

---

---

**Laminate floor coverings —  
Determination of locking strength for  
mechanically assembled panels**

*Revêtements de sol stratifiés — Détermination de la résistance à la traction des lames assemblées mécaniquement*

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[ISO 24334:2019](https://standards.iteh.ai/catalog/standards/sist/228494f8-b1b9-4889-8eb3-3fb4cc011a37/iso-24334-2019)

<https://standards.iteh.ai/catalog/standards/sist/228494f8-b1b9-4889-8eb3-3fb4cc011a37/iso-24334-2019>



**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[ISO 24334:2019](https://standards.iteh.ai/catalog/standards/sist/228494f8-b1b9-4889-8eb3-3fb4cc011a37/iso-24334-2019)

<https://standards.iteh.ai/catalog/standards/sist/228494f8-b1b9-4889-8eb3-3fb4cc011a37/iso-24334-2019>



**COPYRIGHT PROTECTED DOCUMENT**

© ISO 2019

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office  
CP 401 • Ch. de Blandonnet 8  
CH-1214 Vernier, Geneva  
Phone: +41 22 749 01 11  
Fax: +41 22 749 09 47  
Email: [copyright@iso.org](mailto:copyright@iso.org)  
Website: [www.iso.org](http://www.iso.org)

Published in Switzerland

# Contents

	Page
Foreword .....	iv
<b>1 Scope .....</b>	<b>1</b>
<b>2 Normative references .....</b>	<b>1</b>
<b>3 Terms and definitions .....</b>	<b>1</b>
<b>4 Principle .....</b>	<b>1</b>
<b>5 Apparatus .....</b>	<b>1</b>
<b>6 Sampling and conditioning of panels .....</b>	<b>2</b>
<b>7 Testing .....</b>	<b>2</b>
7.1 Cutting of the short panel sides .....	2
7.2 Cutting of the long panel sides .....	3
7.3 Assembling of test specimens .....	4
7.3.1 Assembling of short side specimens .....	4
7.3.2 Assembling of long side specimens .....	5
7.4 Tensile testing .....	6
7.4.1 General .....	6
7.4.2 Preparation .....	6
7.4.3 Procedure .....	6
<b>8 Repetition .....</b>	<b>7</b>
<b>9 Expression of results .....</b>	<b>7</b>
<b>10 Test report .....</b>	<b>7</b>

[ISO 24334:2019](https://standards.iteh.ai/catalog/standards/sist/228494f8-b1b9-4889-8eb3-3fb4cc011a37/iso-24334-2019)  
<https://standards.iteh.ai/catalog/standards/sist/228494f8-b1b9-4889-8eb3-3fb4cc011a37/iso-24334-2019>

## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 219, *Floor coverings*.

This third edition cancels and replaces the second edition (ISO 24334:2014), which has been technically revised.

The main changes compared to the previous edition are as follows:

- addition of a note in the Scope,
- change in [7.4.3](#) in order to specify that pulling speed may also be performed at 5 mm/min.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

# Laminate floor coverings — Determination of locking strength for mechanically assembled panels

## 1 Scope

This document specifies a method for determination of the locking strength of joints between laminate floor covering panels which are assembled with both vertical and horizontal mechanical locking systems.

NOTE This method is also applicable to other mechanically assembled panels, e.g. modular multilayer floorings.

## 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

ISO 7500-1, *Metallic materials — Calibration and verification of static uniaxial testing machines — Part 1: Tension/compression testing machines — Calibration and verification of the force-measuring system*

## 3 Terms and definitions (standards.iteh.ai)

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

## 4 Principle

Mechanically assembled panels with mechanical locking systems are pulled apart to an opening of 0,20 mm or until the lock breaks.

## 5 Apparatus

**5.1 Tensile testing machine**, which shall be verified and calibrated in accordance with ISO 7500-1 and conforming to class 3 for the force range which is applied by the locking strength measurement.

**5.2 Measuring instrument (sliding calliper)** with an accuracy of 0,1 mm, to determine the length, width and thickness of the specimen.

**5.3 Saw** to cut down the specimen.

**5.4 Balance** with an accuracy of 0,1 g.

**5.5 External extensometer** or optical measurements with an accuracy of 0,01 mm.

**5.6 Two clamping devices** attached to the tensile testing machine. The clamping devices (e.g. Zwick/Roell<sup>1)</sup>, Type 8355, 20 kN) are used to hold the grippers.

