

Textile floor coverings — Determination of resistance to damage at cut edges using the modified Vettermann drum test

The European Standard EN 1814 : 1997 has the status of a
British Standard

ICS 59.080.60

National foreword

This British Standard is the English language version of EN 1814 : 1997. It supersedes BS ISO 10833 : 1992, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee PRI/3, Textile floor coverings, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this committee can be obtained on request to its secretary.

When the standard was at the Formal Vote stage, the UK voted against it because it observed that damage occurred to the retaining segments of the drum during the test and it considers that this is a major area of concern for users of the test. The UK also considers that a precision statement is required, based on experimental results obtained with the test.

Cross-references

The British Standards which implement international or European publications referred to in this document may be found in the BSI Standards Catalogue under the section entitled 'International Standards Correspondence Index', or by using the 'Find' facility of the BSI Standards Electronic Catalogue.

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Summary of pages

This document comprises a front cover, an inside front cover, the EN title page, pages 2 to 6, an inside back cover and a back cover.

Amendments issued since publication

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English version

Textile floor coverings — Determination of resistance to damage at cut edges using the modified Vettermann drum test

Revêtements de sol textiles — Détermination de la résistance des joints par l'essai au tambour Vettermann modifié

Textile Bodenbeläge — Bestimmung der Schnittkantenfestigkeit durch modifizierte Trommelprüfung nach Vettermann

This European Standard was approved by CEN on 25 October 1997.

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart 36, B-1050 Brussels

Foreword

This European Standard has been prepared by Technical Committee CEN/TC 134, Resilient and textile floor coverings, 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 1998, and conflicting national standards shall be withdrawn at the latest by May 1998.

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, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This European Standard specifies a method to determine the susceptibility of textile floor coverings to mechanical damage at cut edges.

It is applicable to all textile floor coverings both as sheet materials and as tiles.

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.

EN 1471	<i>Textile floor coverings — Assessment of changes in appearance</i>
EN 20139	<i>Textiles — Standard atmosphere for conditioning and testing</i>
ISO 1957	<i>Machine-made textile floor coverings — Sampling and cutting specimens for physical tests</i>
ISO/TR 10361 : 1990	<i>Textile floor coverings — Production of changes in appearance by means of Vettermann drum and hexapod tumbler testers</i>

3 Definitions

For the purposes of this European Standard the following definitions apply.

3.1 delamination

The separation of the use-surface and/or foundation/primary substrate of a textile floor covering from the secondary substrate or foam backing.

3.2 fraying

The loss of pile or substrate material of a textile floor covering from a cut edge.

3.3 tufting out

The loss of tufts from the use-surface of a textile floor covering.

3.4 sprouting

The release and appearance during use of extra long tuft legs which were accidentally trapped within the pile of a textile floor covering during manufacture.

3.5 laddering; shooting

The loss of consecutive loops of the same column from the use-surface of a textile floor covering.

4 Principle

A metal ball with six rubber studs rolls freely inside a rotating drum which is lined with the textile floor covering specimens.

On sheet materials, a cut is made along the length of the specimens at an acute angle such that the cut edges are stressed in the test.

Tiles are put together so that the original edges of the tiles form the joint which is stressed in the test.

After the test, the appearance of the fatigued cut edges is assessed.

5 Apparatus

5.1 Drum tester, conforming to **5.1.1** of ISO/TR 10361 : 1990, including a vacuum cleaner with an air change rate at the nozzle of 25 l/s to 40 l/s.

