

STANDARDS AUSTRALIA

RECONFIRMATION

OF

AS 2001.5.1—1987

Methods of test for textiles

Part 5.1: Dimensional change—General requirements

RECONFIRMATION NOTICE

Technical Committee TX-020 has reviewed the content of this publication and in accordance with Standards Australia procedures for reconfirmation, it has been determined that the publication is still valid and does not require change.

Certain documents referenced in the publication may have been amended since the original date of publication. Users are advised to ensure that they are using the latest versions of such documents as appropriate, unless advised otherwise in this Reconfirmation Notice.

Approved for reconfirmation in accordance with Standards Australia procedures for reconfirmation on 6 July 2016.

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NOTES

STANDARDS ASSOCIATION OF AUSTRALIA

**Australian Standard
METHODS OF TEST FOR TEXTILES**

PART 1 DIMENSIONAL ANALYSIS

**AS 2001.5.1
GENERAL REQUIREMENTS**

PREFACE

This edition of this Standard was prepared by the Association's Committee on Testing of Textiles under the direction of the Textile Standards Board. It supersedes AS 2001.5.1—1980.

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 series of methods of test of dimensional change cover the testing of fabrics, garments and yarns 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 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, garments or yarns. Unless stipulated specifically in a given method, the apparatus is as described in this Standard, as are methods of measuring and marking the specimens under examination and the form of calculation and expression of results of different agents contributing to the dimensional change.

Other methods dealing with dimensional stability which may utilize this method, include—

Determination of Relaxation in Steam (at present AS 1287, Part 2).

Determination of Relaxation in Aqueous Solution (AS 2001.5.3).

Determination of Dimensional Stability to Heat (at present AS 1287, Part 4).

Determination of Dimensional Change in Laundering of Textile Fabrics and Garments—Automatic Machine Method (AS 2001.5.4).

Determination of Dimensional Change in Laundering of Textile Fabrics and Garments—Cubex Machine Method (AS 2001.5.5).

Determination of Dimensional Change of Yarns and Sewing Threads (AS 2001.5.6).

Determination of Dimensional Change on Dry Cleaning in Perchloroethylene, Excluding Finishing—Machine Method (AS 2001.5.7).

METHOD

1 SCOPE. This Standard sets out the general requirements involved in testing fabric, garments and yarns for dimensional change which may be produced by specific treatments described in other methods on dimensional change. 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 REFERENCED DOCUMENTS. The following Standard is referred to in this Standard:

AS 2001 Methods of Test for Textiles.

AS 2001.1 Conditioning Procedures.

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

□ **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/m³ of calcium carbonate (CaCO₃) shall be used.

5 APPARATUS.

5.1 Conditioning apparatus. Means of providing and maintaining the standard atmosphere as described in AS 2001.1.

5.2 Cubex International Shrinkage Testing Apparatus.

5.2.1 Cubex International Shrinkage Testing Apparatus. Cubex 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 rev/min, the direction of rotation reversing every 5 min with a break of about 10 s between reversals.

5.2.2 Automatic washing machine. Capable of being operated under the following conditions:

- (a) *Machine Type A*—a front-loading horizontal rotating drum type:
 - (i) Diameter of inner drum: 515 mm.
 - (ii) Depth of inner drum: 335 mm.
 - (iii) Distance between inner and outer drums: 28 mm.
 - (iv) Lifting vanes: three, each 50 mm high, extending the depth of the inner drum and spaced 120° apart.
 - (v) Rotating action—1 (Normal): 12 s clockwise, 3 s stop, 12 s anticlockwise, 3 s stop.
Rotating action—2 (Gentle): 3 s clockwise, 12 s stop, 3 s anticlockwise, 12 s stop.
 - (vi) Rotational frequency
—during washing: 52 rev/min;
—during hydroextraction (spin): 530 rev/min.
 - (vii) Water supply normal: 25 ± 5 L/min, 20 ± 5°C.
 - (viii) Filling time: less than 2 min when filled to the highest level.
 - (ix) Draining time: less than 1 min when drained from the highest level.
 - (x) Heating: electric, thermostatically controlled.
 - (xi) Heater capacity: 5.4 kW.
- (b) *Machine Type B*—a top-loading agitator type:
 - (i) 'Normal' agitator speed: 70 ± 5 rev/min.
 - (ii) 'Delicate' or 'Gentle' agitator speed: 50 ± 5 rev/min.
 - (iii) Diameter of perforated basket: 500 ± 50 mm.
 - (iv) Depth of perforated basket: 300 ± 50 mm.
 - (v) At 'Full water level' machine contains approximately 60 L of liquor.

5.3 Drying cabinet. Depending on the procedure to be used, one of the following may be required:

- (a) Facilities for line or drip drying.
- (b) Drying cabinet to operate at a temperature not exceeding 70°C and containing horizontal shelving.
- (c) Electrically (dry heated) heated flatbed press.
□OTE: If this method of drying is used, the type of press is to be as agreed on by the interested parties.
- (d) Tumble dryer, having a cylindrical basket approximately 750 mm in diameter and not less than 400 mm in depth, with a rotational frequency of 50 ± 5 min⁻¹, equipped with means of providing maximum temperatures of 50°C and 70°C, measured in the exhaust vent as close as possible to the drying basket, and providing a cooling period of 5 to 10 min while tumbling at the end of the drying cycle.

□OTE: Machines with a smaller basket than stated may cause excessive creasing.

5.4 Marking. 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.

5.5 Measuring device. 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.

□OTE: Measuring devices which allow the direct determination of the percentage dimensional change may be used.

5.6 Marking device. Suitable means for permanently marking specimens (see Clause 6.3.4). Templates or other devices of known dimensions may be used to position the reference marks on the specimen.

5.7 A plate. A plate of sufficient size to cover the specimen, approximately 6 mm thick.

5.8 Other apparatus. Other apparatus may be specified in the appropriate test method.

□ **SAMPLE AND TEST SPECIMENS.** Care should be taken to ensure that the operator's hands are dry. Excessive handling of the sample and test specimens should be avoided.

6.1 Selection. Samples shall be selected in one of the following ways:

- (a) According to the directions given in the relevant material specification.
- (b) According to the procedure agreed upon by the interested parties, if such directions are not included in the material specification.
- (c) According to the procedures approved by SAA for textile products[□] if directions on sampling are not included in the material specification.

6.2 Conditioning. The samples shall be conditioned according to the procedures specified in AS 2001.1 prior to measurement.

□ In course of preparation.