

Australian Standard™

# Measuring cylinders—Plastics— Graduated



This Australian Standard was prepared by Committee CH-001, Laboratory Glassware and Related Apparatus. It was approved on behalf of the Council of Standards Australia on 13 October 2005.  
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The following are represented on Committee CH-001:

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Royal Australian Chemical Institute  
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Science Industry Australia  
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Australian Standard™

# Measuring cylinders—Plastics— Graduated

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## PREFACE

This Standard was prepared by the Standards Australia Committee CH-001, Laboratory Glassware and Related Apparatus, to supersede AS 2770—1985, *Measuring cylinders—Plastics—Graduated*.

Although the use of laboratory plasticsware is becoming more common, the Committee believes that the user has the responsibility of ensuring that the plastics cylinders are made of a material whose properties, especially chemical and thermal, do not interfere with the desired end use. This Standard thus only describes what are considered to be essential general requirements for such cylinders.

The objective of this revision is to reconfirm the Standard with minor changes including the following:

- (a) Referenced documents have been updated.
- (b) The Standard has been brought into line with the current editorial practices.

Detailed, simple tests have been provided to assist in the investigation of measuring cylinders claimed to comply with this Standard. It is hoped that these tests leave sufficient allowance for cylinders to be tested with any suitable apparatus that can be devised by the testing laboratory, but which complies with the essential requirements specified herein.

Glass measuring cylinders are covered in AS 2163, *Laboratory glassware—Measuring cylinders*.

The term ‘normative’ has been used in this Standard to define the application of the appendix to which it applies. A ‘normative’ appendix is an integral part of a Standard.

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## STANDARDS AUSTRALIA

**Australian Standard**  
**Measuring cylinders—Plastics—Graduated**

**1 SCOPE**

This Standard specifies requirements for a series of plastics measuring cylinders of capacities ranging from 10 mL to 4000 mL, each having a graduated volumetric scale and a pouring lip and of the typical design shown in Figure 1.

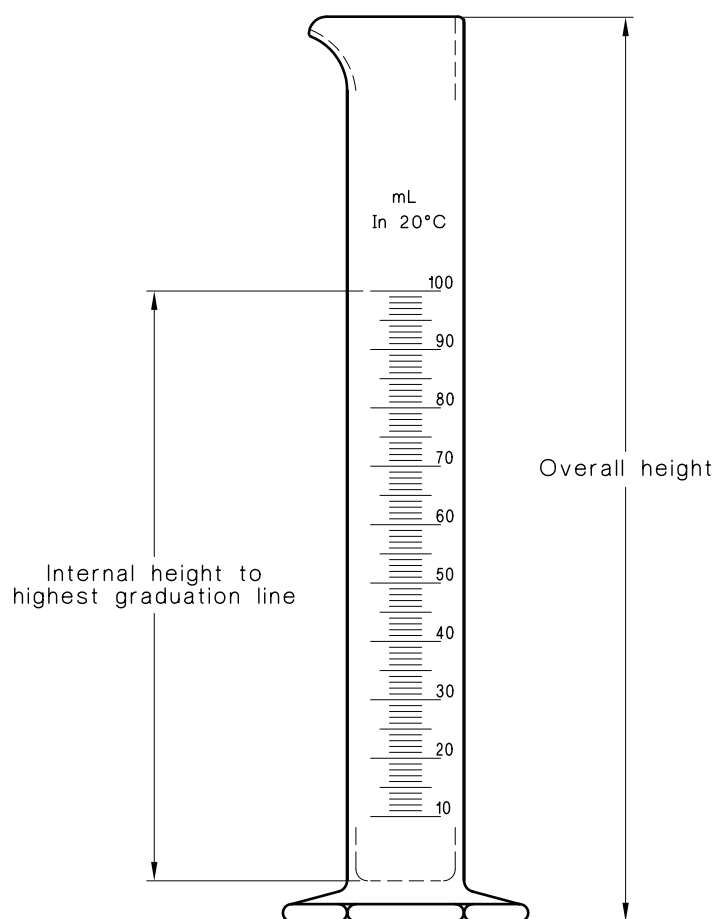


FIGURE 1 GENERAL APPEARANCE OF MEASURING CYLINDER

**2 REFERENCED DOCUMENTS**

The following reference document is referred to in this Standard.

AS  
1199      Sampling procedures for inspection by attributes (series)

### 3 DEFINITIONS

For the purpose of this Standard, the definitions below apply.

#### 3.1 Capacity corresponding to any graduation line

The volume of water at 20°C, contained by the cylinder at 20°C when filled to that graduation line in accordance with Appendix A.

