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**Resilient and laminate floor  
coverings — Determination of the  
effect of simulated movement of a  
furniture leg**

*Revêtements de sol résilient et laminé — Détermination de l'effet d'un  
mouvement simulé d'un pied de meuble*





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## 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)).

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword - Supplementary information](#)

The committee responsible for this document is ISO/TC 219, *Floor coverings*.

# Resilient and laminate floor coverings — Determination of the effect of simulated movement of a furniture leg

## 1 Scope

This International Standard specifies a method for determining the resistance of an installed resilient or laminate floor covering to the mechanical stress resulting from the simulated movement of a furniture leg.

## 2 Principle

The resistance of an installed floor covering to the movement of a furniture leg with rounded edges and different loadings is assessed for deterioration of surface flatness, surface damage, cuts of varying depths, and penetrating edges.

## 3 Apparatus

The apparatus consists of following elements (see also [Figure 1](#)):

**3.1 Frame**, comprising two guide rails (diameter of 100 mm) supporting the motor and the control capstan and fixed relative to the test specimen.

The unloaded peripheral speed shall be 300 mm/s.

**3.2 Carriage**, with a wheel base designed to prevent jerky movements, supported, and guided by rails.

The traction device is fixed to the carriage in such a way that it remains perfectly stable during the test. The tension shall be strictly perpendicular to the axis of the furniture leg.

**3.3 Force-indicating device**, linked to the cable and to the carriage that permits identification of the maximum tensile stress value.

**3.4 Three square brass or stainless feet**, conforming to the dimensions given in [Table 1](#).

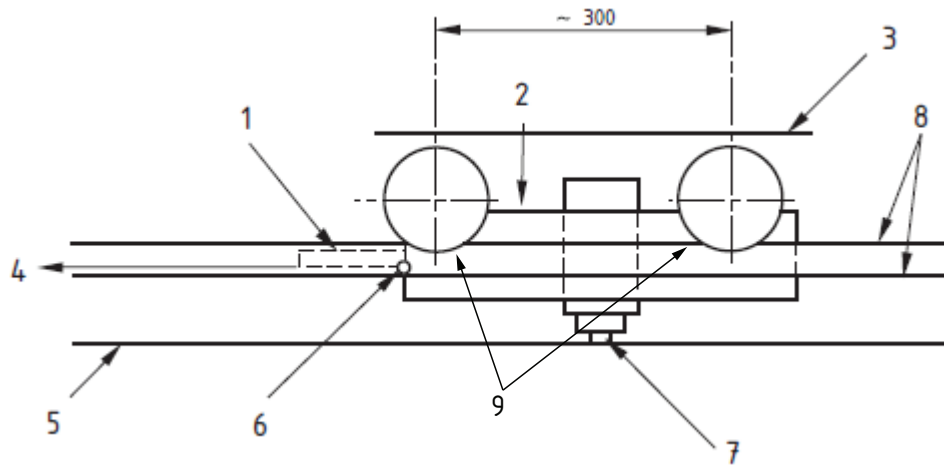
The foot base shall be always parallel to the plane of the floor covering surface even during the displacement of the furniture leg. The device should be designed so that the applied mass corresponds to the target when the foot is in motion. Particular attention should be paid to floor coverings with a high deformation to ensure that the vertical displacement of the foot is sufficient to support the deformation of the flooring.

**3.5 Platform**, can be weighted with masses of respectively 32 kg, 70 kg, or 100 kg, sliding vertically in the carriage with slight friction and resting on the test piece by means of one of the feet.

**Table 1 — Dimensions of feet**

Type	Applied mass kg	Horizontal edge radius <i>RH</i> mm	Vertical edge radius <i>RV</i> mm	Distance between opposite vertical faces mm
3	70 <sup>+0,35</sup> kg	3 ± 0,05	0,1 ± 0,05	34,6 ± 0,05
2	100 <sup>+0,5</sup> kg	2 ± 0,05	0,1 ± 0,05	33,6 ± 0,05
0	32 <sup>+0,16</sup> kg	0,1 ± 0,05	0,1 ± 0,05	31,7 ± 0,05

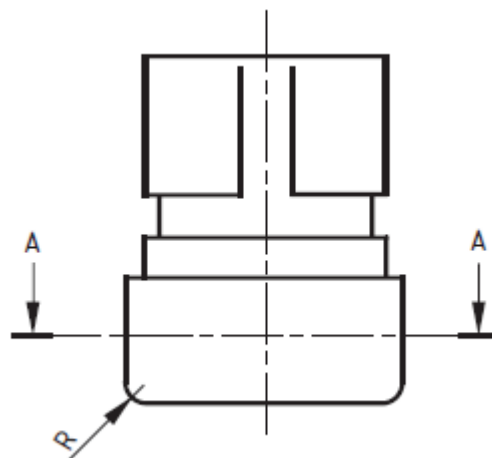
Dimensions in millimetres



**Key**

- 1 force-indicating device
- 2 carriage
- 3 platform
- 4 traction device
- 5 floor covering
- 6 attachment to traction device
- 7 foot
- 8 rails
- 9 wheels

