INTERNATIONAL STANDARD

ISO 22633

First edition
2019-07

Adhesives — Test methods for adhesives for floor coverings and wall coverings — Determination of the dimensional changes of a linoleum floor covering in contact with an adhesive

Adhésifs — Méthodes d'essais pour adhésifs pour revêtements de sols et revêtements muraux — Détermination des variations dimensionnelles d'un revêtement en linoléum en contact avec un adhésif

Reference number
ISO 22633:2019(E)

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Published in Switzerland

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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).

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).

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.

This document was prepared by Technical Committee ISO/TC 61, *Plastics*, Subcommittee SC 11, *Products*.

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.

Introduction

This test is designed as a laboratory test to show the change in dimensions of a linoleum floorcovering in the early stages of bonding with an adhesive. Glass was chosen as an impervious substrate to maximize the effect.

This test does not necessarily reproduce the effects which occur on porous substrates such as in practical site conditions.

Adhesives — Test methods for adhesives for floor coverings and wall coverings — Determination of the dimensional changes of a linoleum floor covering in contact with an adhesive

SAFETY PRECAUTIONS — Persons using this document should be familiar with the normal laboratory practice, if applicable. This document 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.

ENVIRONMENTAL STATEMENT — It is understood that some of the material permitted in this document may have negative environmental impact. As technological advantages lead to acceptable alternatives for these materials, they will be eliminated from this document to the extent possible. At the end of the test, it is essential that the user of this document take care to carry out an appropriate disposal of the wastes.

1 Scope

This document specifies a test method to measure the dimensional changes of a linoleum floorcovering while being adhered to a glass substrate. This method is to be used in conjunction with other test methods and not used solely to determine the suitability of a particular adhesive/linoleum combination.

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 472, *Plastics — Vocabulary*

ISO 554, *Standard atmospheres for conditioning and/or testing — Specifications*

EN 1067, *Adhesives — Examination and preparation of samples for testing*

ISO 15605, *Adhesives — Sampling*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 472 and the following apply.

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/

3.1
adhesive for linoleum floor coverings
adhesive which is intended to produce firm and durable bonds between *linoleum* (3.2) and various substrates

3.2
linoleum
product produced by calendering a homogeneous mixture of *linoleum cement* (3.3), cork and/or woodflour, pigments and inorganic filler onto a fibrous backing. The product is then converted into its final form by an oxidative curing process

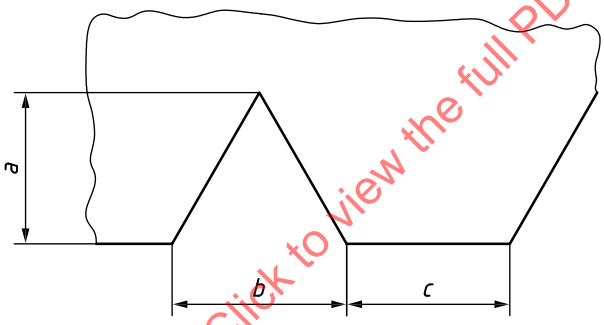
3.3
linoleum cement
binder in *linoleum* (3.2), consisting of a mixture of linseed oil and/or other vegetable drying oils, rosin and normal drying oil catalysts which is converted to a semi-elastic mass by an oxidative curing process

4 Principle

Indication of the dimensional changes which occur during the drying out process of the adhesive, i.e. in the early stages of an installation.

5 Apparatus and materials

5.1 Notched trowel (for the shape of the notch, see Figure 1), with dimensions *a*, *b* and *c* specified by the adhesive manufacturer.



Key
a notch depth
b notch width
c notch distance

Figure 1 — Shape of notches of notched trowel

5.2 Roller, of width (60 ± 5) mm, diameter (90 ± 5) mm and total mass (3,50 ± 0,05) kg with handle at 90° to the axis (as an example, see Figure 2).

Dimensions in millimetres

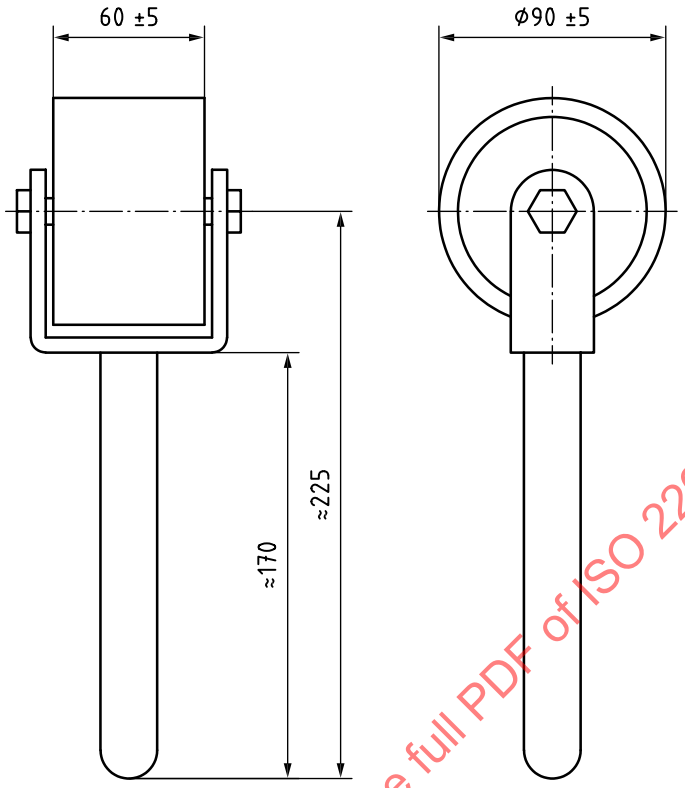


Figure 2 — Roller

NOTE The length of the handle is not critical and can be used for setting the total mass.

