

Australian Standard™

Methods for testing flexible cellular polyurethane

Method 2: Measurement of dimensions of test specimens

PREFACE

This Standard was prepared by the Standards Australia Committee PL/36, Flexible Polyurethane, to supersede AS 2282.2 — 1991.

During the preparation of this revision cognizance was taken of ISO 1923: 1981, *Cellular plastics and rubbers — Determination of linear dimensions*.

FOREWORD

An accurate measurement of thickness is the basis for accurate values of various properties of cellular materials such as density, tensile strength, tear resistance and compression set.

The method of measurement is chosen on the basis of the dimensions of the specimen and the accuracy required. In practice it is possible to classify these methods of measurement, on the basis of the dimension to be measured, into the three categories covered by this Standard, however variations of these methods are sometimes used.

Pressure from the measuring instrument will have an influence on the measurement of the thickness of soft flexible materials. It is therefore necessary to specify the pressure for accurate comparative measurements in the laboratory.

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 three methods for the measurement of test specimen dimensions of flexible cellular polyurethane. The methods are as follows:

- (a) Method A—the reference method, which is also particularly applicable to dimensions less than 30 mm, utilizes a gauge with a circular foot.
- (b) Method B—for dimensions over 30 mm, utilizes vernier callipers.
- (c) Method C—for dimensions over 100 mm, utilizes a rule or tape measure.

2 APPARATUS

2.1 Gauge (Method A)—a dial gauge or micrometer incorporating a circular foot $700 \pm 100 \text{ mm}^2$ in area, having an indicating lamp, and capable of exerting a pressure of $100 \pm 10 \text{ Pa}$ on the test specimen.

The gauge should read to the nearest 0.02 mm. It is desirable to mount the measuring device on a solid plane baseplate.

NOTE: An example of suitable apparatus for Method A is given in Appendix A.

2.2 Vernier callipers (Method B)—vernier callipers accurate to 0.1 mm.

2.3 Rule or tape (Method C)—metal rule or a tape measure, graduated in millimetres, accurate to 0.5 mm.

2.4 Commercial apparatus (alternative Method A)—commercial gauging apparatus similar to that described in Clause 2.1, but having pressure feet up to 2000 mm^2 in area, applying foot pressures between 100 Pa and 500 Pa.

NOTE: This equipment may be used as alternative equipment for Method A, where the material tested is not influenced by the higher foot pressures applied.

3 PROCEDURE The procedure shall be as follows:

- (a) Select from Table 1 the method and measuring equipment to be used, appropriate to the magnitude of dimension to be measured and required accuracy of measurement.

TABLE 1
CHOICE OF MEASURING EQUIPMENT

Range of dimension measured mm	Required accuracy mm	Apparatus	Method	Rounding off of calculated median reading mm
≤ 30	0.02	Dial gauge or micrometer	A	0.1
$> 30 \leq 100$	0.1	Vernier calliper	B	0.2
> 100	1.0	Metal rule or metal tape	C	1

Where test pieces of smaller dimensions, which would otherwise be tested using Method A equipment, will not be covered by the complete area of the circular gauge foot, vernier callipers (Method B) may be used.

- (b) Support the test specimen to prevent distortion of the material.
- (c) Where applicable, present the previously set measuring equipment to the test specimen, while ensuring that the material is not distorted. Preset the gauge or calliper to progressively smaller measurements, and present it to the specimen, until the setting is reached where the calliper measuring faces just touch the surfaces of the specimen without any compression or damage to the specimen. Measure the required dimension along a line perpendicular to the opposing faces of the test specimen.
- (d) When using Method A equipment, note the reading the moment the lamp glows.
- (e) Obtain three readings at each measurement position, calculate the median and, in accordance with Table 1, round off the result to the specified unit.

4 REPORT The report shall include the following particulars:

- (a) Type and designation of the material.
- (b) The method and measuring equipment used.
- (c) The median dimension in millimetres, rounded off to —
 - (i) 0.1 mm for measurements made with dial gauge or micrometer (Method A);
 - (ii) 0.2 mm for measurements with vernier calliper (Method B); and
 - (iii) 1 mm for measurements with metal rule or metal tape (Method C).
- (d) Reference to this Australian Standard i.e. AS 2282.2.