therefore a pre-requisite for any reliable microbiological work. Sufficient testing should be carried out to demonstrate

- a) the acceptability of each batch of medium,
- b) that the medium is “fit for purpose”, and
- c) that the medium can produce consistent results.

These three criteria are an essential part of internal quality control procedures and, with appropriate documentation, will permit effective monitoring of culture media and contribute to the production of both accurate and reliable data. For reliable microbiological analysis it is essential to use culture media of proven quality. For all media described in standard methods it is essential to define the minimum acceptance criteria required to ensure their reliability. It is recommended that in the determination of the performance characteristics of a culture medium tests are carried out that conform with this International Standard.

The establishment of widely accepted minimum performance criteria for media should lead to products with more consistent quality and thus reduce the extent of testing necessary in the user's laboratory.

In addition the acceptance criteria measured by the methods defined in this International Standard can be used by all microbiological laboratories to evaluate the productive, selective and/or elective properties of a culture medium.

In the microbiological analysis of food, animal feed and water, the requirements of this International Standard have precedence in the assessment of culture media quality.

AUSTRALIAN STANDARD

Microbiology of food, animal feed and water—Preparation, production, storage and performance testing of culture media (ISO 11133:2014, MOD)**1 Scope**

This International Standard defines terms related to quality assurance of culture media and specifies the requirements for the preparation of culture media intended for the microbiological analysis of food, animal feed, and samples from the food or feed production environment as well as all kinds of water intended for consumption or used in food production.

These requirements are applicable to all categories of culture media prepared for use in laboratories performing microbiological analyses.

This International Standard also sets criteria and describes methods for the performance testing of culture media. This International Standard applies to producers such as:

- commercial bodies producing and/or distributing ready-to-use or semi-finished reconstituted or dehydrated media;
- non-commercial bodies supplying media to third parties;
- microbiological laboratories preparing culture media for their own use.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 6887-1, *Microbiology of food and animal feed — 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 6887-2, *Microbiology of food and animal feed — Preparation of test samples, initial suspension and decimal dilutions for microbiological examination — Part 2: Specific rules for the preparation of meat and meat products*

ISO 6887-3, *Microbiology of food and animal feed — Preparation of test samples, initial suspension and decimal dilutions for microbiological examination — Part 3: Specific rules for the preparation of fish and fishery products*

ISO 6887-4, *Microbiology of food and animal feed — Preparation of test samples, initial suspension and decimal dilutions for microbiological examination — Part 4: Specific rules for the preparation of miscellaneous products*

ISO 6887-5, *Microbiology of food and animal feeding stuffs — Preparation of test samples, initial suspension and decimal dilutions for microbiological examination — Part 5: Specific rules for the preparation of milk and milk products*

ISO 6887-6, *Microbiology of food and animal feed — Preparation of test samples, initial suspension and decimal dilutions for microbiological examination — Part 6: Specific rules for the preparation of samples taken at the primary production stage*

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