BS 4682 : Part 4 : 1981

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British Standard Methods of test for

Dimensional stability of textile floor coverings

Part 4. Determination of dimensional changes after immersion in water

Méthodes d'essai relatives à la stabilité dimensionnelle des revêtements de sol textiles
Partie 4. Détermination des variations dimensionnelles après immersion dans l'eau

Prüfung der Maßhaltigkeit von textilen Fußbodenbelägen
Teil 4. Bestimmung von Maßänderungen nach Eintauchen in Wasser

Foreword

This Part of this British Standard has been prepared under the direction of the Fibres, Yarns and Fabrics Standards Committee The original version of BS 4682: Part 3 specified a test method for the determination of dimensional changes of textile floor coverings after exposure to heat and immersion in water This composite method is now considered to be totally unrealistic, and consequently the present revision consists of two entirely separate test methods, Part 3 for exposure to heat and Part 4 for immersion in water. The International Organization for Standardization (ISO) has published ISO 2551-1972 'Machine-made textile floor coverings—Determination of dimensional changes in varying moisture conditions', which is similar in principle to the original British Standard, the two treatments remaining together within a single test method

The aim of this Part of BS 4682 is to determine the effects on the dimensions of textile floor coverings of water at room temperature; the two hour soaking and the use of a wetting agent are to ensure thorough wetting out The committee responsible for this standard also considered the effects of water at a higher temperature, for example as used in hot water cleaning Work showed that in effect this water temperature was unlikely to exceed 50 °C Other work demonstrated that immersion in water at temperatures between 60 °C and 80 °C followed by cooling to ambient temperature produced results that were indistinguishable from immersion in cold water For these reasons immersion in water at room temperature alone is used in this standard

1. Scope

This Part of this British Standard describes a method for determining the dimensional changes that take place after textile floor coverings have been immersed in water and subsequently dried in the standard atmosphere for testing, and is applicable to textile floor coverings of all types.

2. References

The titles of the standards publications referred to in this standard are listed on the inside back cover

3. Principle

Comparison is made between measurements of dimensions on a test specimen after conditioning in the standard atmosphere for testing, then after being immersed in water, and then after having been reconditioned in the standard atmosphere for testing.

4. Apparatus

The following apparatus is required

4.1 *Container* of dimensions at least 20 mm greater than the test specimen in each direction and deep enough to accommodate the submerged test specimen

4 2 *Rigid perforated tray* of a sufficient size to carry the test specimen.

4.3 *An efficient wetting agent**.

4.4 *A means* of ensuring a forced draught of ambient air, if required

4.5 *Apparatus* for determining dimensions as required in BS 5920.

5. Atmosphere for conditioning and testing

The atmosphere required for conditioning and testing is the standard atmosphere for testing as defined in BS 1051, i e an atmosphere of relative humidity 65 ±2 % and of temperature 20 ±2 °C.

6. Test specimens

6.1 Sampling. Select the specimens to be as representative as possible of the bulk, where appropriate by adopting the standard procedure described in BS 4664

6.2 Number and dimensions. Take at least three test

* For example, sodium dioctyl sulphosuccinate, or dodecyl benzene sodium sulphonate

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specimens, each measuring not less than 250 mm × 250 mm, noting the direction of manufacture where possible

6.3 Preparation. Lay out the specimens flat, singly and with the use-surface uppermost in the standard atmosphere for testing for at least 48 h and until they reach constant mass, which is defined as no change in mass greater than 1 % when determined at hourly intervals over a period of 3 h

7. Test procedure

Make the first measurements (l_0) on the fully conditioned specimen in accordance with BS 5920

Place the specimen on the rigid perforated tray with the use-surface uppermost, and immerse it laid flat in water to which has been added 0 5 g/l of an efficient wetting agent (calculated on active matter content) at a temperature of 20 ± 2 °C Allow the specimen to soak in the water for 2 h, ensuring that it remains submerged throughout Lift the tray with the specimen from the water taking precautions to avoid distorting its shape Leave to drain in a horizontal position for 5 ± 1 min* Place the specimen on the measuring board and again measure the dimensions (l_1) in accordance with BS 5920.

Dry the specimen on the tray in the standard atmosphere for testing, as described in clause **5**, using a forced air draught if necessary, until constant mass is again obtained as in **6.3** Measure the dimensions (l_2) in accordance with BS 5920

Note the final appearance of the specimen

8. Calculation and expression of results

Calculate the averages of the measurements obtained for all specimens in the direction of manufacture and for those in the direction at right angles to this for each of the stages referred to in clause **7**

Calculate in each case, to the nearest 0 05 %, the average percentage dimensional change after immersion in water, and subsequently after drying, as follows

$$\frac{(L_1 - L_0)}{L_0} \times 100 \text{ and } \frac{(L_2 - L_0)}{L_0} \times 100$$

where

L_0 is the average of the initial measurements (l_0) and

L_1 and L_2 are the averages of measurements at the subsequent stages (l_1 and l_2)

Indicate shrinkage by a minus sign and expansion by a plus sign.

11. Test report

The report shall state:

(a) that the test procedure was conducted in accordance with this British Standard method,

(b) the individual values, for each specimen, of the measurements made in the direction of manufacture and in the direction at right angles to the direction of manufacture, together with the results obtained as described in clause **8** and the statement that the average percentage dimensional changes are quoted to the nearest 0 05 %;

(c) a description of the final appearance of the test specimens,

(d) an indication of the type of measuring instrument used,

(e) details of any deviations from the standard test procedure.

* To assist in the draining of products, especially those with impervious backings, a second rigid perforated tray may be placed on the top of the specimen which can then be turned over to allow more rapid loss of water.