



SLOVENSKI STANDARD
oSIST prEN ISO 16534:2019
01-maj-2019

Toplotnoizolacijski proizvodi za uporabo v gradbeništvu - Določanje lezenja pod tlačno obremenitvijo (ISO/DIS 16534:2019)

Thermal insulating products for building applications - Determination of compressive creep (ISO/DIS 16534:2019)

Wärmedämmstoffe für das Bauwesen - Bestimmung des Langzeit-Kriechverhaltens bei Druckbeanspruchung (ISO/DIS 16534:2019)

Produits isolants thermiques destinés aux applications du bâtiment - Détermination du fluage en compression (ISO/DIS 16534:2019)

Ta slovenski standard je istoveten z: prEN ISO 16534

ICS:

91.100.60	Materiali za toplotno in zvočno izolacijo	Thermal and sound insulating materials
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Thermal insulating products for building applications — Determination of compressive creep

Produits isolants thermiques destinés aux applications du bâtiment — Détermination du fluage en compression

ICS: 91.100.60

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 16534 was prepared by Technical Committee ISO/TC 163, *Thermal performance and energy use in the built environment*, Subcommittee SC 1, *Test and measurement methods*.

ISO 16534 includes the original EN 1606 prepared by Technical Committee CEN/TC 88 "Thermal insulating materials and products", with the following clauses modified to reflect the conditions for tropical countries:

- [Clause 6.5](#): Conditioning of test specimens;
- [Clause 7.1](#): Test conditions;
- [Clause 10](#): Test report.

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Introduction

ISO 16534 is one of a series of existing European Standards on test methods which were adopted by ISO. This group of International Standards comprises the following group of interrelated standards:

ISO	Title	Respective EN standard
ISO 12344	Thermal insulating products for building applications — Determination of bending behaviour	EN 12089
ISO 12968	Thermal insulation products for building applications — Determination of the pull-off resistance of external thermal insulation composite systems (ETICS) (foam block test)	EN 13495
ISO 29465	Thermal insulating products for building applications — Determination of length and width	EN 822
ISO 29466	Thermal insulating products for building applications — Determination of thickness	EN 823
ISO 29467	Thermal insulating products for building applications — Determination of squareness	EN 824
ISO 29468	Thermal insulating products for building applications — Determination of flatness	EN 825
ISO 29469	Thermal insulating products for building applications — Determination of compression behaviour	EN 826
ISO 29470	Thermal insulating products for building applications — Determination of the apparent density	EN 1602
ISO 29471	Thermal insulating products for building applications — Determination of dimensional stability under constant normal laboratory conditions (23 °C/50 % relative humidity)	EN 1603
ISO 29472	Thermal insulating products for building applications — Determination of dimensional stability under specified temperature and humidity conditions	EN 1604
ISO 29764	Thermal insulating products for building applications — Determination of deformation under specified compressive load and temperature conditions	EN 1605
ISO 29765	Thermal insulating products for building applications — Determination of tensile strength perpendicular to faces	EN 1607
ISO 29766	Thermal insulating products for building applications — Determination of tensile strength parallel to faces	EN 1608
ISO 29767	Thermal insulating products for building applications — Determination of short-term water absorption by partial immersion	EN 1609
ISO 29768	Thermal insulating products for building applications — Determination of linear dimensions of test specimens	EN 12085
ISO 29769	Thermal insulating products for building applications — Determination of behaviour under point load	EN 12430

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ISO 29770	Thermal insulating products for building applications — Determination of thickness for floating-floor insulating products	EN 12431
ISO 29771	Thermal insulating materials for building applications — Determination of organic content	EN 13820
ISO 29803	Thermal insulation products for building applications — Determination of the resistance to impact of external thermal insulation composite systems (ETICS)	EN 13497
ISO 29804	Thermal insulation products for building applications — Determination of the tensile bond strength of the adhesive and of the base coat to the thermal insulation material	EN 13494
ISO 29805	Thermal insulation products for building applications — Determination of the mechanical properties of glass fibre meshes	EN 13496
ISO 16534	Thermal insulating products for building applications — Determination of compressive creep	EN 1606
ISO 16535	Thermal insulating products for building applications — Determination of long-term water absorption by immersion	EN 12087
ISO 16536	Thermal insulating products for building applications — Determination of long-term water absorption by diffusion	EN 12088
ISO 16537	Thermal insulating products for building applications — Determination of shear behaviour	EN 12090
ISO 16546	Thermal insulating products for building applications — Determination of freeze-thaw resistance	EN 12091
ISO 16544	Thermal insulating products for building applications — Conditioning to moisture equilibrium under specified temperature and humidity conditions	EN 12429
ISO 16545	Thermal insulating products for building applications — Determination of behaviour under cyclic loading	EN 13793

