

English Version

## Resilient floor coverings - Specification for floor panels for loose laying

Revêtements de sol résilients - Spécification des panneaux de plancher pour pose flottante

Elastische Bodenbeläge - Spezifikation für Fußbodenpaneele für lose Verlegung

This European Standard was approved by CEN on 27 February 2010.

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## Foreword

This document (EN 14085:2010) has been prepared by Technical Committee CEN/TC 134 “Resilient, textile and laminate 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of an identical text or by endorsement, at the latest by October 2010, and conflicting national standards shall be withdrawn at the latest by October 2010.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 14085:2003.

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



1 Scope

This European Standard specifies requirements and test methods for floor panels, which have surface layers consisting of resilient floor covering. The floor panels are considered suitable for domestic and commercial levels of use.

This European Standard is not applicable to floor panels that are subject to frequent wetting, such as bathrooms, laundry rooms and saunas.

This European Standard also specifies the requirements for marking and packaging.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references only the edition cited applies. For undated references the latest edition of the referenced document (including any amendments) applies.

EN 309:2005, *Particleboards – Definition and classification*

EN 316:2009, *Wood fibre boards – Definition, classification and symbols*

EN 424, *Resilient floor coverings – Determination of the effect of simulated movement of a furniture leg*

EN 425, *Resilient and laminate floor coverings – Castor chair test*

EN 427, *Resilient floor coverings – Determination of the side length, squareness and straightness of tiles*

EN 428, *Resilient floor coverings – Determination of overall thickness*

EN 548, *Resilient floor coverings – Specification for plain and decorative linoleum*

EN 649, *Resilient floor coverings – Homogeneous and heterogeneous polyvinyl chloride floor coverings – Specification*

EN 651, *Resilient floor coverings — Polyvinyl chloride floor coverings with foam layer – Specification*

EN 652, *Resilient floor coverings – Polyvinyl chloride floor coverings with cork-based backing – Specification*

EN 653, *Resilient floor coverings – Expanded (cushioned) polyvinyl chloride floor coverings – Specification*

EN 655, *Resilient floor coverings – Tiles of agglomerated composition cork with polyvinyl chloride wear layer – Specification*

EN 669:1997, *Resilient floor coverings – Determination of dimensional stability of linoleum tiles caused by changes in atmospheric humidity*

EN 685, *Resilient, textile and laminate floor coverings - Classification*

EN 1817, *Resilient floor coverings – Specification for homogeneous and heterogeneous smooth rubber floor coverings*

EN 12104, *Resilient floor coverings – Cork floor tiles – Specification*

EN 12199, *Resilient floor coverings – Specifications for homogeneous and heterogeneous relief rubber floor coverings*



EN 12466:1998, *Resilient floor coverings – Vocabulary*

EN 13845, *Resilient floor coverings – Polyvinyl chloride floor coverings with particle based enhanced slip resistance – Specification*

EN 14565, *Resilient floor coverings – Floor coverings based upon synthetic thermoplastic polymers – Specification*

ISO 24336, *Laminate floor coverings – Determination of thickness swelling after partial immersion in water*

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 309:2005, EN 316:2009, EN 12466:1998 and the following apply.

#### 3.1

##### **floor panel**

product generally of rectangular form consisting of a compact layer of a substrate and a surface layer of a resilient floor covering

#### 3.2

##### **substrate**

core material of the floor panel, which is tongued and grooved or otherwise constructed to allow the panels to be assembled together using an appropriate glue or by other assembling techniques.

NOTE 1 The substrate might include a backing.

NOTE 2 The substrate is generally a particleboard, as defined in EN 309, or a Medium Density Fibreboard or High Density Fibreboard (MDF or HDF) as defined in EN 316.

#### 3.3

##### **surface layer**

upper decorative layer of one of the specified resilient floor coverings, which is bonded to the substrate directly or as total product and is intended to be the visible side when the floor is installed.

### 4 Requirements

#### 4.1 General requirements for the floor panels

All classes of floor panels including the surface layer shall conform to the requirements specified in Table 1 when tested in accordance with the test methods specified in Table 1.

