SRI LANKA STANDARD 47 : 1996

UDC 677.017.635.2

METHOD FOR DETERMINATION OF DIMENSIONAL CHANGES OF FABRICS INDUCED BY COLD - WATER IMMERSION

(First Revision)

SRI LANKA STANDARDS INSTITUTION

METHOD FOR DETERMINATION OF DIMENSIONAL CHANGES OF FABRICS INDUCED BY COLD - WATER IMMERSION

(First Revision)

SLS 47 : 1996

Gr. 4

SRI LANKA STANDARDS INSTITUTION
No. 17, Victoria Place
Elvitigala Mawatha
Colombo 08
Sri Lanka.

Sri Lanka Standards are subject to periodical revision in order to accommodate the progress made by industry. Suggestions for improvement will be recorded and brought to the notice of the Committees to which the revisions are entrusted.

This standard does not purport to include all the necessary provisions of a contract.

SRI LANKA STANDARD
METHOD FOR DETERMINATION OF DIMENSIONAL CHANGES OF FABRICS INDUCED BY COLD - WATER IMMERSION
(First Revision)

FOREWORD

This standard was approved by the Sectoral Committee on Textiles, Clothing and Leather and was authorized for adoption and publication as a Sri Lanka Standard by the Council of the Sri Lanka Standards Institution on 1996-10-17.

In reporting of result of a test or an analysis made in accordance with this standard, if the final value, obtained or calculated is to be rounded off, it shall be done in accordance with **CS 102**.

In the preparation of this standard the assistance derived from the following publications is gratefully acknowledge.

ISO 7771 : 1985 - International standard for determination of dimensional changes of fabrics induced by cold - water immersion.

1 SCOPE

This standard prescribes a method for determination of dimensional changes that occur when a fabric is subjected to immersion in cold water without agitation, and dried.

2 REFERENCES

CS 16 Standard atmospheres for conditioning and testing textiles
CS 102 Presentation of numerical values

3 DEFINITIONS

For the purpose of this standard, the following definition shall apply:

dimensional change : The change in dimensions taking place in either the lengthwise or widthwise direction when a specimen is soaked and dried without agitation under the prescribed conditions.

4 PRINCIPLE

The specimen is cut from the sample and, after conditioning, is measured, soaked, dried under the prescribed conditions, reconditioned and remeasured. The dimensional changes are calculated in the lengthwise and/or widthwise directions.

5 REAGENTS

5.1 Sodium hexametaphosphate or Sodium triphosphate.

5.2 Efficient wetting agent.

6 APPARATUS

6.1 Watertight tray or container, approximately 100 mm deep and of sufficient area to contain the specimen horizontally without folding.

6.2 Steel rule, graduated in millimetres.

6.3 Two pieces of plate glass, each measuring at least 600 mm x 600 mm and approximately 6 mm thick.

6.4 Means of producing and maintaining the standard atmosphere for testing textiles.

6.5 Means of marking reference points.

7 CONDITIONING & TESTING

Conditioning and testing shall be carried out according to **CS 16.** The atmospheres for testing shall have a relative humidity of 65 $\pm$ 2 per cent and a temperature of 27 $\pm$ 2^0C.

8 NUMBER OF SPECIMENS

Test at least one specimen from wide fabrics and three specimens from narrow fabrics as specified in 9.

9 TEST SPECIMENS

9.1 Wide fabrics

Cut specimens at least 500 mm x 500 mm, free from creases, with the edges parallel to the lengthwise and widthwise directions respectively. Do not take any specimen within 1 m of either end of the piece and do not include selvedges.

For knitted fabrics make up the specimens in double thickness, the free edges being sewn together with dimensionally stable thread. When fabrics with fancy weave structures are being tested ensure as far as possible that exact numbers of repeats are taken in each test specimen. It the fabric may possibly unravel during the test, overlock the edges of the specimen with dimensionally stable thread.

Ensure that the distance between marks of each pair is at least 350 mm, so that no mark is less than 50 mm from the edges of the specimen and that the measuring points are regularly spaced across the specimen (See Figure 1).

9.2 Narrow fabrics

Cut each specimen full width to at least 450 mm in length. Do not take any specimen within 1 m of either end of the piece.

Make each specimen with one or more pairs of reference points according to fabric width as set out in figure 2. Ensure that each point is approximately 50 mm from the end of the specimen.

