Sri Lanka Standard

METHOD FOR TESTING OF PAPER AND BOARD FOR BURSTING STRENGTH AFTER IMMERSION IN WATER FOR A SPECIFIED PERIOD

(First Revision)

SLS 476 : 1999
ISO 3689 : 1983

Gr. A

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NATIONAL FOREWORD

This Sri Lanka Standard was approved by the Sectoral Committee on Paper and Board and was authorized for adoption and publication by the Council of the Sri Lanka Standards Institution on 1999.-.08.-.19.....

This Sri Lanka standard was first published in 1979 based on ISO 3689 Paper and Board - Determination of bursting strength after immersion in water for a specified period, which has been revised in 1983.

Terminology and conventions

In this revision the text of the International Standard has been accepted as suitable for publication, without deviation as a Sri Lanka Standard. However, certain terminology and conventions are not identical with those used in Sri Lanka Standards, attention is therefore drawn to the following:

a) Wherever the words 'International Standard/Publication' appear, referring to this standard, they should be interpreted as "Sri Lanka Standard".

b) The comma has been used throughout as a decimal marker. In Sri Lanka Standards it is the current practice to use a full point on the baseline as the decimal marker.

Wherever page numbers are quoted, they are ISO page numbers.

Cross - references International Standards	Corresponding Sri Lanka Standards
ISO 186 Paper and board - Sampling to determine average quality.	**SLS 808** Method of sampling paper and board.
ISO 187 Paper, board and pulps	**SLS 374** Standard atmospheric conditions for conditioing and testing

ISO 2758 Paper - Determination of bursting strength.

ISO 2759 Board - Determination of bursting strength.

SLS 678 Method of testing paper for bursting strength.

SLS 680 Method of testing of board for bursting strength.

Paper and board — Determination of bursting strength after immersion in water

1 Scope and field of application

This International Standard specifies a method for the determination of the wet strength of paper and board by measuring its bursting strength after it has been immersed in water for a specified period.

In principle, the method is applicable to most kinds of paper and board, provided that an appropriate immersion time is agreed between the interested parties.

Different results may be found if the sample is re-tested after a period of time.

2 References

ISO 186, *Paper and board — Sampling for testing.*

ISO 187, *Paper and board — Conditioning of samples.*

ISO 2758, *Paper — Determination of bursting strength.*

ISO 2759, *Board — Determination of bursting strength.*

3 Definitions

For the purpose of this International Standard, the following definitions apply:

3.1 bursting strength after immersion for X hours: The limiting resistance offered by a single sheet of paper or board, after immersion in water for X hours, to a uniformly distributed pressure applied at right angles to its surface up to the point at which it breaks, under the specified conditions of test.

3.2 bursting strength retention after immersion for X hours: The percentage ratio of the bursting strength of a single sheet of paper or board after immersion in water for X hours to that of the same paper or board in the dry state measured under the specified conditions of test.

4 Principle

Immersion in water for the appropriate period of a test piece of the paper or board to be tested and determination of the bursting strength.

5 Apparatus and material

5.1 Burst testing apparatus, complying with the requirements of ISO 2758 or ISO 2759.

5.2 Thermostatically controlled water tank, large enough to hold the test pieces in a vertical position.

5.3 Water for soaking

Use distilled or deionized water.

6 Sampling

Specimens shall be selected in accordance with ISO 186.

7 Test pieces

7.1 Preparation

Test pieces shall be prepared as specified in ISO 2758 or ISO 2759. Ten test pieces are normally required for the wet bursting test; if multiple bursting is necessary (see 8.3), a larger number of test pieces is required. A duplicate set shall be prepared for the dry bursting test, if required.

7.2 Conditioning

For wet testing, conditioning is not generally necessary. If a dry bursting strength test is also required, the test pieces shall be conditioned as specified in ISO 187.

8 Procedure

8.1 Immersion

Immerse the test pieces, well separated from one another and from the bottom and sides of the tank, in the water (5.3) at one of the temperatures specified in ISO 187[1], the long side of each test piece being vertical. Immerse the upper edges 25 ± 2 mm below the surface of the water. Corrugated fibreboard shall be immersed with the flutes vertical, in order to avoid trapping air which could affect the amount of water absorbed during immersion. After immersion for the specified period, remove the test pieces from the water, lightly blot the test pieces to remove surplus water and then immediately test them.

8.2 Immersion times

The immersion time used depends on the material and the purpose to which it is to be put and shall be agreed by the interested parties. Typical immersion times are 1 h ± 1 min for papers, 2 h ± 2 min and 24 h ± 15 min for boards.

8.3 Determination

After immersion of the test pieces, carry out the test in accordance with ISO 2758 or ISO 2759, unless the bursting strength after wetting is less than 35 kPa[2]; if the paper is weaker, burst sufficient test pieces together to obtain a reading above 35 kPa.

8.4 Number of tests

Carry out five replicate tests with the top side of the paper or board uppermost and five with the wire side uppermost. Repeat with the same number of test pieces if the dry bursting strength is required.

9 Expression of results

The results may be expressed as one of the following:

a) mean bursting strength, P, in kilopascals, after wetting for X h, given by the formula

$$P = \frac{B}{N}$$

where

B is the mean bursting strength, in kilopascals;

N is the number of test pieces burst together (see 8.3).

b) mean burst index after wetting for X h (burst index is defined in ISO 2758 and ISO 2759);

c) mean bursting strength retention after wetting for X h [for example, the results as in a) or b) expressed as a percentage of the corresponding mean value in the conditioned state].

10 Precision

Insufficient information is available at present to quote details.

11 Test report

The test report shall include the following particulars:

a) a reference to this International Standard;

b) the type of bursting tester used;

c) the mean results (in accordance with clause 9);

d) the minimum and maximum values;

e) the immersion time, in hours;

f) in the case of multiple sheet testing, the number of test pieces used;

g) the standard deviation;

h) the temperature of the water used for immersion of the test pieces;

j) details of any items regarded as optional, or not specified in this International Standard or in the International Standards to which reference is made, and any other features that may have affected the results.

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1) Preferred temperature: 23 ± 1 °C.

2) 1kPa = 1 kN/m²

1 kgf/cm² = 98,1 kPa

1 lbf/in² = 6,89 kPa