Table 1 — General requirements for the floor panels

Property	Requirement	Test method
<b>Dimensions measured at the surface layer</b>  <b>Square panels</b> Side length            % <b>Rectangular panels</b> Width                    % Length                  mm	<b>Maximum deviation from the nominal</b>  ± 0,10, with max. 0,5 mm  ± 0,10, with max. 0,5 mm  max. 2,0	EN 427 <sup>a</sup>
<b>Overall thickness</b>  Average                   mm  Individual values        mm	  Nominal ± 0,25  Maximum deviation from the average ± 0,30	EN 428
<b>Squareness</b> mm	≤ 0,50	EN 427
<b>Straightness measured at the surface layer</b> mm	≤ 0,30	EN 427
<b>Flatness of the panel</b>  <b>Length</b> Concave / convex                % of the length  <b>Width</b> Concave / convex                % of the width	  ≤ 0,50 / ≤ 1,0  ≤ 0,10 / ≤ 0,15	Annex A
<b>Openings between panels</b>  Average                   mm Individual values        mm	  ≤ 0,15 ≤ 0,20	Annex B
<b>Height difference between panels</b> <sup>b</sup>  Average                   mm  Individual values        mm	  ≤ 0,15 ≤ 0,20	Annex B
<b>Dimensional variation caused by changes in atmospheric humidity %</b>	≤ 5	Annex C / EN 669
<sup>a</sup> For length > 0,5 m a metal ruler may be used. <sup>b</sup> Only to be tested when required for the assembling system.		



## 4.2 Resilient floor coverings

The surface layer shall comply with the relevant standards below:

- linoleum floor covering as defined in EN 548;
- rubber floor covering as defined in EN 1817 and EN 12199;
- polyvinyl chloride floor covering as defined in EN 649, EN 651, EN 652, EN 653 and EN 655;
- cork floor covering as defined in EN 12104;
- synthetic thermoplastic polymer floor covering as defined in EN 14565;
- polyvinyl chloride floor coverings with particle based enhanced slip resistance as defined in EN 13845.

## 4.3 General requirements for the surface layer

### 4.3.1 General

All classes of floor panels with a resilient surface shall conform to the appropriate general requirements as specified below.

### 4.3.2 Residual indentation

The residual indentation shall be in accordance with the requirements established in the corresponding specification standard as listed in 3.3 taking into account the surface or wear layer thickness classes in that same standard in relation to Table 2.

### 4.3.3 Colour fastness to artificial light

The colour fastness to artificial light shall be in accordance with the requirements for the surface or wear layer established in the corresponding specification standard as listed in 3.3.

### 4.3.4 Hardness of rubber surface

The hardness of a surface consisting of rubber floor covering as specified in EN 1817 shall be in accordance with the requirement in that same standard.









## 4.4 Classification requirements

### 4.4.1 General

The floor panels shall be classified in accordance with EN 685. The panels shall conform to the requirements of Table 2 for their class, regardless of the type of surface layer that they have.

**NOTE** The requirements for each class are related to the effect of a furniture leg and castor chair and the thickness swelling after partial immersion in water.

Table 2 — Classification requirements for floor panels

Class	Symbol	Intensity of use	Effect of a furniture leg <sup>a</sup>	Effect of a castor chair	Thickness swelling floor panel
		Domestic			
21		Moderate/Light	No Requirement	No Requirement	≤ 20 %
22		General/Medium			
22+		General			
23		Heavy			
		Commercial			
31		Moderate	No damage shall be visible when tested with foot type 0	No disturbance to the surface other than slight change in appearance and no delaminating shall occur	≤ 18 %
32		General			≤ 15 %
33 <sup>b</sup>		Heavy			
34 <sup>b</sup>		Very Heavy			
Test method			EN 424	EN 425	ISO 24336
<sup>a</sup> For panels with a Cork surface the requirements for the furniture leg in EN 12104 shall be considered. <sup>b</sup> Panels with a cork surface are not suitable for use in this class; see also Table 3.					



4.4.2 Classification requirements for the surface layer

4.4.2.1 General

The surface layer shall be classified in accordance with EN 685.

NOTE The classification depends on the type of floor covering used

4.4.2.2 Linoleum surface layer

Floor panels with a linoleum surface layer shall conform to the classification requirements of the surface layer thickness as specified in EN 548.

4.4.2.3 Rubber surface layer

Floor panels with a rubber surface layer shall conform to the classification requirements of the surface layer thickness as specified in EN 1817 and EN 12199.

4.4.2.4 Polyvinyl Chloride surface layer

Floor panels with a polyvinyl chloride surface layer shall conform to the classification requirements of the wear layer thickness in combination with the corresponding wear group as specified in EN 649; EN 651; EN 652; EN 653 and EN 655.

4.4.2.5 Polyvinyl Chloride with enhanced slip properties surface layer

Floor panels with a polyvinyl chloride with enhanced slip properties surface layer shall conform to the classification requirements of the nominal thickness in combination with the corresponding wear resistance as specified in EN 13845.

4.4.2.6 Synthetic thermoplastic polymer surface layer

Floor panels with a synthetic thermoplastic polymer surface layer shall conform to the classification requirements as specified in EN 14565.

4.4.2.7 Cork surface layer

Floor panels with a cork surface layer shall conform to the classification requirements as specified in EN 12104 and the nominal thickness shall be as specified in Table 3.