9.3 Marking of specimens

Specimens shall be marked so as to produce reference points clearly visible on the fabric before and after the test. Short length of sewing thread inserted with a needle or indelible coloured ink may be used for this purpose.

10 TEST PROCEDURE

10.1 Lay the conditioned specimen free from tension on one of the pieces of plate glass and place the other piece of plate glass over the specimen. Measure and record the distances between corresponding reference points to the nearest millimetre, taking care to avoid parallax errors.

10.2 Soak the measured specimen, lying flat, for 2 h in the tray or container containing water to which 0.5g/l of effieient wetting agent has been added (calculated on active matter content). The water shall be at a temperature between 25^0C and 30^0C. The water should be of zero hardness or alternatively, of not more than 5 parts/100,000 of calcium carbonate hardness to which sodium hexametaphosphate has been added at the rate of 0.08 g/1 per 1 part/100,000 of calcium carbonate. Ensure that the depth of liquid above the specimen is at least 25 mm. If necessary keep the specimen submerged, for example by use of small weight pieces, ensuring that these are as small as possible.

10.3 After 2 h, pour off the liquid and remove the specimen without distortion from the tray and place it flat on a towel. In this process, care is necessary in handling the specimen. The most convenient method is to fold the corners to the centres so that the whole specimen is supported when lifted onto the towel. Remove excess moisture by lightly pressing another towel on top of the specimen.

10.4 Lay the specimen on a smoth flat surface and allow it to dry at a temperature of 27 ± 2^0C.

NOTE

For thick, absorbent fabrics an excessive drying time may be required, Dry using any other convenient means, for example an open rack and record the drying means used in the test report.

10.5 Condition the specimen in the standard atmosphere for testing textiles until it reaches equilibrium and measure the distances between the corrosponding reference points.

11 EXPRESSION OF RESULTS

Calculate the percentage change of each individual dimension and the mean percentage dimensional change in each direction. Record the mean dimensional changes to the nearest 0.1% by the relationship given below.

$$\text{Dimensional change (\%)} = \frac{l_0 - l_1}{l_0} \times 100$$

where,

l_0 is the initial length, before treatment
l_1 is the length, after treatment

12 TEST REPORT

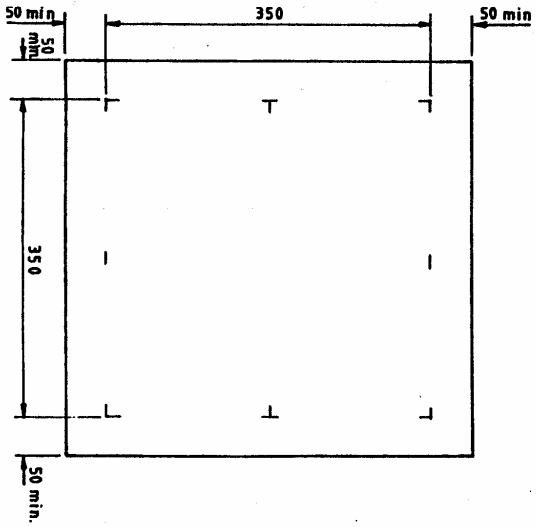
The test report shall include the following information.

(a) A statement that the procedure was conducted in accordance with this standard.

(b) Whether the specimen were from wide or narrow fabrics and the number tested.

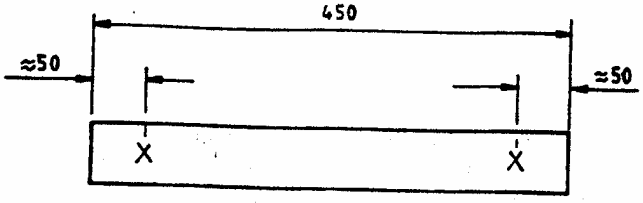
(c) The mean percentage change in dimensions in the lengthwise and widthwise direction for wide fabrics, and in the length-wise direction for narrow fabrics. Use a positive sign to indicate extension and a negative sign to indicate shrinkage.

(d) Details of any deviation from the specified procedure.

