AS 2001.5.1—1987

STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard METHODS OF TEST FOR TEXTILES

PART 5—DIMENSIONAL CHANGE

AS 2001.5.1 GENERAL REQUIREMENTS

PREFACE

Dimensional change in textiles may be attributed to many causes. Some of the principal causes are moisture absorption, stress in fibres and yarns during manufacture, chemical and physical changes brought about by subsequent chemical or physical treatments, either as part of the manufacturing process involving the textile or during its use. These changes may cause felting, reorientation of molecular structures or relaxation of the latent forces inherent in the fibres.

The methods of test set out in Part 5 of AS 2001 cover the testing of fabrics and garments and may show either an increase or a reduction in the measured dimension. If the change is an increase, it is termed positive (+); if it is a reduction, it is termed negative (—).

This standard, which supersedes AS 1287, Part 1—1974, is the basic reference document for a series of methods for determining dimensional stability to various agents and sets out the general requirements, including the selection of test specimens, whether fabric or garments. Unless stipulated specifically in a given method, the apparatus is as described in this standard, as are methods of measuring and marking the specimens being examined and the form of calculation and expression of results of different agents contributing to the dimensional change.

Other methods proposed to form Part 5 of AS 2001, and which may utilize this method, include—

Determination of relaxation in steam (at present AS 1287, Part 2—to be AS 2001.5.2)
Determination of relaxation in aqueous solution (at present AS 1287, Part 3—to be AS 2001.5.3)
Determination of dimensional stability to heat (at present AS 1287, Part 4—to be AS 2001.5.4)
Determination of dimensional change in laundering of woven and knitted fabrics and garments (at present AS 1287, Part 5—to be AS 2001.5.5)
Determination of dimensional change in yarns and threads (to be AS 2001.5.6)
Determination of dimensional change in dry cleaning in perchloroethylene, excluding finishing—Laboratory method (published as AS 2001.5.7).

This method requires reference to the following Australian standard:

AS 2001.1* Methods of Test for Textiles—Conditioning Procedures.

*Revision of AS 1090 in course of preparation.

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METHOD

1 SCOPE. This standard sets out the general requirements involved in testing fabric and garments for dimensional change which may be produced under specific conditions described in other methods in Part 5. These requirements relate to the reagents and apparatus used for testing, selection and preparation of test specimens, methods of measurement of specimens and expression of results.

2 PRINCIPLE. Specimens of the fabric or garments under test are marked, measured, and subjected to specified conditions. The resultant dimensional changes are measured, calculated and reported.

3 REAGENTS. The required reagents will be specified in the appropriate test method. In general, if distilled water is not specified, water of hardness not greater than 100 g/m^3 of calcium carbonate ($CaCO_3$) may be used.

4 APPARATUS. The apparatus required includes all or some of the following:

(a) Means for producing the standard atmosphere described in AS 2001.1, i.e. 20 ± 2°C, 65 ± 2 percent relative humidity.

(b) A suitable stainless metal scale or flexible glass fibre tape at least 300 mm long, graduated in millimetres and figured in centimetres or millimetres. The scale (or tape) shall be accurate to 0.5 mm. For measuring garments, a flexible tape is required.

(c) Suitable means for permanently marking specimens (see Clause 5.5).

(d) A flat glass or transparent plastics plate of sufficient size to cover the specimen and approximately 6 mm thick.

(e) Makeweights—any suitable textile fabric may be used to provide the total load specified. It is convenient to use pieces weighing approximately 25 g or of a size 500 mm square. The edge of each piece shall be seamed or overlocked to prevent fraying. Previously tested specimens, except non-shrinkproof wool fabrics, are suitable.

(f) Cubex International Shrinkage Testing Apparatus or equivalent consisting essentially of a cubic container of 50 L capacity (about 370 mm internal dimension on the edge) insulated on five sides and with an access door on the sixth side which can be completely sealed. The cubic container shall rotate about a diagonal axis at 60 r/min, the direction of rotation reversing every 5 min with a break of about 10 s between reversals.

(g) Additional apparatus may be specified in the appropriate test method.

5 FABRIC TEST SPECIMENS.

5.1 Selection of Test Specimens. Test specimens shall be selected as follows:

(a) Cut test specimens so that they are representative of the textile under examination. Do not cut test specimens, or the sample from which the test specimens are taken within 2 m of the lead end or tail end of a piece, or closer to the edge than one-tenth of the width of the piece. For fabrics up to 400 mm wide, test the full width of the fabric (see Clause 5.5(e)).

(b) Where lengthwise specimens are being tested, the long direction is to be parallel to the length of the piece and, as far as possible, no two specimens are to contain the same warp threads or the same wales.

(c) Where widthwise specimens are being tested, the long direction is to be parallel to the width of the piece and, as far as possible, no two specimens are to contain the same weft threads or the same courses.

5.2 Size and Number of Test Specimens. The size and the required minimum number of test specimens shall be specified in the appropriate test method.

5.3 Preparation of Test Specimens. Test specimens shall be zig-zag sewn or overlocked along edges where fraying may occur. Heat sealing may be used on fabrics of thermoplastic fibre.

5.4 Conditioning of Test Specimens. The test specimens shall be conditioned in the standard atmosphere of 20 ± 2°C and 65 ± 2 percent relative humidity by the method described in AS 2001.1 without preconditioning. They shall be measured in that atmosphere.

5.5 Marking and Measurement of Test Specimens. Fabric test specimens shall be marked and measured as follows:

(a) Lay the specimens, free from creases and applied tensions, on a smooth flat surface. Place permanent reference marks in the direction(s) under test using a thread or ink dots, depending on the type of fabric being tested. Small holes made with a fine heated wire may be made in fabrics of thermoplastic fibre.

(b) Unless otherwise specified, reference marks are to be no closer than 25 mm from any edge of the specimen.

(c) Make three pairs of marks in the lengthwise direction and three pairs in the widthwise direction as indicated in Fig. 1.

(d) Measure the distance between the marks to the nearest 1 mm.

(e) Test the full width of the specimen for fabrics up to 400 mm wide.

(f) If curling or cockling occurs, cover the specimens with the glass or plastics plate before each measurement is made, taking care to avoid parallax errors when measuring the distances between the reference marks.

6 GARMENT TEST SPECIMENS.

6.1 General. The list of measurements is extensive; not all may be necessary as their selection will depend on the type and style of garment. The chosen locations should, however, be specified when reporting.

Unless otherwise arranged by agreement, measurements shall be made as described in Clause 6.4 and the relevant subsection of Clause 6.5. If, for example, it is required to relate changes in dimensions