Table 3 — Nominal thickness for cork surfaces

Class	Nominal thickness
21, 22 and 23	≥ 2,5 mm
31 and 32	≥ 3,0 mm

5 Marking and packaging

5.1 Marking

Floor panels manufactured and conforming to this specification shall show the following information clearly on a label on or in the package:

- a) number and date of this European Standard, i.e. EN 14085:2010;

- b) manufacturer's or supplier's identification;
- c) product name
- d) class / symbol of level of use according to EN 685;
- e) year of manufacture (last two digits);
- f) colour / pattern and batch number;
- g) successive number of the package if necessary for the installation;
- h) nominal dimensions of the panel;
- i) number of panels contained in the package;
- j) covered floor area after installation per package;
- k) warning requirement that packages shall be stored shielded from direct sunlight and humidity.

## **5.2 Packaging**

Floor panels shall be delivered in packages designed to protect the corners, edges and surfaces of the product, under normal conditions of transport and handling. The product shall be accompanied by installation, cleaning and maintenance instructions.



## **Annex A**

### **(normative)**

## **Determination of flatness**

### **A.1 Sampling**

From the available material five floor panels shall be taken as specimens.

### **A.2 Conditioning**

Test specimens are measured in the received state. For type approval or verification purposes, the test specimens shall be stabilized to a constant mass in an atmosphere of  $(23 \pm 2) ^\circ\text{C}$  and  $(50 \pm 5) \%$  relative humidity. Constant mass is considered to be reached when the results of two successive weighing operations, carried out at an interval of 24 h, do not differ by more than 0,1 % of the mass of the test specimens..

### **A.3 Apparatus**

#### **A.3.1 Dial gauge**

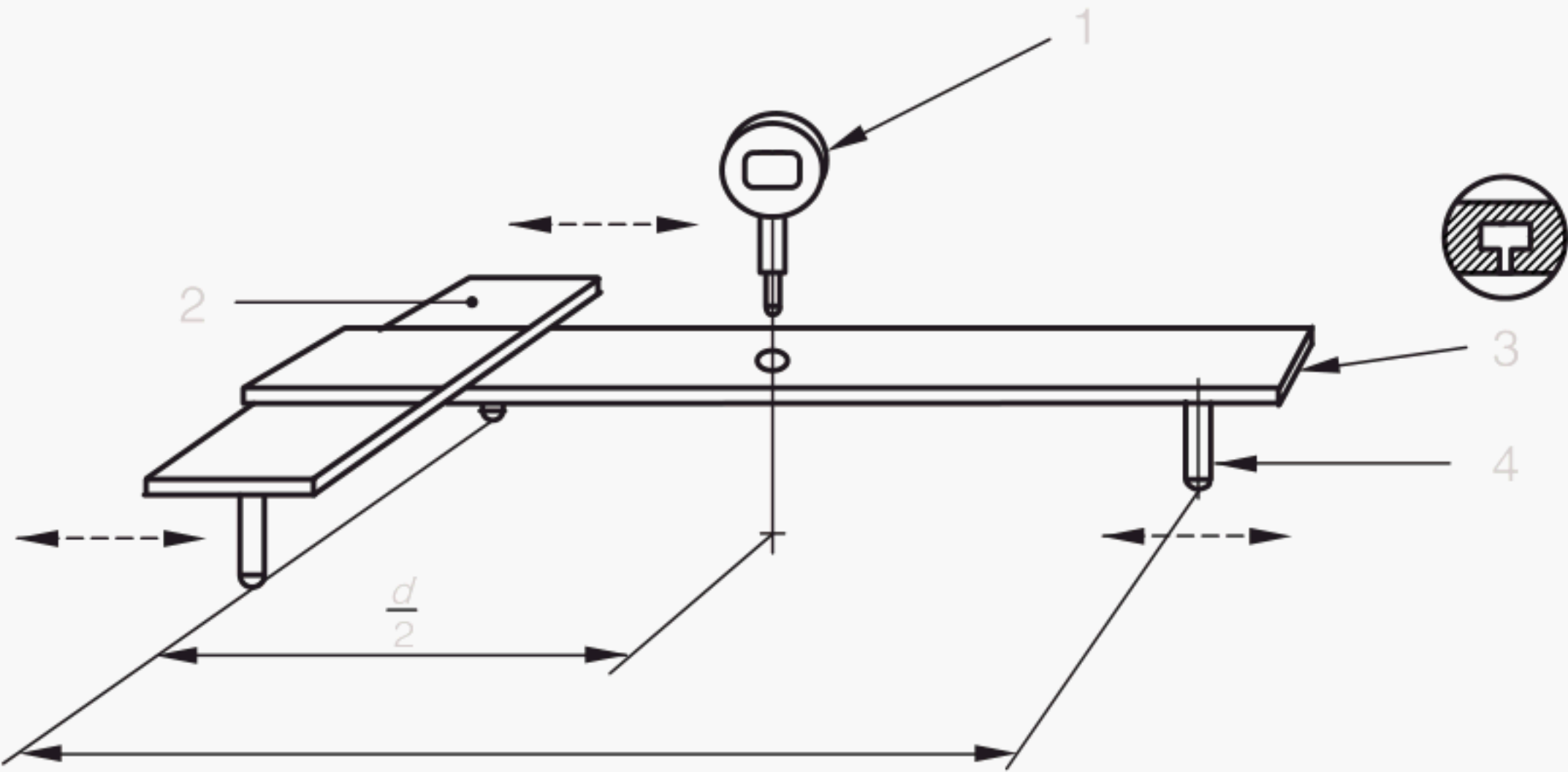
Apparatus for measuring width flatness consisting of a dial gauge accurate to  $\pm 0,01$  mm with a rounded tip of radius  $\delta 5,5$  mm, installed centrally in relation to three rounded supports with radii  $\epsilon 5$  mm. The supports shall be adjustable along a T-shaped assembly of bars to provide the required gauge length. The measurement  $d$  shall not be less than the width  $w$  of the test specimen minus 10 mm. The tip of the gauge in contact with the face of the test specimen shall apply a force of  $(1,0 \pm 0,5)$  N. The mass of the apparatus shall not affect the flatness of the test specimen beyond the limit of the accuracy of the gauge. See Figure A.1 for illustration. The instrument shall be set to zero against a suitable reference plate.

