

Australian Standard<sup>®</sup>

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**Screwcap bottles for  
microbiological use  
(McCartney bottles)**

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This Australian Standard was prepared by Committee CH/1, Laboratory Glassware and Related Apparatus. It was approved on behalf of the Council of Standards Australia on 1 March 1994 and published on 11 July 1994.

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The following interests are represented on Committee CH/1:

Australian Chamber of Commerce and Industry  
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N.S.W. Agriculture  
National Association of Testing Authorities, Australia  
Royal Australian Chemical Institute  
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*This Standard was issued in draft form for comment as DR 83209.*

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First published as AS 4186—1994.

PUBLISHED BY STANDARDS AUSTRALIA  
(STANDARDS ASSOCIATION OF AUSTRALIA)  
1 THE CRESCENT, HOMEBUSH, NSW 2140

ISBN 0 7262 8845 4

## PREFACE

This Standard was prepared by the Standards Australia Committee on Laboratory Glassware and Related Apparatus in response to a request from N.S.W. Agriculture supported by the Australian Society of Microbiologists and the N.S.W. Supply Service. The N.S.W. Supply Service has withdrawn a thin-walled variation of the McCartney bottle as a result of complaints received about its narrow neck, instability, leakage problems, tendency to crack during flame-sterilization procedures and soft cap which distorted under light loads.

In preparing this Standard, the Committee considered ISO 4796, *Laboratory glassware—Bottles*, and details given in Cruickshank, R. *Medical Microbiology—A guide to the laboratory diagnosis and control of infection*, 11th ed. Edinburgh: Livingstone, 1965, p. 724–734.

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

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## STANDARDS AUSTRALIA

### Australian Standard

#### Screwcap bottles for microbiological use (McCartney bottles)

**1 SCOPE** This Standard specifies the requirements for screwcap glass bottles suitable for use in microbiological laboratories as culture bottles.

**NOTES:**

- 1 Clause 6 specifies type tests that are performed to assess compliance of finished product with this Standard. However, it may also be convenient for product manufacturers to use these tests for quality control purposes.
- 2 Alternative methods for determining compliance of a lot with this Standard are given in Appendix A.

**2 REFERENCED DOCUMENTS** The following documents are referred to in this Standard:

**AS**

- |        |                                                                              |
|--------|------------------------------------------------------------------------------|
| 1199   | Sampling procedures and tables for inspection by attributes                  |
| 1399   | Guide to AS 1199—Sampling procedures and tables for inspection by attributes |
| 2243   | Safety in laboratories                                                       |
| 2243.3 | Part 3: Microbiology                                                         |
| 3900   | Quality management and quality assurance standards                           |
| 3900.1 | Part 1: Guidelines for selection and use                                     |
| 3904   | Quality management and quality system elements                               |
| 3904.1 | Part 1: Guidelines                                                           |

**SAA**

- |          |                                                                                                     |
|----------|-----------------------------------------------------------------------------------------------------|
| HB 18    | Guidelines for third-party certification and accreditation                                          |
| HB 18.44 | Guide 44: General rules for ISO or IEC international third-party certification schemes for products |

**3 DEFINITIONS** For the purpose of this Standard, the definitions below apply.

**3.1 Nominal capacity**—volume of liquid which a bottle will contain when filled to the base of the neck.

**3.2 Seal**—the system which enables the contents of the bottle to be isolated from the external environment.

**3.3 Transition zone**—curved part of the bottle where a change in direction occurs in the linear outline of the bottle, for example between base and sidewall or sidewall and neck.

#### 4 MATERIALS

**4.1 Bottle** The bottle shall be made from clear, colourless glass free of particulate matter and having thermal properties which meet the requirements of the test outlined in Appendix B.

**4.2 Cap** The cap shall be made of material which is resistant to the conditions of normal use, including washing and sterilization procedures.

The cap shall be sufficiently strong and rigid so as not to crack or distort when being screwed onto the bottle.

**4.3 Insert** The insert shall be made of an elastic material which is chemically inert and retains its shape under normal conditions of use.

NOTE: Sealing inserts may be moulded into the cap.

## 5 DESIGN REQUIREMENTS

### 5.1 Bottle

**5.1.1 Shape** The shape of the bottle shall be similar to those illustrated in Figure 1, and shall be such that the capacity to the brim is approximately 15 percent greater than the nominal capacity. The walls may be slightly tapered. The base of the bottle shall have a radius which provides a smooth transition between the base and the wall, similarly the shoulder shall have a radius which provides a smooth transition between the wall and the neck.

