

Australian Standard™

Methods for testing flexible cellular polyurethane

Method 3: Determination of apparent density

PREFACE

This Standard was prepared by the Standards Australia Committee PL/36, Flexible Polyurethane, to supersede AS 2282.3 — 1979.

During the preparation of this revision cognizance was taken of ISO 845:1988, *Cellular plastics and rubbers — Determination of apparent (bulk) density*.

METHOD

1 SCOPE This Standard sets out a method for determining the apparent density of cellular materials. It is primarily intended for flexible cellular materials.

NOTE: An alternative method for material up to 13 mm thick is given in AS 2282.4.

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

AS

- | | |
|--------|--|
| 2282 | Methods for testing flexible cellular polyurethane |
| 2282.1 | Method 1: Sampling and conditioning of test specimens |
| 2282.2 | Method 2: Measurements of dimensions of test specimens |
| 2282.4 | Method 4: Determination of apparent density of flexible cellular polyurethane sheeting up to 13 mm thick |

3 DEFINITION For the purpose of this Standard, the definition below applies.

3.1 Apparent density—the mass per unit volume of the cellular material in air, at a stated temperature and relative humidity.

4 PRINCIPLE The apparent density is determined by weighing a known volume of material and dividing the mass by the measured volume.

5 APPARATUS The following apparatus is required:

- (a) **Balance**, capable of weighing to an accuracy of 0.5 percent or 0.01 g.
- (b) **Means of measuring the dimensions of the test piece**, in accordance with AS 2282.2.

6 TEST PIECES

6.1 Requirements The test piece shall be of a shape such that its volume can be easily calculated. It shall be cut without permanently deforming the original cell structure of the material.

The test piece should be as large as possible commensurate with the apparatus available and with the shape of the original material.

NOTE: A foam sample of dimensions 380 mm × 380 mm × 50 mm is suitable

The place from which the test piece is taken and the presence or absence of surface skins shall be recorded. For slab-stock materials, test pieces without skin shall be used.

6.2 Number A minimum of three test pieces shall be tested.

7 PROCEDURE The procedure shall be as follows:

- (a) Condition the test piece as specified in AS 2282.1.
- (b) Measure its dimensions, in millimetres, in accordance with AS 2282.2, then use the mean value of a minimum of three separate measurements of each dimension to calculate the volume of the test piece.
- (c) Weigh the test piece to an accuracy of 0.5 percent and express its mass in grams.

8 CALCULATION The apparent density D of the test piece, in kilograms per cubic metre, is given by the equation:

$$D = 10^6 \times \frac{m}{V}$$

where

m = the mass of the test piece, in grams

V = the volume of the test piece, in cubic millimetres.

9 REPORT The report shall include the following information:

- (a) A description of the material.
- (b) The temperature and relative humidity at which the test piece was conditioned.
- (c) The individual test results, stating details of test pieces (shape, dimensions and from where taken).
- (d) Whether the test pieces had skin or not.
- (e) The mean value of the apparent density, in kilograms per cubic metre.
- (f) The number of this Australian Standard, i.e. AS 2282.3.