**5.7 Two grippers**, 50 mm × 210 mm, attached to the clamping devices to hold the specimen with an anti-slip coating material (see [Figure 6](#) and [Figure 7](#)).

**5.8 Calibration plate**, made of iron steel, 200 mm × 200 mm, (7 ± 1) mm thick, to adjust the clamping device coplanar in the tensile testing machine.

## 6 Sampling and conditioning of panels

Sample five panels, preferably from the same package, for the preparation of five test specimens for the short side locks and five for the long side locks (if panel dimensions allow it, the sampling of the short side and the long side may come from the same panel).

The panels from which the test specimens are cut shall be conditioned to a constant mass at (50 ± 5) % relative humidity (RH) and (23 ± 2) °C.

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 panels.

## 7 Testing

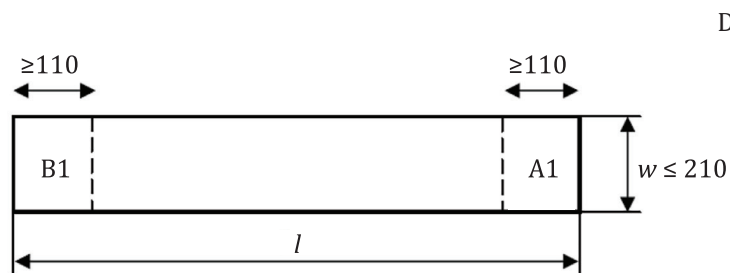
### 7.1 Cutting of the short panel sides

Cut two pieces, A1 and B1, from each panel. The length of the specimen shall be a minimum of 110 mm (to fit the machine).

If the width of the panel is equal to or less than 210 mm, the actual width shall be used in the specimen ([Figure 1](#)).

If the width of the panel is less than 100 mm, the long-side-profiles of two panels shall be glued together. The new actual width shall be used in the specimen ([Figure 2](#)).

If the width of the panel is more than 210 mm, the specimen has to be cut down to a width of (200 ± 10) mm ([Figure 3](#)).



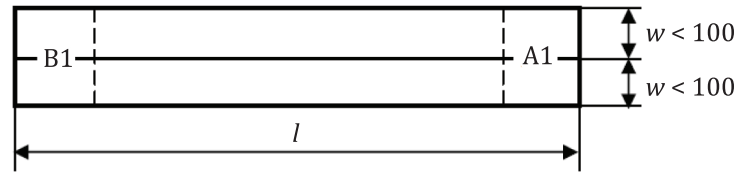
#### Key

- $l$  surface dimension, length of panel
- $w$  surface dimension, width of panel
- A1, B1 test specimens (length  $\geq 110$  mm)

**Figure 1 — Cutting of panels for short side testing (100 mm <  $w \leq 210$  mm)**

1) Zwick/Roell is an example of a suitable product available commercially. This information is given for the convenience of users of this document and does not constitute an endorsement by ISO of this product.

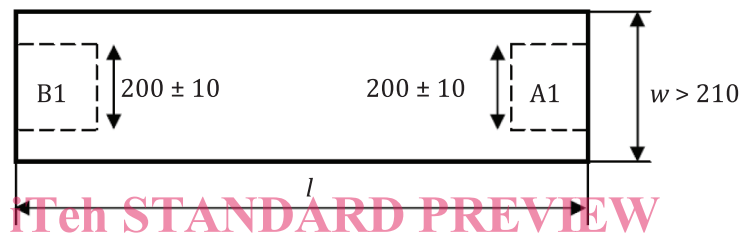
Dimensions in millimetres

**Key**

- $l$  surface dimension, length of panel  
 $w$  surface dimension, width of panel  
 A1, B1 test specimens (length  $\geq 110$  mm)

**Figure 2 — Cutting of panels for short side testing ( $w < 100$  mm)**

Dimensions in millimetres

**Key**

- $l$  surface dimension, length of panel  
 $w$  surface dimension, width of panel  
 A1, B1 test specimens (length  $\geq 110$  mm)