#### **A.3.2 Rigid surface**

A plain rigid surface, at least as long as the floor panel, having a maximum straightness deviation of 0,05 mm over 1 000 mm..

#### **A.3.3 Thickness gauge**

A feeler thickness gauge or sliding calliper, or equivalent tool to measure the deviation between the plate and the floor panel to an accuracy of 0,05 mm.



- Key**
- 1 dial gauge
  - 2 T-groove
  - 3 adjustable pin
  - 4 adjustable bridge

Figure A.1 — Example of instrument for measuring width flatness

**A.4 Procedure**

**A.4.1 Determination of width flatness ( $f_w$ )**

Adjust the supports along the T-shaped assembly of bars according to the width of the test specimen to evaluate (see Figure A.2). Determine the maximum deviation  $f_w$  for each element. The measurement  $d$  shall not be less than the width  $w$  of the test specimen minus 10 mm..



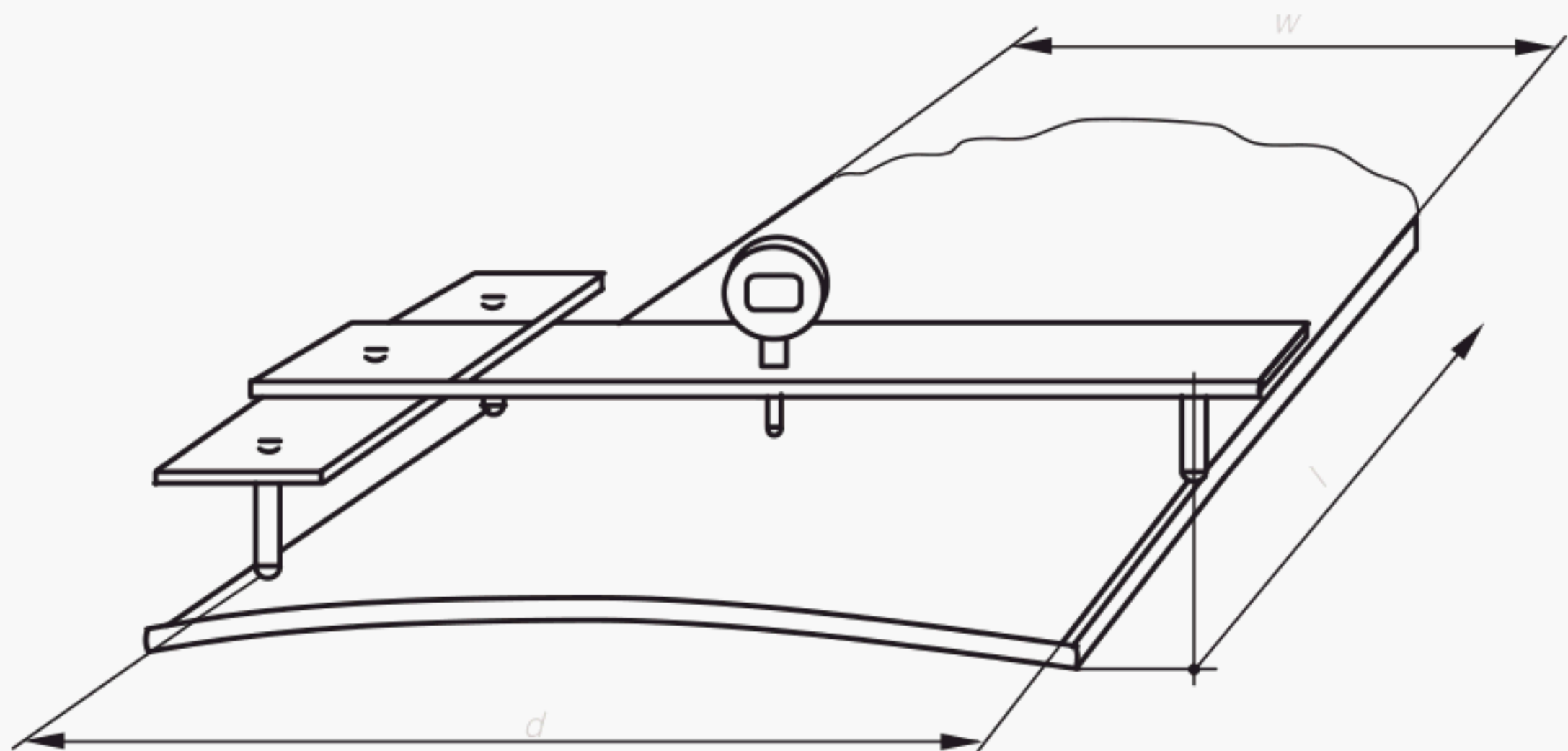
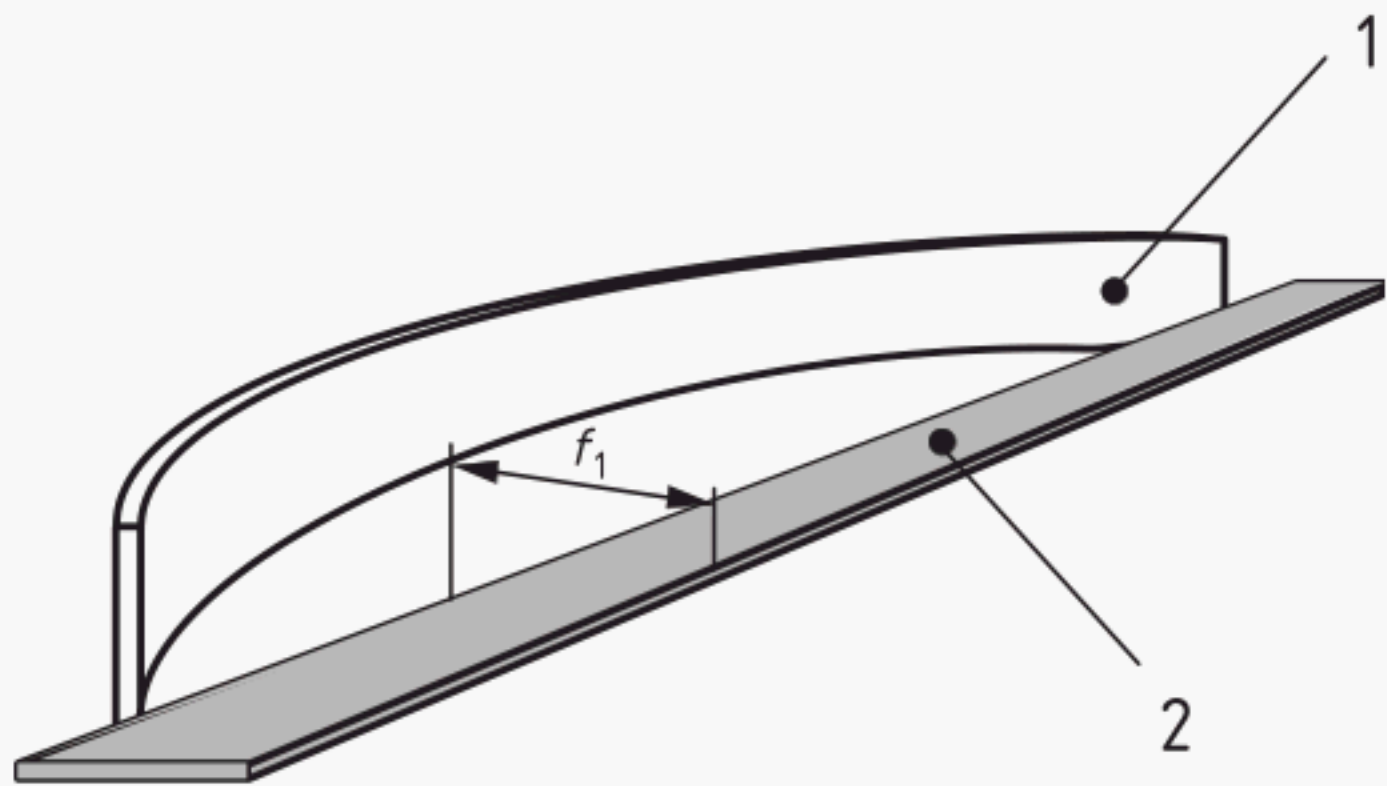