**Figure 1 — Side view of apparatus**



**Figure 2 — Foot of apparatus**

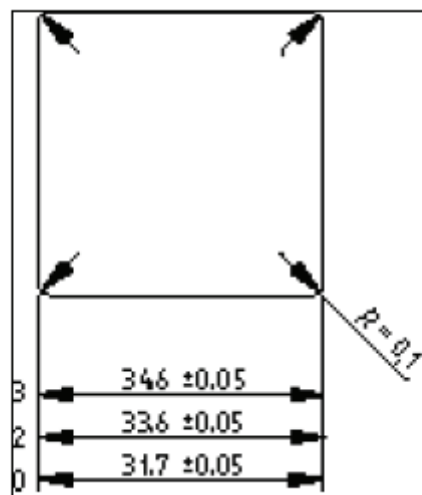


Figure 3 — Horizontal section A-A

## 4 Sampling and preparation of test piece

Take a representative sample from the available material.

Prepare or select a smooth, flat base with a tolerance no greater than 1,5 mm over a distance of 600 mm.

NOTE The base can be a sand-cement screed, a concrete slab finished with a smoothing coat (if necessary), or a fibre cement board at least 6 mm thick resting on a rigid stand.

Take one test piece approximately 1m<sup>2</sup> in area, which shall be fitted in accordance with the manufacturer's instructions. For laminate floor coverings, make sure that there are long and short side joints in the test area.

## 5 Conditioning

For resilient floor coverings, condition the test piece after fitting at a temperature of  $(23 \pm 2)$  °C and a relative humidity of  $(50 \pm 5)$  % for a minimum of five days in order to ensure sufficient drying of the adhesive.

For laminate floor coverings tested without gluing, only 24 h is required.

Maintain these conditions when carrying out the test.

## 6 Procedure

### 6.1 Test paths

For resilient floor coverings, ensure that the test paths are at least 100 mm from the edge of the test piece. Choose two separate test paths where the structure of the floor covering could cause different results for tests in different directions, i.e. longitudinal and transverse direction, or the principal relief lines in the pattern for sheet floor coverings, or parallel to the edge and diagonally for tiles laid alternately.

For laminate floor coverings, choose a test path in the length direction so that short side joints will be tested and a test path in the width direction so that long side joints will be tested.

### 6.2 Testing

Check the test piece and guide rails to ensure that they are horizontal.

## ISO 16581:2014(E)

Before every test, clean the foot and the surface of the laminate floor covering by means of alcohol and remove any dust on the test piece.

Fix the appropriate foot under the platform with two edges parallel to the frame rails.

Place the carriage and the platform on the rails and the test piece, and then place the mass on the platform.

For laminate floor coverings, all samples should fulfil the general classification for joint opening and height difference.

After 1 min, pull the free end of the cable (which is turned once round the capstan), without exceeding a force of 1 kN, to move the entire unit horizontally at a speed of 150 mm/s to 200 mm/s over a distance of approximately 700 mm.

Repeat the test twice on two test paths in each direction for a distance of at least 700 mm.

Record the damage caused for each test path. Surface scratches and marks as well as changes in gloss are not considered as damage. For laminates floor coverings, gouging, deformation, or delamination are considered as damage.

Ignore any damage arising beyond the first 600 mm of each test path, any damage at the end of the path if the tensile force exceeds 1 kN, and any scuffing of the surface.

## 7 Expression of results

### 7.1 Resilient floor coverings

Express the principal types of damage for each test path as follows:

- a) deterioration in the flatness of the surface;
- b) damage which partially destroys the surface;
- c) cuts of varying depths;
- d) penetrating edges;
- e) in the case of an open joint floor covering, a joint opening greater or equal to 1 mm;
- f) in the case of a treated or welded joint, its failure.

### 7.2 Laminate floor coverings

Express the principal types of damage for each test path as follows:

- a) gouging;
- b) delamination at the surface;
- c) damage of the edges, for example, chipping, delamination at the edge;
- d) deformations of the surface;
- e) joint opening greater or equal to 0,2 mm.

## 8 Test report

The test report shall contain the following information:

- a) a reference to this International Standard, i.e. ISO 16581;



- b) a complete identification of the product tested, including type, source and manufacturer's reference numbers, batch number;
- c) chain of custody;
- d) the type of foot used;
- e) the results for each test path;
- f) any deviation from this International Standard which might have affected the results.