5.3 Three glass plates for each adhesive under test. Thickness at least 6 mm. Dimensions 300 mm × 300 mm or 350 mm × 350 mm.

5.4 Suitable measuring device, capable of measuring to an accuracy of 0,01 mm over a length either 200 mm or 250 mm, such as elongation meter or other.

5.5 Three linoleum test pieces, 250 mm × 250 mm or 300 mm × 300 mm for each adhesive under test.

5.6 Suitable adhesive, for fixing gauge studs to the linoleum surface if required by the measuring method.

5.7 Self-adhesive paper labels, when using the travelling microscope method.

5.8 Square metal plate of uniform thickness (approximately 10 mm), with dimensions 10 mm less than the distance between the reference points, producing a load of approximately 5 kg.

6 Preparation of test specimens

6.1 General

Ensure that all the glass plates are clean and free from dust, grease or other contaminants.

Place the test pieces in a 50 °C oven for 24 h to form a stack of pairs where the upper surface of one piece is in contact with the upper surface of its partner. Place a uniform load of 5 kg on top of the stack.

Remove from the oven and cool in a standard atmosphere 23 °C/50 % in accordance with ISO 554 for a further 24 h while still maintaining the load of 5 kg.

Separate the test pieces after this period.

NOTE This pre-treatment is intended to release any stresses or curl in the linoleum so that it is in a flat state when the test proper is commenced.

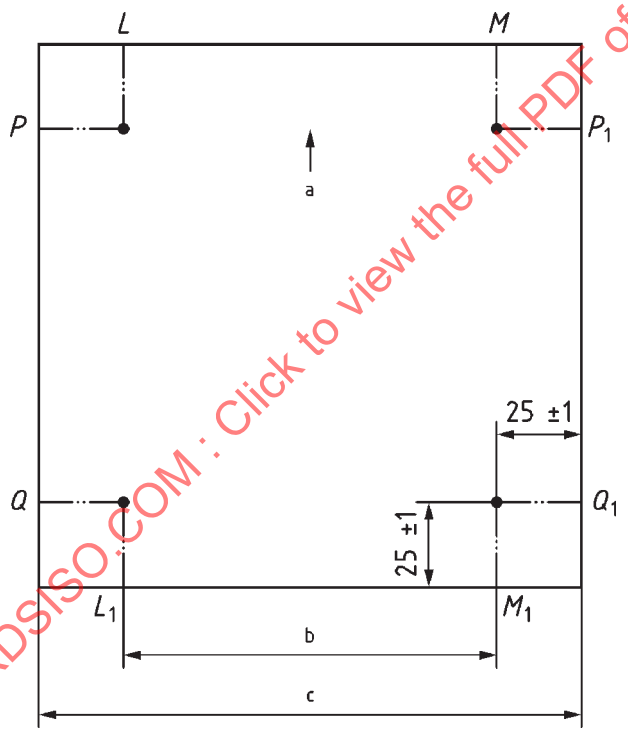
6.2 Conditioning

Take and prepare a significant sample of the adhesive in accordance with ISO 15605 and EN 1067. Condition glass plates, linoleum test pieces and the adhesives in a standard atmosphere 23 °C/50 % in accordance with ISO 554 for 10 days and maintain the climate for the duration of the test.

6.3 Datum points

Fix the gauge studs in four positions, each being (25 ± 1) mm from the outer edge of the covering (see Figure 3) using the appropriate adhesive.

Dimensions in millimetres



Key

1	grain direction
L, M,	starting points for dimension measurement parallel to the grain
L_1, M_1	end points for dimension measurement parallel to the grain
P, Q	starting points for dimension measurement perpendicular to the grain
P_1, Q_1	end points for dimension measurement perpendicular to the grain
a	Measurements between studs.
b	Edge to edge measurements.

Figure 3 — Measurements

6.4 Reference dimension — Measurement A

Lay each linoleum test piece onto a glass plate and place the metal plate centrally to ensure the test piece is completely flat.

Measure dimensions LL_1, MM_1, PP_1 and QQ_1: Measurement A.

7 Test procedure

7.1 Application of the adhesive

Apply the adhesive to the glass plate using the appropriate trowel held at an angle of 60°. Ensure that the application is parallel with one edge of the glass plate.

NOTE It is convenient to mark the extremities of the linoleum piece on the glass plate and stick a self-adhesive tape between these marks and the edge of the plate. The tape is removed after applying the adhesive.

7.2 Bonding

After the minimum open time, place a test piece onto the prepared glass plate ensuring the length direction of the test piece is at right angles to the adhesive ridges. Smooth with light hand pressure. The test piece is rolled then with a roller as specified in 5.2 starting at one edge rolling up and down and gradually moving across the plate ensuring all areas are rolled. This is repeated then in a direction at a right angle to the first rolling.

7.3 Measurements

Measure the test specimens as in 6.4 after the following time intervals:

10 min	Measurement B1
30 min	Measurement B2
60 min	Measurement B3
6 h	Measurement B4
24 h	Measurement B5
4 d	Measurement B6
7 d	Measurement B7

8 Evaluation and expression of results

There shall be 6 values for each set of three test specimens, each in the longitudinal direction and in the transverse direction at every measurement stage.

Calculate the mean dimensional change:

a) longitudinally

b) transversely

at each stage, i.e. $(B_1 - A)$, $(B_2 - A)$, etc.