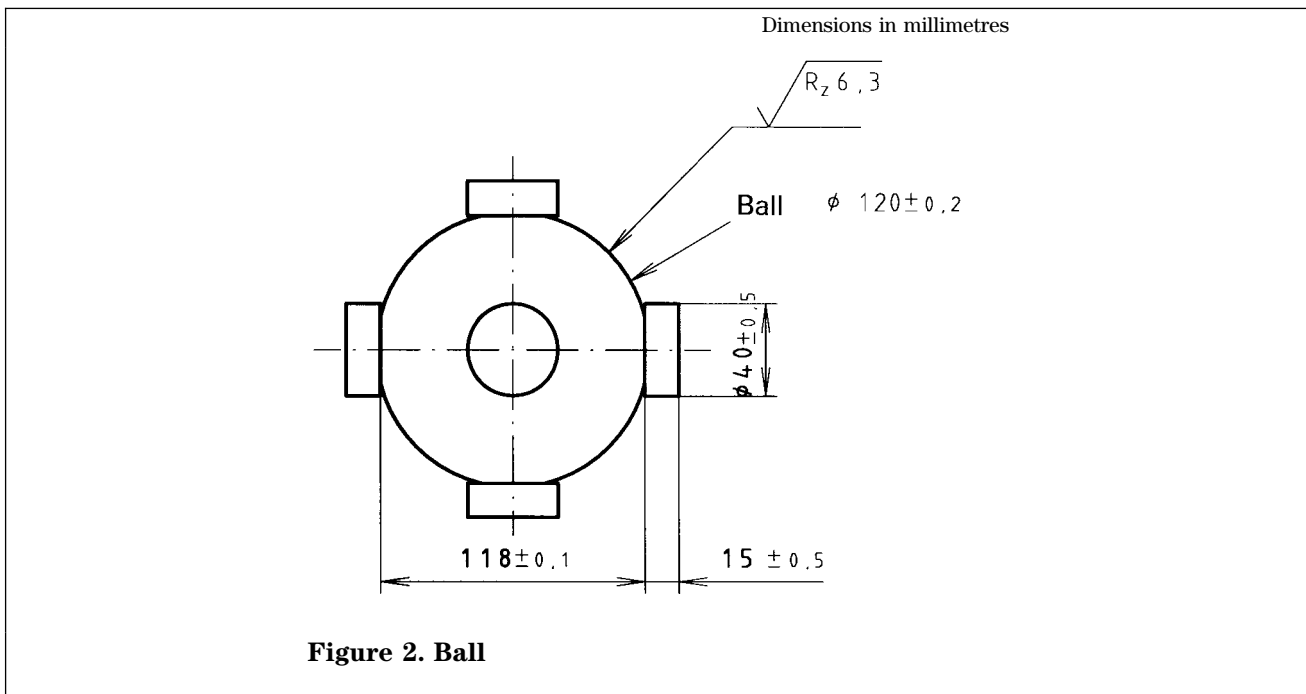
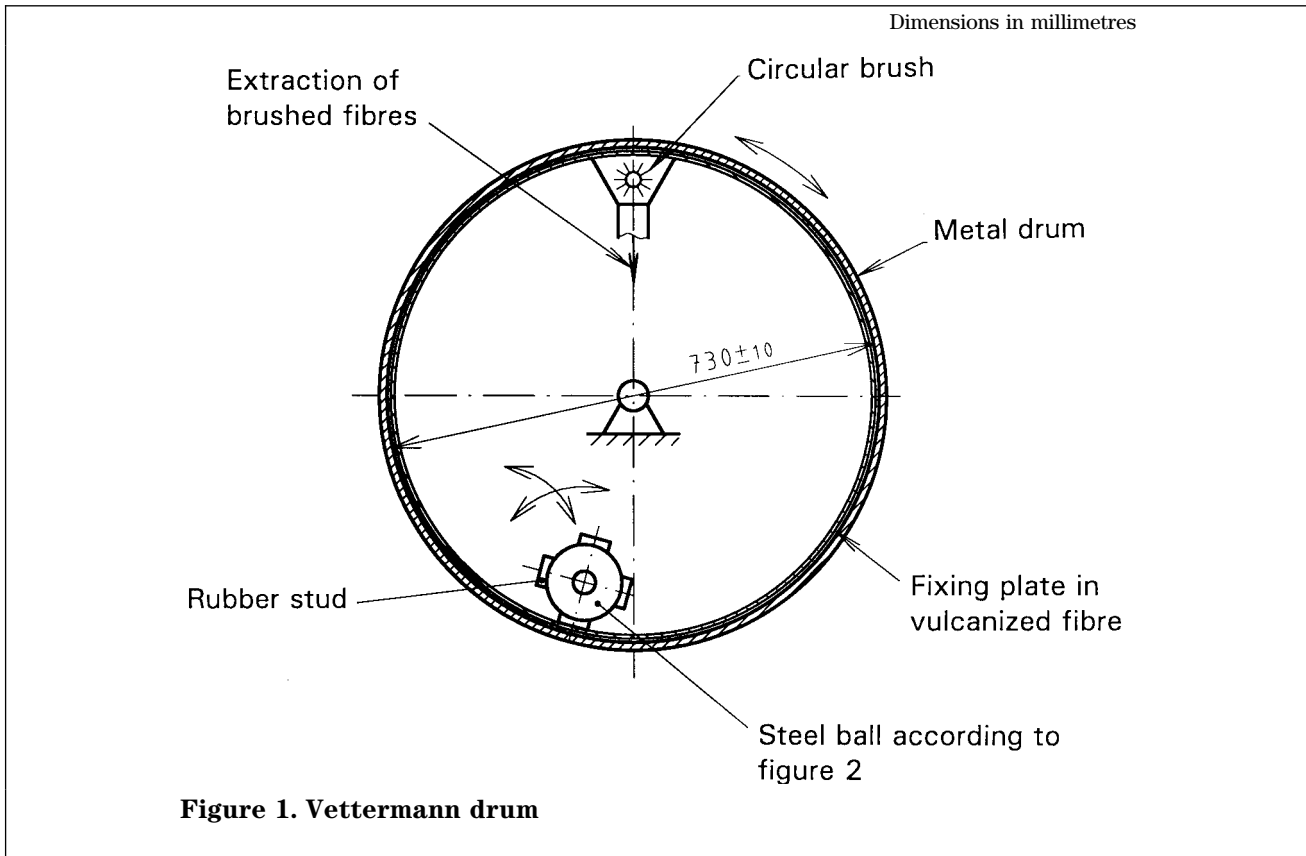
5.2 Metal ball, fitted with six cylindrical rubber studs equally spaced from each other on the surface of the ball.