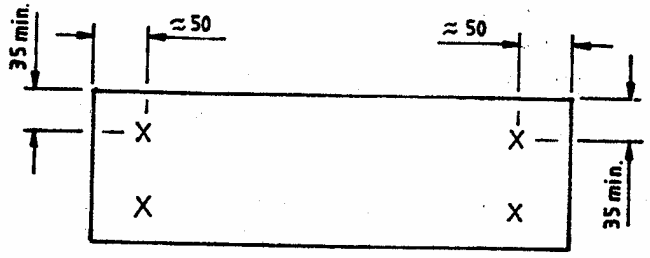


Dimensions in millimetres

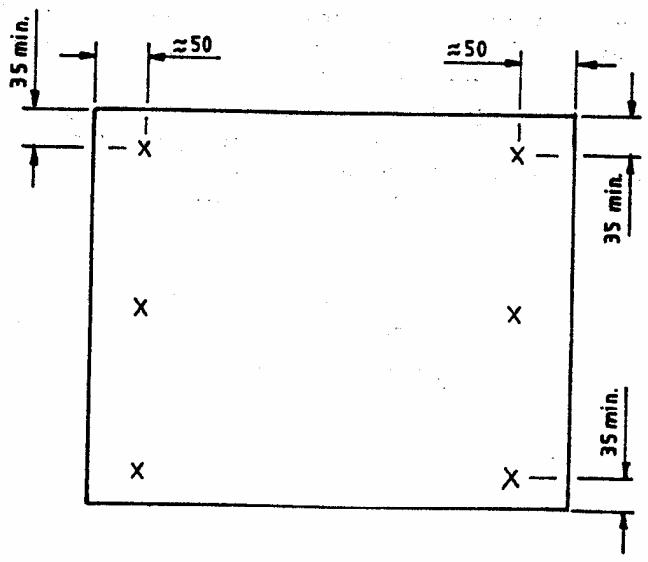
FIGURE 1 - Marking of specimen from wide fabrics



a) Marking of specimen from fabrics of width less than 70 mm



b) Marking of specimen from fabrics of width from 70 to 250 mm



c) Marking of specimen from fabrics of width above 250 mm and below 450 mm

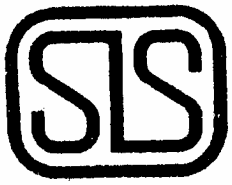
Dimensions in millimetres

FIGURE 2 - Marking of specimens

SLS CERTIFICATION MARK

The Sri Lanka Standards Institution is the owner of the registered certification mark shown below. Beneath the mark, the number of the Sri Lanka Standard relevant to the product is indicated. This mark may be used only by those who have obtained permits under the SLS certification marks scheme. The presence of this mark on or in relation to a product conveys the assurance that they have been produced to comply with the requirements of the relevant Sri Lanka Standard under a well designed system of quality control inspection and testing operated by the manufacturer and supervised by the SLSI *which includes surveillance inspection of the factory, testing of both factory and market samples.*

Further particulars of the terms and conditions of the permit may be obtained from the Sri *Lanka Standards Institution, 17, Victoria Place, Elvitigala Mawatha, Colombo 08.*



Printed at SLSI (Printing Unit)

SRI LANKA STANDARDS INSTITUTION

The Sri Lanka Standards Institution (SLSI) is the National Standards Organization of Sri Lanka established under the Sri Lanka Standards Institution Act No. 6 of 1984 which repealed and replaced the Bureau of Ceylon Standards Act No. 38 of 1964. The Institution functions under the Ministry of Science & Technology.

The principal objects of the Institution as set out in the Act are to prepare standards and promote their adoption, to provide facilities for examination and testing of products, to operate a Certification Marks Scheme, to certify the quality of products meant for local consumption or exports and to promote standardization and quality control by educational, consultancy and research activity.

The Institution is financed by Government grants, and by the income from the sale of its publications and other services offered for Industry and Business Sector. Financial and administrative control is vested in a Council appointed in accordance with the provisions of the Act.

The development and formulation of National Standards is carried out by Technical Experts and representatives of other interest groups, assisted by the permanent officers of the Institution. These Technical Committees are appointed under the purview of the Sectoral Committees which in turn are appointed by the Council. The Sectoral Committees give the final Technical approval for the Draft National Standards prior to the approval by the Council of the SLSI.

All members of the Technical and Sectoral Committees render their services in an honorary capacity. In this process the Institution endeavours to ensure adequate representation of all view points.

In the International field the Institution represents Sri Lanka in the International Organization for Standardization (ISO), and participates in such fields of standardization as are of special interest to Sri Lanka.

Printed at the Sri Lanka Standards Institution, 17, Victoria Place, Elvitigala Mawatha, Colombo 08.