SLOVENSKI STANDARD
SIST EN 12332-2:2003

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Gumirane ali plastificirane tekstilije - Ugotavljanje preboja moļi - 2. del: Hidravliļna metoda

Rubber- or plastic-coated fabrics - Determination of bursting strength - Part 2: Hydraulic method

Mit Kautschuk oder Kunststoff beschichtete Textilien - Bestimmung der Berstfestigkeit - Teil 2: Hydraulisches Verfahren

Supports textiles revetus de caoutchouc ou de plastique - Détermination de la résistance a l'éclatement - Partie 2: Méthode hydraulique

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59.080.40	Povrģinsko prevleļene tekstilije	Coated fabrics

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English version

Rubber- or plastic-coated fabrics - Determination of bursting strength - Part 2: Hydraulic method

Supports textiles revêtus de caoutchouc ou de plastique - Détermination de la résistance à l'éclatement - Partie 2: Méthode hydraulique

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This European Standard was approved by CEN on 3 August 2002.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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Contents

Foreword

This document (EN 12332-2:2002) has been prepared by Technical Committee CEN /TC 248, "Textiles and textiles products", the secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by May 2003, and conflicting national standards shall be withdrawn at the latest by May 2003.

EN 12332 "*Rubber- or plastic-coated fabrics – Determination of bursting strength*" consists of two Parts:

- *Part 1: Steel ball method.*

- *Part 2: Hydraulic method.*

NOTE Persons using this standard should be familiar with normal laboratory practice. This standard does not purport to address all of the safety problems, if any, associated with its use. It is the responsibility of the user to establish appropriate safety and health practices and to ensure compliance with any national regulatory conditions.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This Part of this European Standard specifies a method for determining the bursting strength of coated fabrics using a forcing fluid and a diaphragm machine.

2 Normative references

This European standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN ISO 2231, *Rubber- or plastics - coated fabrics — Standard atmospheres for conditioning and testing (ISO 2231: 1989)*

EN ISO 2286-1, *Rubber- or plastics-coated fabrics — Determination of roll characteristics — Part 1: Methods for determination of length, width and net mass (ISO 2286-1:1998)*

3 Principle

A circular test specimen and an underlying elastic diaphragm are clamped around their edges over the top of a chamber. The specimen is gradually stretched into a dome shape by forcing fluid into the chamber at a constant rate. The pressure of the fluid at failure of the specimen and the distension, measured in terms of the height of the dome are recorded.

4 Apparatus and materials

A diaphragm machine[1)] with:

4.1 A rigid chamber filled with fluid and having a circular aperture of diameter equal to, or up to 0,5 mm greater than the diameter of the circular free area.

4.1.1 A circular elastic diaphragm mounted over the aperture in the chamber. The diaphragm and its seal with the chamber shall be able to withstand pressures greater than the burst strength of the material being assessed. The modulus of elasticity of the diaphragm shall be as low as possible, a value of 5 % of the modulus of the test specimen is recommended.

4.1.2 A means of clamping the test specimen around its edge, above the diaphragm and over the aperture in the chamber, leaving a central circular free area of diameter (113 ± 1) mm or preferably (35,7 ± 0,5) mm.

The design of the clamping system shall ensure that the test specimen does not slip during the test and shall neither stretch nor compress the central area of the specimen as it is clamped.

The following has been found to be suitable; six concentric grooves 2,5 mm apart and 1,25 mm deep, cut into the lower clamping surface so that the ridges between the groves have 0,5 mm radius tops.

1) Often called " Mullen type machine".

The upper ring is divided into 16 identical segments each of which is clamped against the body with a 25 mm diameter screw. These are tightened with a torque wrench to press the upper ring segments against the lower ring, and to clamp the sample. The complete upper ring has an internal diameter of 113 mm or 37,5 mm. The upper segments have groves that interlock with the lower ring ridges.

NOTE The areas corresponding to diameters of 113 mm and 37,5 mm are 100 cm^2 and 10 cm^2 respectively.

4.1.3 A means of pumping the additional fluid into the chamber at a constant rate to produce a pressure of up to 5 000 kPa.

4.1.4 A method of recording the maximum pressure of the fluid in the chamber during the test to 1 % of the maximum pressure range.