The mass of the ball without rubber studs shall be $7000 \text{ g} \pm 100 \text{ g}$ and the diameter of the ball shall be $120 \text{ mm} \pm 0,2 \text{ mm}$.

5.3 Rubber studs, conforming to ISO/TR 10361, which shall be replaced before each test.

5.4 External vacuum cleaner, upright type with rotating brush.

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6 Sampling and preparation of specimens

Sampling shall be carried out in accordance with ISO 1957.

6.1 Sampling

6.1.1 Sheet materials

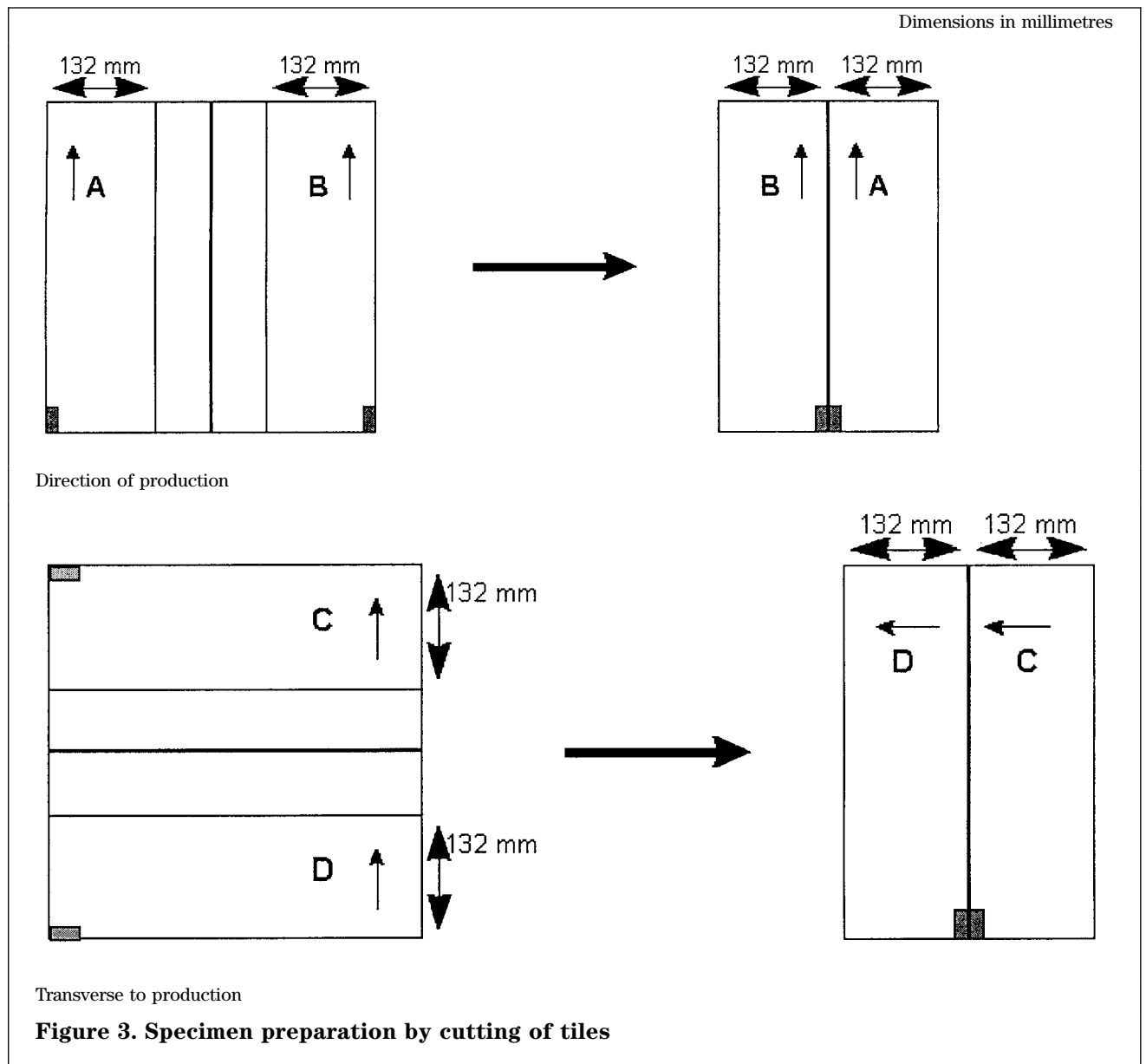
Prepare four specimens approximately 570 mm long (in the direction of manufacture) and approximately 265 mm wide. The longitudinal edge of the specimens shall be parallel to the direction of manufacture.

