BS 3424 : Part 17 : 1987

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British Standard

Testing coated fabrics

Part 17. Method 20. Method for determination of dimensional stability to water immersion

Essais des supports textiles revêtus
Partie 17. Méthode 20. Méthode de détermination de la stabilité dimensionnelle après immersion dans l'eau

Prüfung beschichteter Gewebe
Teil 17. Verfahren 20. Verfahren zur Bestimmung der Maßbeständigkeit nach Eintauchen in Wasser

IMPORTANT NOTE. It is recommended that this Part be read in conjunction with the information in Part 0 'Foreword and general introduction'.

Foreword

A coated fabric is a composite material comprising a textile structure and a rubber or plastics coating polymer, and as such responds to immersion in cold water in a manner that differs from the response of the textile element of the composite when not constrained by the coating polymer. The net contraction (or expansion) over the surface area usually will be considerably less than that of the uncoated textile. Consequently, as the dimensional changes in percentage terms are somewhat lower than with the unrestrained textile, it has been found necessary to use a specimen size larger than that used for testing the uncoated textile, so that measured differences after immersion are significant.

This Part supersedes method 20 of BS 3424 : 1973.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

1 Scope

This Part of BS 3424 describes a method for determining the dimensional stability of a coated fabric to immersion in cold water.

NOTE. The title of the publication referred to in this standard is given on page 3.

2 Principle

A specimen of coated fabric is conditioned, measured, soaked, dried, reconditioned and remeasured. The dimensional changes so obtained are expressed as percentage values of the original dimensions.

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3 Apparatus and reagents

3.1 *Watertight tray or container* approximately 100 mm deep and of sufficient size to contain the test specimen horizontally without folding.

3.2 *A steel rule* at least 1 m in length, preferably with an engraved, bevelled edge, marked in millimetres.

3.3 *Suitable means of marking reference points*, for example:

(a) *Indelible ink marker*;
(b) *fine threads* of a colour contrasting with that of the test specimen;
(c) *staples.*

3.4 *A flat surface* of sufficient size to enable the test specimen to be laid flat.

3.5 *Two transparent glass or acrylic plates*, each measuring not less than 600 mm × 600 mm.

3.6 *Means for maintaining the standard atmosphere* for conditioning specified in BS 3424 : Part 2.

3.7 *A wetting agent* such as *sodium oleate* or *sodium dioctyl sulphosuccinate.*

4 Test specimens

Cut one test specimen not less than 600 mm × 600 mm with two sides parallel to the longitudinal direction of the roll, avoiding the first and last metre of the roll.

5 Conditioning

Conditioning shall be carried out in the atmosphere specified in method 4 (i.e. BS 3424 : Part 2).

