

Australian Standard®

Methods of testing rigid cellular plastics

Method 2: Determination of linear dimensions

METHOD

1 SCOPE This Standard specifies the characteristics and the choice of the measuring equipment and sets out the procedure for determining the linear dimensions of sheets, blocks or test specimens of rigid cellular plastics (flexible and rigid).

2 DEFINITION For the purposes of this Standard, the definition below applies.

2.1 Linear dimensions—the shortest distance, measured with an instrument in accordance with Clause 3, between two specific points, between two parallel lines or between two parallel planes, defined by corners, edges or surfaces of the cellular specimen.

3 APPARATUS According to the dimensions to be measured and the precision desired, choose the apparatus from the following (see Table 1).

3.1 Dial gauge—having a measuring surface of approximately 10 cm². The gauging pressure shall be 100 ±10 Pa (see Note) and the reading accuracy shall be ±0.05 mm.

NOTE: Commercial dial gauges that incorporate a spring pressure may not comply with this condition. An example of one design of an appropriate gauge is given in Appendix A.

3.2 Micrometer—having a measuring surface with a minimum diameter of 5 mm, but in any case not less than five times the average diameter of the cells, permitting reading to an accuracy of ±0.05 mm.

3.3 Sliding calliper—with a vernier permitting reading to an accuracy of ±0.1 mm.

3.4 Metal rule or metal tape—graduated in millimetres and permitting reading to an accuracy of ±0.5 mm.

4 PROCEDURE

4.1 Choice of measuring equipment The choice of measuring equipment shall be in accordance with the accuracy required corresponding to the dimensions to be measured (see Table 1), as follows:

- (a) When an instrument accuracy of ±0.05 mm is required, a dial gauge (see Clause 3.1) or micrometer (see Clause 3.2) shall be used. The micrometer may only be used for specimens with shapes that cannot be used with a dial gauge.

An accuracy of ±0.05 mm shall not normally be required for dimensions of more than 10 mm.

- (b) When an instrument accuracy of ±0.1 mm is required, a sliding calliper (see Clause 3.3) shall be used.

The accuracy of ±0.1 mm shall not normally be required for dimensions of more than 100 mm.

NOTE: In this case, a dial gauge or micrometer may also be used, but then the instrument accuracy need not be better than that of a sliding calliper.

TABLE 1
CHOICE OF MEASURING EQUIPMENT

Range of dimensions	Required accuracy	Instrument recommended		Median of readings rounded to the nearest millimetre
		For normal use	If the shape of the specimens permits	
≤10	±0.05	Dial gauge or micrometer		0.1
>10 ≤100	±0.1	Sliding calliper	Micrometer (rigid only) or dial gauge	0.2
>100	±0.5	Metal rule or metal tape	Sliding calliper	1

- (c) When an instrument accuracy of ± 0.5 mm is required, a metal rule or metal tape (see Clause 3.4) shall be used.

NOTE: In this case, a sliding calliper may also be used but then the instrument accuracy need not be better than that of a metal rule or metal tape.

4.2 Number and location of the measurements The number of the measuring locations depends on the size and the shape of the specimen, but shall be at least five. In order to give a good average, the locations shall be as widely separated as possible.

The median of the three readings at each position shall be taken and the average of the five median values calculated.

4.3 Measurement with dial gauge (see Clause 3.1) The measurement shall be normally made on a baseplate which shall be larger than the largest dimension of the specimen that is supported by the baseplate. The specimen shall rest flat upon the baseplate during the measurements.

The readings of the dial gauge shall be rounded off to the nearest 0.1 mm.

4.4 Measurement with micrometer (see Clause 3.2) For the measurement, the plane surfaces of the micrometer shall be continuously brought together until they just touch the cellular material, without causing any distortion or damage to the surface of the specimen. The specimen shall be moved slightly back and forward. Simultaneously, the plane surfaces of the micrometer shall be slowly brought together until a slight resistance to the movement is felt.

NOTE: The area of the measuring surface may be increased by measuring over metal sheet or plate.

The readings of the micrometer shall be rounded off to the nearest 0.1 mm.

4.5 Measurement with sliding calliper (see Clause 3.3) The calliper shall be progressively preset to smaller measurements and presented to the specimen until the setting is reached when the calliper measuring faces just touch the surfaces of the specimen without any compression or damage to the latter. The readings of the sliding calliper shall be rounded off to the nearest 0.2 mm.

The method specified in Clause 4.4 may also be used.

4.6 Measurement with metal rule or metal tape (see Clause 3.4) The cellular material shall not be distorted or damaged by the application of the metal rule or metal tape.

The metal rule or metal tape measurements shall be rounded off to the nearest 1.0 mm.