NOTE: Internal stresses are most likely to occur in the transition zone of the bottle.

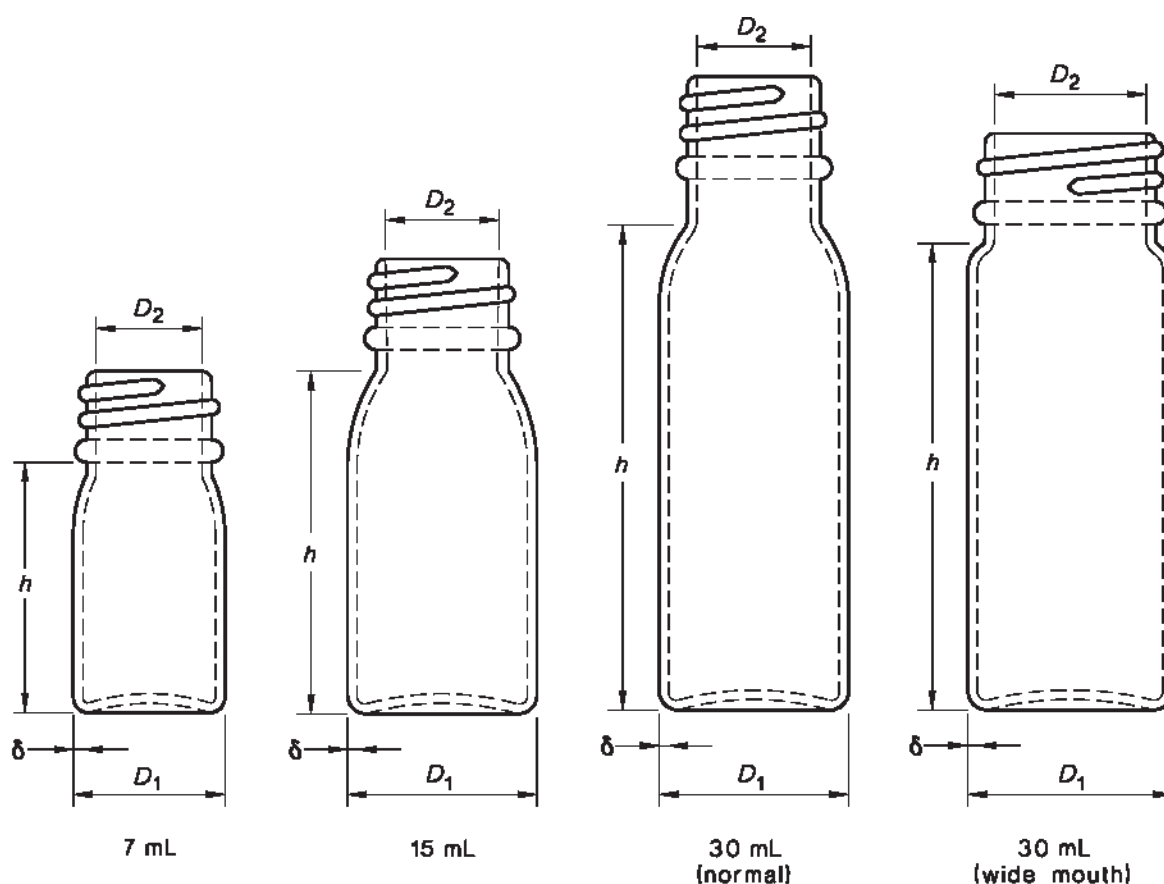


FIGURE 1 SHAPES OF TYPICAL MICROBIOLOGICAL BOTTLES

**5.1.2 Dimensions** The dimensions for each size of bottle shall be in accordance with Table 1.

**5.1.3 Base** The base shall be so constructed that the bottle stands firmly on a flat surface without rocking or spinning. When placed on a surface tilted at  $15^\circ$  from the horizontal, a filled bottle shall remain standing.

**5.1.4 Wall thickness** The walls shall have a uniform thickness of glass in accordance with the values given in Table 1.

**5.1.5 Neck** The neck shall have a thickness of glass at least equal to that of the wall, with an internal diameter  $D_2$  in accordance with the values in Table 1.

The external surface of the neck shall consist of a screw thread designed to mate closely with the thread on the cap.

**5.1.6 Rim** The rim of the bottle shall be smooth and flat, so as to ensure an airtight seal between the bottle and the cap.