4.1.5 A method of measuring distension of the test specimen in terms of the height of the dome to the nearest 0,5 mm.

4.2 A cutting device, such as a press knife, for cutting test specimens of a suitable size for the clamping system.

5 Test specimens

5.1 At any location in the length of the roll, and in the usable width (defined in EN ISO 2286-1), select:

— Option 1: Five individual test specimens of a sufficient size to be clamped firmly in the test machine.

— Option 2: A single test specimen which is wide and long enough for at least five areas to be clamped and tested in turn.

5.2 In the case of uncut sheet material, the test positions shall be from a range of locations across the full usable width and length of the material avoiding areas that are within 50 mm of any manufactured edge.

6 Conditioning

6.1 Condition the test specimens in one of the atmospheres defined in EN ISO 2231 for at least 16 hours before testing and test the specimens in this atmosphere.

6.2 If tests are to be made on wet test pieces, do not condition them but totally immerse them either for 1 h ± 5 min, 6 h ± 15 min, or 24 h ± 15 min in an aqueous solution of non ionic wetting agent of concentration not more than a volume fraction of 0,1%, with a volume ratio of approximately 20:1, at temperature equilibrium with a standard atmosphere of EN ISO 2231.

Rinse by immersion in the ionised or distilled water at the same temperature using a liquor ratio of minimum 20:1.

Remove the specimen and keep wet until ready to test, then blot and test immediately.

7 Procedure

7.1 Ensure that the test machine is reset, with the diaphragm flat and the maximum pressure indicator set to zero.

7.2 Tightly clamp one of the test specimens into the machine; for strong materials a very high clamping force is necessary whereas with weak, thin materials care is required to avoid cutting into the specimen. Delicate materials shall be tested with cotton canvas rings placed against the clamping surfaces of the steel rings. A diaphragm correction is made for whatever materials are used for the diaphragm, or are used to support it. Set the distension measuring device to zero.

NOTE For fabrics coated on both faces, an agreement on the face to be tested should be achieved; otherwise, it is recommended to test both faces and indicate this deviation in the test report. If the uncoated face is the external face in use, the testing authority should be especially asked to test the material with the uncoated surface outside and this deviation noted in the report.

7.3 Observe the upper surface of the test specimen and gradually force fluid into the chamber at a constant rate until either the test specimen fails or the specified maximum burst pressure is reached.

7.4 If possible use a fluid flow rate which reaches the desired end point of the test in a time of 30 s ± 10 s.

7.5 Examine the test specimen and record the direction of the failure. If the failure occurred near to or at the clamped edge of the test specimen or the test specimen slipped in the clamp then discard the results and repeat the test with another test specimen or at another test position.

7.6 Record the maximum pressure of the fluid to the nearest 1 % of the maximum pressure range and the distension of the test specimen to the nearest 0,5 mm.

7.7 Release fluid from the chamber until the diaphragm is flat and remove the test specimen.

7.8 Repeat the procedure in 7.1 to 7.7 for the other four test specimens or test positions.

7.9 Calculate the arithmetic mean of the five maximum distensions to the nearest 0,5 mm.

7.10 Fully tighten the clamp without a test specimen but with any additional supporting material that was used with the test specimens. Using the same rate of fluid flow that was used in the testing procedure pump the test chamber with fluid until the mean bursting distension of the five test specimens, calculated above, is reached. Record this pressure of the fluid at this distension as (P_0).

7.11 Calculate the arithmetic mean of the five maximum pressures, recorded for the test specimen. Subtract the pressure (P_0) from this value to correct the effect of the modulus of the diaphragm on the burst strength of the test specimens.

8 Test report

Include in the test report the following particulars:

a) the description of the coated fabric;

b) the conditioning method and the time of exposure, include whether or not the specimens were tested wet or dry;

c) the testing environment that the tests were carried out in;

d) the reference to this method EN 12332-2:2002;

e) the diameter of the exposed area of the test specimen - 37,5 mm or 113 mm;

f) the bursting pressure in kilopascals as the mean of the six results obtained;

g) the bursting distension in millimetres as the mean of six results obtained;

h) a description of the failure and the number of tests associated with each;

i) details of any deviations from this test method.