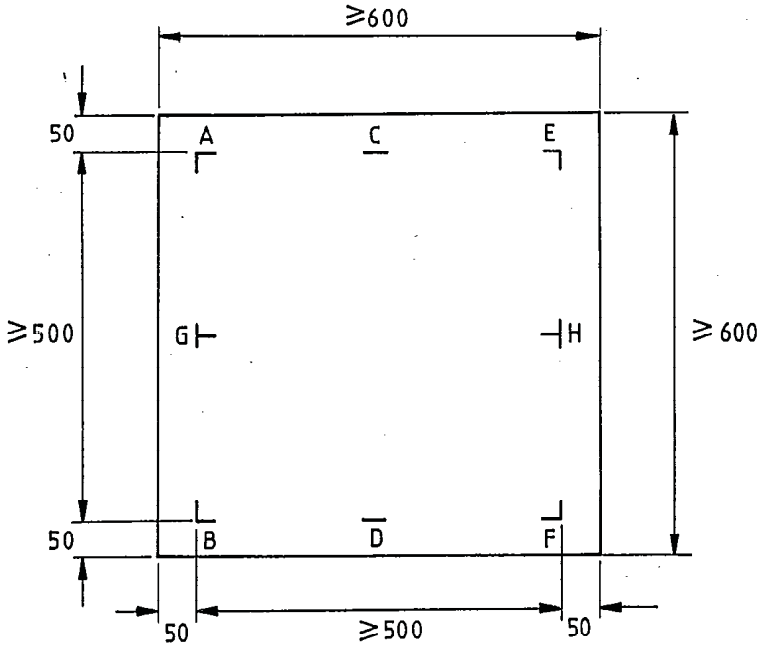
6 Test specimen marking

Place the test specimen on the flat surface (3.4) and make not fewer than three pairs of marks on the textile substrate side of a single face coated fabric or on both sides of a double texture coated fabric, in both the longitudinal and transverse directions, using a suitable means of marking (3.3). The distance between the two marks in each pair shall be not less than 450 mm and no mark shall be less than 50 mm from the edges of the test specimen. The pairs of marks shall be displaced from each other in such a manner as to yield a representative measure of the whole test specimen (see figure 1).

If staples are employed to mark the test specimen, measurements shall be made from the point of entry into the test specimen and indications made on the test specimen which end of the staple is used for measurement.

7 Measuring

Lay the conditioned test specimen, free from tension, on one of the plates (3.5) and place the other plate over the test specimen. Measure and record the distances between corresponding reference marks to the nearest millimetre, taking care to avoid parallax errors.



All dimensions are in millimetres.

Figure 1. Position of marks on test specimen

8 Test procedure

Soak the measured test specimen, lying flat, for 2 h in the tray or container (3.1) containing a 0.2 % solution of a wetting agent (3.7), in distilled water at 20 ± 5 °C or as required by the performance specification.

Ensure that the depth of liquid above the specimen is at least 25 mm. If necessary keep the test specimen submerged, for example by use of small weight pieces, ensuring that these are as small as possible.

After 2 h pour off the liquid and remove the test specimen, without distortion, from the tray, and place it flat on a towel.

Remove excess moisture by lightly pressing another towel on top of the specimen.

Allow the test specimen to dry, unrestrained, on a horizontal flat surface at a temperature of 20 ± 5 °C.

Condition the test specimen in the atmosphere specified in method 4 of BS 3424 : Part 2 until it reaches equilibrium regain.

Carefully replace the test specimen between the plates (3.5).

Measure and record the distances between corresponding reference marks on the test specimen to the nearest millimetre.

9 Calculation and expression of results

9.1 Calculate the mean percentage dimensional change in the longitudinal direction, L, using the following equation:

$$L = \frac{(L_2 - L_1) \times 100}{L_1}$$

where

L_1 is the mean of the original distances between the gauge marks in the longitudinal direction, i.e. distance $\frac{(AB + CD + EF)}{3}$ (in mm) (see figure 1);

L_2 is the mean of the distances between the same marks in the longitudinal direction after completing the test procedure in clause 8 (in mm).

9.2 Calculate the mean percentage dimensional change in the transverse direction, T, using the following equation:

$$T = \frac{(T_2 - T_1) \times 100}{T_1}$$

where

T_1 is the mean of the original distances between the reference marks in the transverse direction, i.e. distance $\frac{(AE + GH + BF)}{3}$ (in mm) (see figure 1);

T_2 is the mean of the distances between the same reference marks in the transverse direction after completing the test procedure in clause 8 (in mm).

10 Test report

The test report shall include the following information:

(a) the description of the coated fabric;

(b) the mean percentage dimensional change in the longitudinal direction;

(c) the mean percentage dimensional change in the transverse direction;

(d) the temperature of the water during immersion as described in clause 8;

(e) a reference to this method of test, i.e. method 20 of BS 3424 : Part 17;

(f) any deviations from the standard test procedure.

Publication referred to

BS 3424 Testing coated fabrics
Part 2 Method 4 Conditioning and selection of test specimens

This British Standard, having been prepared under the direction of the Rubber Standards Committee, was published under the authority of the Board of BSI and comes into effect on 30 January 1987.

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