Figure A.2 — Determination of width flatness

A.4.2 Determination of length flatness ( $f_l$ )

Place the test specimen against the steel ruler as shown in Figure A.3. Using the thickness gauges or the caliper gauge, determine the maximum deviation  $f_l$  from the ruler for each element. The measured value shall be expressed as concave when the surface layer is facing towards the ruler and as convex when the surface layer is facing away from the ruler.



Key

- 1 test specimen
- 2 steel ruler

Figure A.3 — Determination of length flatness

**A.5 Recording and expression of results**

**A.5.1 General**

Report if the samples were conditioned before the test was performed.

**A.5.2 Width flatness (*f<sub>w</sub>*)**

Record all measured values *f<sub>w</sub>* and take the largest convex and concave values and divide each by the measurement *d* (see A.3.5). Express the results to the nearest 0,01 %.

**A.5.3 Length flatness (*f<sub>l</sub>*)**

Record all measured values *f<sub>l</sub>* and take the largest convex and concave values and divide each by the nominal length of the element. Express the result to the nearest 0,01 %.



## **Annex B**

### **(normative)**

## **Determination of openings and height differences between floor panels**

### **B.1 Sampling**

Take 8 laminate floor-covering elements as test specimens.

### **B.2 Conditioning**

Test specimens are measured in the received state. For type approval or verification purposes, the test specimens shall be stabilized to a constant mass in an atmosphere of  $(23 \pm 2) ^\circ\text{C}$  and  $(50 \pm 5) \%$  relative humidity. Constant mass is considered to be reached when the results of two successive weighing operations, carried out at an interval of 24 h, do not differ by more than 0,1 % of the mass of the test specimens.

### **B.3 Apparatus**

#### **B.3.1 Thickness gauges**

Set of thickness gauges ranging from 0,05 mm to 0,10 mm in steps of 0,01 mm, and from 0,10 mm to 0,50 mm in steps of 0,05 mm.

#### **B.3.2 Calliper gauge**

Calliper gauge or a depth gauge, with a scale interval of 0,05 mm.