#### 3.2 Permanently marked

Marking which endures for the life of the cylinder when it is used in the preparation and dispensing of reagents or solvents for routine analytical work as well as in the associated cleaning processes. Such markings may be applied by any suitable process, e.g. moulding, etching, engraving, chemical adhesion.

### 4 MATERIAL OF CONSTRUCTION

Cylinders shall be formed of a plastics material which under routine laboratory conditions is rigid, non-brittle and sufficiently transparent to permit inspection of the contents and accurate reading of the volume of the contents. The thermal and chemical properties of the material shall render the cylinder suitable for routine laboratory use.

CAUTION: CHECK THAT THE LIQUIDS, WHICH IT IS PROPOSED TO PUT INTO THE CYLINDER, ARE COMPATIBLE WITH THE PLASTICS MATERIAL OF WHICH THE CYLINDER IS MADE. THIS MAY BE DONE BY REFERRING IN THE FIRST INSTANCE, TO THE MANUFACTURER, SUPPLIER OR THEIR LITERATURE. ALTERNATIVELY, A SMALL AMOUNT OF THE LIQUID MAY BE POURED INTO THE CYLINDER OVER A CATCHMENT AREA AND THE CYLINDER CAREFULLY CHECKED FOR ANY DEGRADATION, E.G. SOFTENING, SWELLING, DISSOLUTION OR CLOUDING, OVER A PRESCRIBED PERIOD OF TIME.

### 5 DESIGN

#### 5.1 General

The design shall be similar to that shown in Figure 1. Cylinders may be moulded in one piece or the base may be detachable.

#### 5.2 Cylinder

The cylinder shall stand upright on its base without rocking or spinning when placed on a horizontal surface. The empty cylinder shall not topple when the surface on which it stands is tilted at 12 degrees to the horizontal.

#### 5.3 Base

The shape of the base may be either polygonal, with at least five sides, or it may be circular. Where detachable, the base shall be constructed of an appropriate plastics material.

#### 5.4 Pouring lip

The pouring lip shall be so formed as to enable the contents of the cylinder to be poured in a narrow stream without liquid spilling or running down the outside of the cylinder.

#### 5.5 Finish

All parts of the measuring cylinder shall be free from sharp edges, projections or roughness likely to cause accidental cutting, puncturing or abrasion of the skin of the user.

## 6 DIMENSIONS

### 6.1 General

Cylinders shall conform to the dimensional requirements given in Table 1.

### 6.2 Wall thickness

The wall thickness of the calibrated part of the measuring cylinder, shall be uniform to within at least 10 percent of the mean wall thickness and shall be such that when the cylinder is tested for flexibility in accordance with Appendix C, the diameter shall not decrease by more than 10 percent while the cylinder is under the specified load.

## 7 GRADUATION LINES

### 7.1 General

Graduation lines, (see Figure 2) classified as short, medium or long lines shall meet the following requirements:

- (a) *Short lines* The length of the short lines shall be between 0.1 times and 0.125 times the circumference of the cylinder.
- (b) *Medium lines* The length of the medium lines shall be not less than 1.5 times the length of the short lines and shall extend symmetrically at each end beyond the ends of the short lines.
- (c) *Long lines* The length of the long lines shall be not less than twice the length of the short lines and shall extend symmetrically at each end beyond the ends of the short lines.

All graduation lines shall be clean, permanent, uniform lines of thickness not exceeding 0.3 mm for cylinder capacities up to and including 250 mL and 0.5 mm for cylinder capacities exceeding 250 mL.

### 7.2 Spacing of lines

The graduations shall be spaced such as to divide the capacity of the cylinder into the volume increments given in Table 2 with due regard to the requirements of Table 1.

There shall be no evident irregularity in the spacing of graduation lines.

**TABLE 1**  
**DIMENSIONS FOR CYLINDERS**

| Nominal capacity | Minimum internal height to highest graduation line | Maximum overall height | Minimum distance from highest graduation line to top of cylinder |
|------------------|----------------------------------------------------|------------------------|------------------------------------------------------------------|
| mL               | mm                                                 | mm                     | mm                                                               |
| 10               | 90                                                 | 150                    | 40                                                               |
| 25               | 90                                                 | 170                    | 40                                                               |
| 50               | 115                                                | 200                    | 50                                                               |
| 100              | 145                                                | 260                    | 60                                                               |
| 250              | 200                                                | 340                    | 60                                                               |
| 500              | 250                                                | 390                    | 75                                                               |
| 1000             | 315                                                | 470                    | 75                                                               |
| 2000             | 400                                                | 570                    | 75                                                               |
| 4000             | 460                                                | 585                    | 75                                                               |