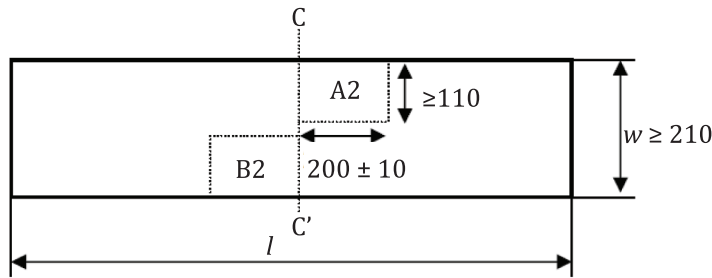
**Figure 3 — Cutting of panels for short side testing ( $w > 210$  mm)****7.2 Cutting of the long panel sides**

Cut two pieces, A2 and B2, from each panel. The length of the specimen shall be  $(200 \pm 10)$  mm and the width shall be a minimum of 110 mm (to fit the machine).

If the width of the panel is more than or equal to 110 mm, the specimen should be cut from the centre line of the panel (Figure 4).

If the width of the panel is less than 110 mm, the long-side-profiles of two panels shall be glued together and the specimen should be cut from the centre line of the panel (Figure 5).

Dimensions in millimetres

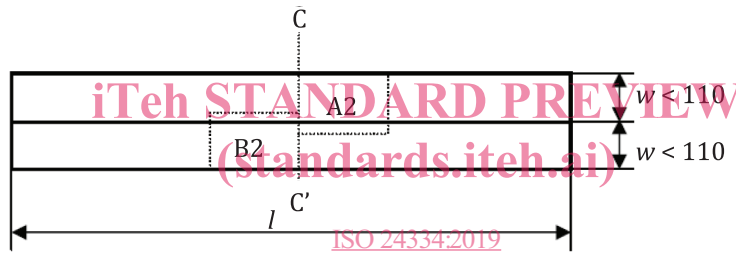


**Key**

- l* surface dimension, length of panel
- w* surface dimension, width of panel
- C-C' centre line of the panel
- A2, B2 test specimens (length  $200 \pm 10$  mm; width  $\geq 110$  mm)

**Figure 4 — Cutting of panels for long side testing ( $w \geq 110$  mm)**

Dimensions in millimetres



**Key**

- l* surface dimension, length of panel
- w* surface dimension, width of panel
- C-C' centre line of the panel
- A2, B2 test specimens (length  $200 \pm 10$  mm; width  $\geq 110$  mm)

**Figure 5 — Cutting of panels for long side testing ( $w < 110$  mm)**

**7.3 Assembling of test specimens**

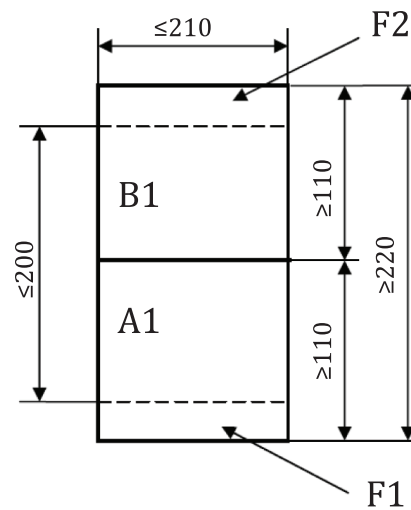
**7.3.1 Assembling of short side specimens**

Measure the width of the flooring surface of A1 and B1 to the nearest millimetre, and their thickness to the nearest 0,1 mm.

As shown in [Figure 1](#), [Figure 2](#) and [Figure 3](#), connect the short side lock from A1 and B1 according to the fitting instruction from the manufacturer.



Dimensions in millimetres

**Key**

- F1 attachment area 1 for the first gripper  
 F2 attachment area 2 for the second gripper  
 A1, B1 test specimens

**Figure 6** — Assembled test piece for short side testing

(standards.iteh.ai)

### 7.3.2 Assembling of long side specimens

Measure the width of the flooring surface of A2 and B2 to the nearest millimetre, and their thickness to the nearest 0,1 mm.

As shown in [Figure 4](#) and [Figure 5](#), connect the long side lock from A2 and B2 according to the fitting instruction from the manufacturer.