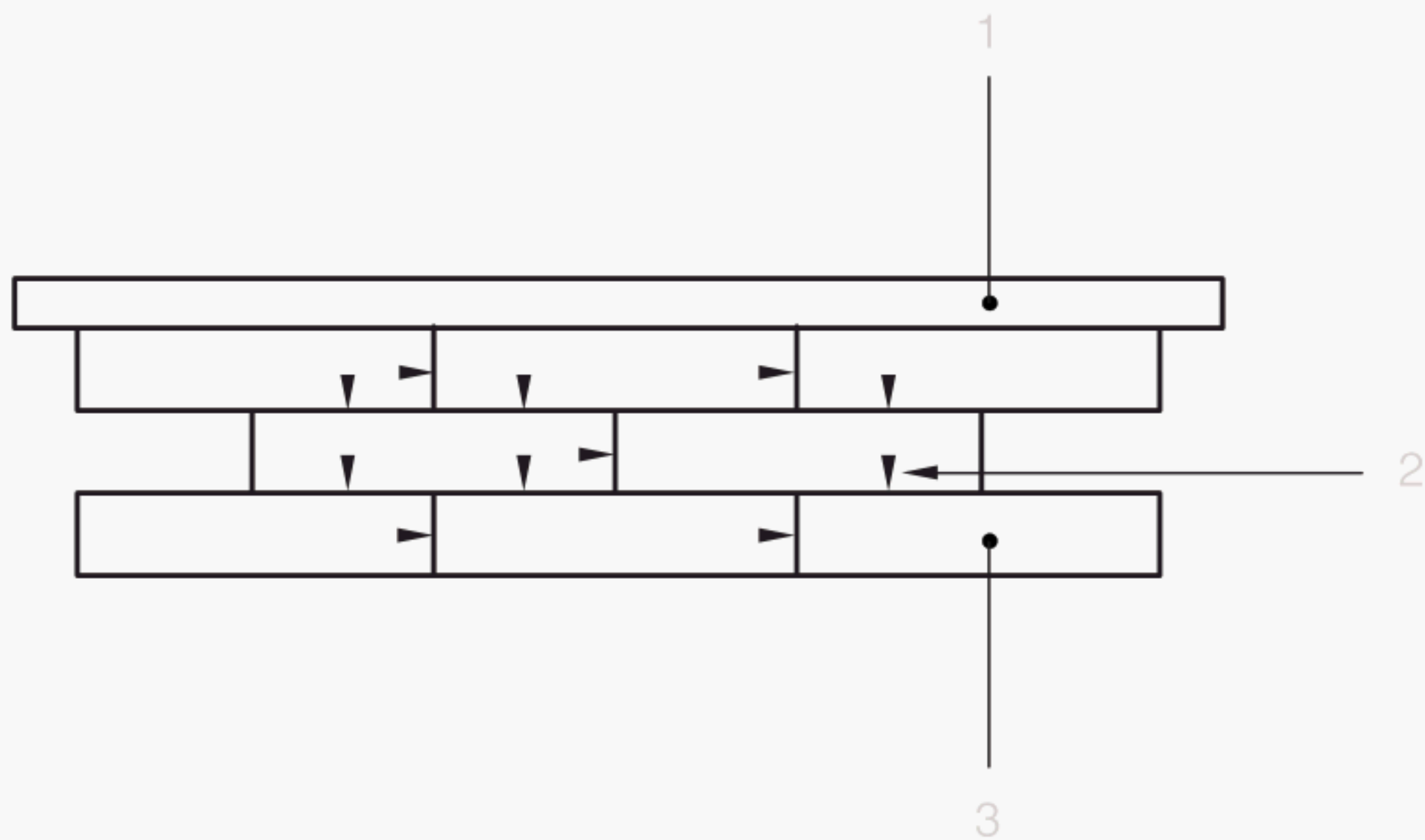
#### **B.3.3 Test surface**

Test surface of appropriate size that is rigid, horizontal and flat.

### **B.4 Procedure**

#### **B.4.1 Assembly**

By hand force, firmly assemble the test specimens on the test surface without using any glue, as in Figure B.1, using the ruler as a guide. The symbol ▼ indicates 11 measuring points



**Key**

- 1 steel ruler
- 2 measuring point
- 3 test specimen

**Figure B.1 — Test panels assembled, with indicated measuring points**

**B.4.2 Determination of openings between panels**

Using the thickness gauges, measure the openings, without applying any force to the panels, at the 11 indicated points.

**B.4.3 Determination of height difference**

Using the calliper or depth gauge, measure the height differences, without applying any force to the panels at the 11 indicated points. Place the base of the instrument at one side of the joint, and measure the maximum height difference at the other side of the joint. Do not carry out the measurement further than 5 mm from the joint edge.

**B.5 Calculation and expression of results**

Calculate the mean value for the 11 opening thickness measurements and for the 11 height difference measurements. Record the maximum individual value for both properties. Express the results in millimetres to the nearest 0,05 mm.