6.1.2 Tiles

Take at least four tiles of dimensions 500 mm × 500 mm or of lesser dimensions.

Before cutting, mark the corners of the tiles and the direction of manufacture on the back of the specimen as shown in figure 3.

From the tiles cut a total of eight specimens of width approximately 132 mm, as shown in figure 3.



6.2 Preparation of specimens

6.2.1 Sheet materials

Make a cut in the centre of the specimens, making an acute angle with the direction of manufacture (see figure 4). The cut shall cross at least one pile row. The cut shall be made with a sharp cutting tool (carpet knife or a press cutter), cutting from the pile side through the pile and backing.

Connect the two sides of the cut specimens on the back with a single-sided adhesive tape of at least 50 mm width. Apply the adhesive tape firmly. Ensure that the two edges are as close as possible.

Attach double-sided adhesive tape along the entire specimen length and positioned over the single-sided tape.

Cover both ends of the specimens with a 50 mm wide single-sided adhesive tape to prevent fraying during the test.

6.2.2 Tiles

Prepare four specimens of each floor covering as shown in figure 3, two to test the edges in the direction of manufacture (pieces A and B) and two in the transverse direction (pieces C and D).

Make up four composite test specimens with the original cut edge in the centre.

Position the edges in the centre of the specimen as close to each other as possible and fix in position with the single-sided adhesive tape.

Attach double-sided adhesive tape along the entire specimen length and position over the single-sided tape.

7 Atmosphere for conditioning and testing

Condition the specimens (face up) in the standard atmosphere for textiles, as defined in EN 20139, for at least 24 h. Conduct the test in this atmosphere.

8 Procedure

Remove the protective layer from the double-sided adhesive tape on the back of the specimen. Fix the four specimens on the inside of the drum with the use-surface towards the centre of the drum.

In placing the specimens, ensure that the sides lie within the retaining segments. Insert the specimens between the retaining segments and clamp firmly.

Place the ball (5.2) in the drum.

Set the revolution counter to 11 000 cycles and switch the machine on.

Operate the vacuum continuously throughout the test.

After the test, clean the specimens with the external vacuum cleaner, making four passes in each direction along the length of the specimen, the last pass being in the direction of pile lay.

9 Assessment

Place the specimen on the rotating observation table as defined in EN 1471 and use the observation conditions specified in the standard. Check for degradation of the cut edges by the fatiguing action in the test. Note the type of damage as defined in clause 3, in particular if the fibres or the yarns are pulled out on to the surface, and, if so, from which part of the floor covering.

Check by close inspection:

- the number of tufts removed from one or several rows of pile (cut pile products);
- the number of yarns pulled out with a length greater than one loop (loop pile products);
- whether there has been delamination, and, if so, the length and width of the delaminated area.

10 Test report

The test report shall state:

- reference to this standard, i.e. EN 1814;
- identification of the product tested, including the type, origin, manufacturer's reference number;
- sampling details;
- the result of the test, as in clause 9;
- details of any deviations from this standard procedure which might have an influence on the results.

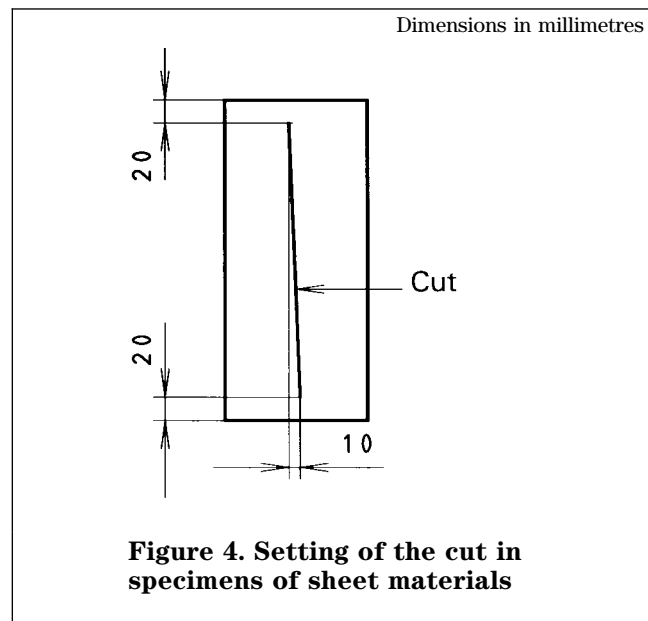


Figure 4. Setting of the cut in specimens of sheet materials

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