

Australian Standard™

Methods for testing flexible cellular polyurethane

Method 6: Determination of tensile strength and elongation at break

PREFACE

This Standard was prepared by the Standards Australia Committee PL/36, Flexible Polyurethane, to supersede AS 2282.6 — 1991.

During the preparation of this revision cognizance was taken of ISO 1798:1997, *Flexible cellular polymeric materials — Determination of tensile strength and elongation at break*.

METHOD

1 SCOPE This Standard sets out a method for determining the strength and deformation properties of flexible cellular material when a test piece is extended at a constant rate until it breaks.

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: Measurement of dimensions of test specimens

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

3.1 Tensile strength — the maximum force required to break the test piece, divided by its original cross-sectional area.

3.2 Elongation — the change in gauge length of the test piece, determined at the time of break, expressed as a percentage of its original gauge length.

4 PRINCIPLE A test piece of the material is extended at a constant rate until it breaks.

5 APPARATUS A power-driven tensile-testing machine, complying with the following requirements, is required:

- (a) The rate of travel of the power-actuated grip shall be 500 ± 50 mm/min and shall be uniform at all times.
- (b) The sensitivity shall be such that the breaking load of the test piece can be measured with an accuracy of ± 1 percent.

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6 SAMPLING AND SAMPLE PREPARATION

6.1 Direction of sampling If the product shows a predominant direction of the cellular structure (orientation of the cells), the test pieces for the tensile test shall, if possible, be taken in such a way that their longitudinal axes lie at right angles to this predominant direction. If this is not possible, the location of the longitudinal axis with respect to the predominant direction shall be stated in the test report.

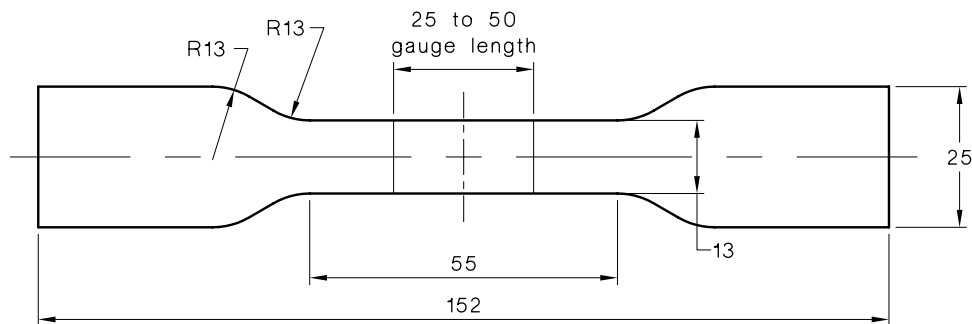
6.2 Shape and dimensions The test piece shall be rectangular in cross-section, without surface skin, and without visible defects. The tensile test pieces shall be cut with a test-piece cutter in accordance with Figure 1, and shall be 10 mm to 15 mm thick.

6.3 Number of test pieces Five test pieces shall be tested.

6.4 Conditioning The test specimens shall be conditioned in accordance with AS 2282.1.

7 PROCEDURE The procedure shall be as follows:

- (a) After conditioning in accordance with AS 2282.1, either measure the thickness of the material at five evenly distributed points in the area from which the test pieces are to be cut, or make two measurements in the area from which each test piece is to be cut. These dimensions shall be measured in accordance with AS 2282.2, and shall not vary from one another by more than ± 2 percent.



DIMENSIONS IN MILLIMETRES

FIGURE 1 TEST PIECE

- (b) Cut the test pieces and mark their gauge length with two reference lines. The marker for these lines shall have two parallel marking edges, the inside limits of which are at not less than 25 mm ± 1 percent, and not more than 50 mm ± 1 percent, apart.
- (c) Place the test piece in the grips of the testing machine, grasping it by the 25 mm tabs, taking care to adjust it symmetrically in order that the tension will be distributed uniformly over the cross-section. Start the machine, and record the maximum force (measured to ± 1 percent) and the distance between the inside edges of two reference lines (measured to ± 1 mm) immediately prior to break of the test piece. Reject any test pieces that break outside the gauge length.