**Annex C**  
(normative)

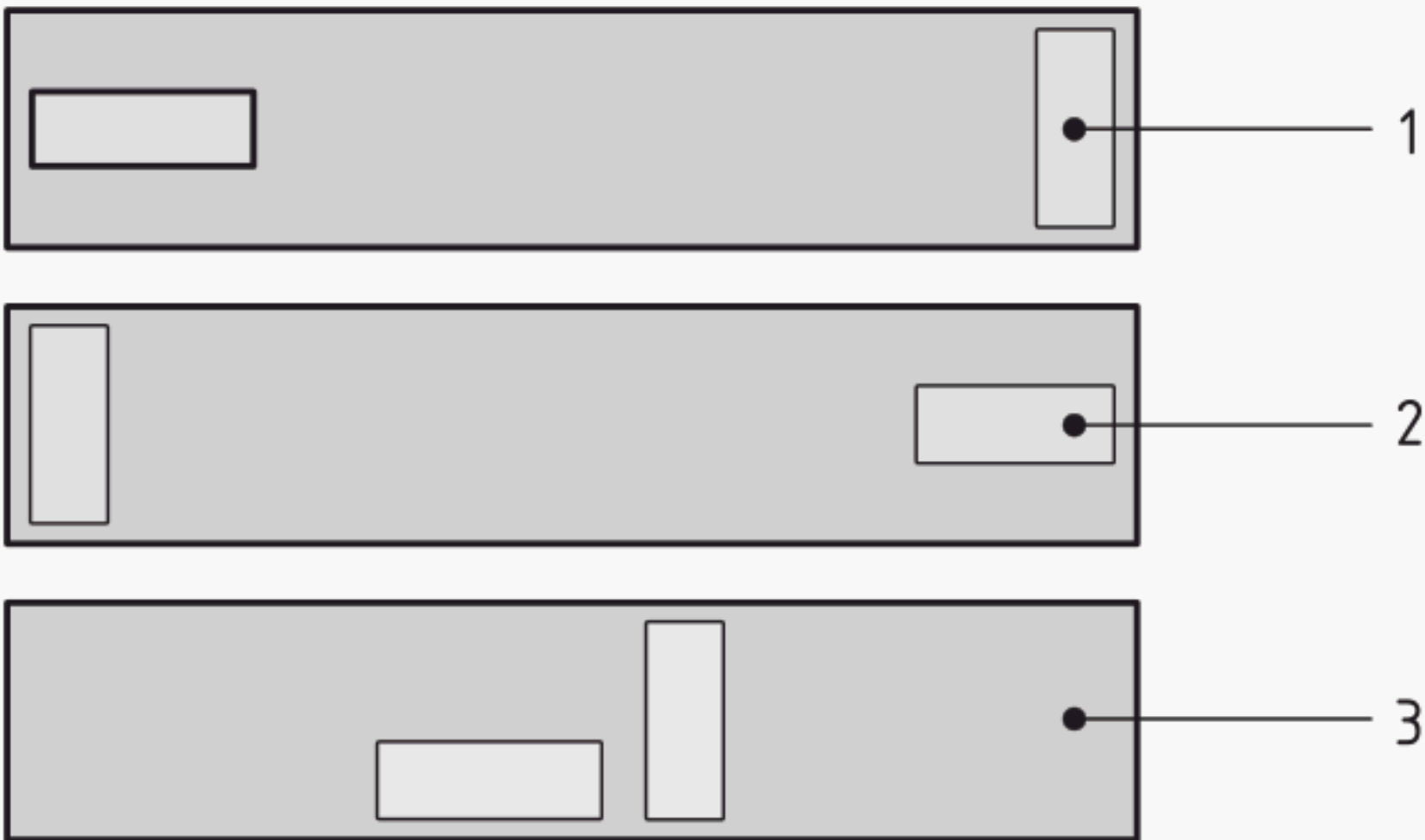
**Determination of dimensional variations caused by changes in humidity**

**C.1 General**

Test in accordance with EN 669, with the following modifications.

**C.2 Sampling**

Take from each of three floor panels one test specimen in the length direction and another in the width direction. The test specimens may be taken from any part of the element as long as the length direction and width direction is maintained (see Figure C.1). The dimension of a test specimen shall be  $(180 \pm 1)$  mm x  $(20 \pm 1)$  mm. If the nominal width of the element is less than 180 mm, no test specimen in the width direction shall be taken.



**Key**

- 1 test specimen taken in the width direction
- 2 test specimen taken in the length direction
- 3 laminate floor covering element

**Figure C.1 — Example of sampling**

**C.3 Conditioning**

The test specimens shall be stabilized to a constant mass in an atmosphere of  $(23 \pm 2)$  °C and  $(50 \pm 5)$  % relative humidity. Constant mass is considered to be reached when the results of two successive weighing operations, carried out at an interval of 24 h, do not differ by more than 0,1 % of the mass of the test specimens.

## **C.4 Procedure**

Measure the width and the length of the specimens at the marks in accordance with EN 669. Carry out the test in accordance with Clause 6 of EN 669:1997.

## **C.5 Calculation and expression of results**

Only the variation in length and width of the test specimens shall be determined. Determine the dimensional variations for length and width direction for each specimen between 50 % RH and 80 % RH in accordance with EN 669. Calculate the average length variation and the average width variation respectively. Express the results as a percentage to the nearest 0,1 %.



## **Annex D** (normative)

### **Test report for tests carried out in accordance with Annexes A, B and C**

The test report shall include at least the following information:

- a) reference to this standard, i.e. EN 14085 and the specification for the surface layer;
- b) complete identification of the product tested including type, source and manufacturer's reference number;
- c) previous history of the sample;
- d) number of panels tested;
- e) test results;
- f) any deviation from the test methods which may have affected the results.

**Annex E**  
(informative)

**Optional properties**

Where the following properties are required for specific applications, the floor panels may be tested in accordance with the following methods, as appropriate:

Electrostatic propensity, EN 1815;

Effect of stains, EN 423;

Moisture content of agglomerated cork at dispatch from the manufacturer, EN 12105.



## Bibliography

- [1] EN 423, *Resilient floor coverings – Determination of resistance to staining*
- [2] EN 429, *Resilient floor coverings – Determination of the thickness of layers*
- [3] EN 430, *Resilient floor coverings – Determination of mass per unit area*
- [4] EN 1815, *Resilient and textile floor coverings – Assessment of static electrical propensity*
- [5] EN 12105, *Resilient floor coverings – Determination of moisture content of agglomerated composition cork*
- [6] EN 433, *Resilient floor coverings – Determination of residual indentation after static loading*