

Australian Standard[®]

**Verification and use of
volumetric apparatus**

**Part 1: General—Volumetric
glassware**

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 31 January 1996 and published on 5 May 1996.

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Australian Chamber of Commerce and Industry
Australian Government Analytical Laboratories
Environmental Protection Authority, N.S.W.
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Independent consultant

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PREFACE

This Standard was prepared by the Standards Australia Committee CH/1 on Laboratory Glassware and Related Apparatus to revise the 1979 edition of AS 2162, *Code of practice for the use of volumetric glassware*, which it now supersedes.

The objective of this Standard is to describe procedures for the verification of volumetric glassware using water or mercury as the working substance, and give recommended practices for the use of such glassware. The Standard was originally published in 1949 to assist persons engaged in the manufacture, verification and use of volumetric glassware.

Attention is drawn to the fact that the attainment of a high level of accuracy depends upon the use of satisfactory techniques as well as that of matching the quality of the glassware to the task on hand. In regard to the latter, it is recommended that the use of Class A glassware be restricted to those operations which necessitate attainment of the highest degree of accuracy.

The units of volume used in this code are the litre (L) and the millilitre (mL). In terms of the SI units the litre is equivalent to 10^{-3}m^3 (1 dm^3) and the millilitre is equivalent to 10^{-6}m^3 (1 cm^3).

This Standard is essentially the same as the previous edition but has been reformatted and includes a new clause dealing with apparatus and material. Clauses considering factors affecting accuracy have also been rewritten.

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

Verification and use of volumetric apparatus

Part 1: General—Volumetric glassware

1 SCOPE This Standard provides guidance for users wishing to verify or to calibrate their own articles of volumetric glassware by means of water or mercury (when more appropriate) and to enable them to obtain the best accuracy in use.

International Standards and product Standards issued by Standards Australia for individual articles of glassware, include clauses on tolerances and the definition of capacity. These describe in sufficient detail and without ambiguity the method of manipulation to define the capacity. This Standard should be regarded as supplementary to the information contained in glassware product Standards.

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

AS

2243 Safety in laboratories

2243.2 Part 2: Chemical aspects

4163 Glassware—Guide to the use of piston operated volumetric apparatus (POVA)

CSIRO

Tech Paper No. 1 The calibration and verification of volumetric measures

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

3.1 Accuracy—A qualitative term describing the degree of closeness with which the indications of an instrument approach the true values of the measurand.

3.2 Calibration—all the operations for the purpose of determining the values of the errors of measuring instruments, material measures, and measurement standards (and, if necessary, to determine other metrological properties, including influence quantities).

3.3 Capacity—the nominal volume of water (or mercury) contained, or delivered by an article of volumetric glassware, at its reference temperature.

3.4 Error of measurement—The discrepancy between the result of the measurement and the value of the measurand.

NOTES:

1 The value of the measurand is a comparison value and, according to the particular case, equal to—

(a) the true value of the quantity (generally unknown);

(b) the accepted true value; or

(c) the arithmetic mean of the results of a series of measurements.

2 The discrepancy can be expressed as the difference between these two values, or as the quotient of that difference and the value of the measurand.

3.5 Measurand—A physical quantity, property or condition which is measured.

NOTE: The term 'measurand' is preferred to 'quantity measured', 'measured quantity' and 'quantity to be measured'.

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