A further group of existing European Standards on test methods for products used to insulate building equipment and industrial installations comprises the following group of interrelated International Standards:

ISO 12623	Thermal insulating products for building equipment and industrial installations — Determination of short-term water absorption by partial immersion of preformed pipe insulation	EN 13472
ISO 12624	Thermal insulating products for building equipment and industrial installations — Determination of trace quantities of water soluble chloride, fluoride, silicate, sodium ions and pH	EN 13468
ISO 12628	Thermal insulating products for building equipment and industrial installations — Determination of dimensions, squareness and linearity of preformed pipe insulation	EN 13467
ISO 12629	Thermal insulating products for building equipment and industrial installations — Determination of water vapour transmission properties of preformed pipe insulation	EN 13469

Thermal insulating products for building applications — Determination of compressive creep

1 Scope

This document specifies the equipment and test method for determining the compressive creep of specimens under various conditions of stress.

This document is applicable to thermal insulating products.

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.

ISO 29469, *Thermal insulating products for building applications — Determination of compression behaviour*

ISO 29768, *Thermal insulating products for building applications — Determination of linear dimensions of test specimens*

ISO 5725-2, *Accuracy (trueness and precision) of measurement methods and results — Part 2: Basic method for the determination of repeatability and reproducibility of a standard measurement method*

3 Terms and definitions

For the purposes of this document, the following definitions apply.

3.1

thickness

linear dimension measured perpendicular to the planes of length and width d is the original product thickness; d_s is the thickness of the test specimen; d_L is the thickness of the test specimen under the basic compressive stress of the loading device ('deadweight'); d_0 is the thickness of the test specimen 60 s after the beginning of the loading process; d_t is the thickness of the test specimen at a given time, t

3.2

compressive stress

σ_c

ratio of the compressive force to the initial cross sectional surface area of the test specimen

3.3

deformation

X

reduction in thickness of the test specimen

3.4

relative deformation

ε

ratio of the deformation of the test specimen X , and its thickness d_s , measured in the direction of loading

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3.5 compressive creep

X_{ct}
increase in deformation of the test specimen over time whilst under a constant stress, at specified conditions of temperature and humidity

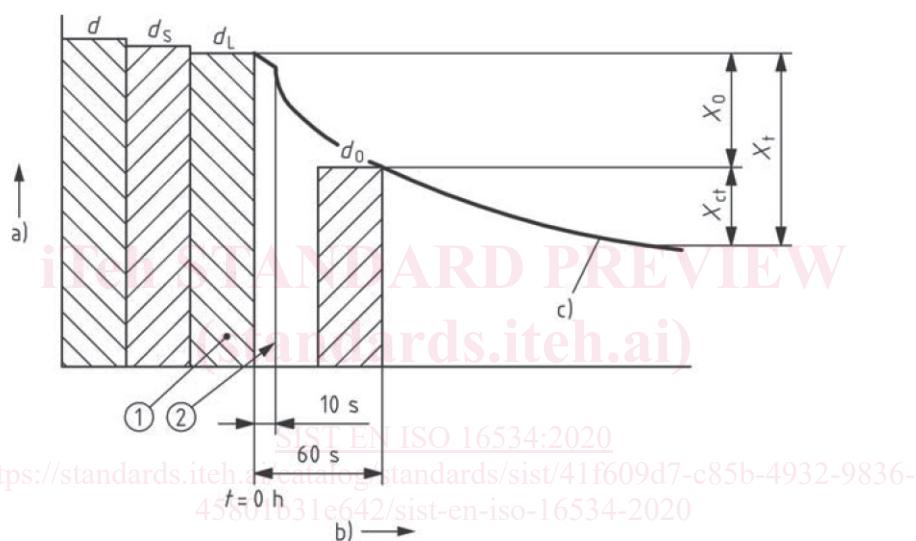
$$X_{ct} = X_t - X_0$$

where

X_t is the deformation at time t ;

X_0 is the initial deformation (after 60 s from the beginning of loading)

An illustration of the different thicknesses and deformations is given in [Figure 1](#)



Key

- d original product thickness
- d_s initial thickness of the test specimen
- d_L thickness of the test specimen under the basic compressive stress of the loading device ('dead weight')
- d_0 thickness of the test specimen 60 s after the beginning of the loading process
- X_0 the initial deformation (after 60 s from the beginning of loading).
- X_{ct} increase in deformation of the test specimen over time while under a constant stress, at specified conditions of temperature and humidity
- X_t total the deformation at selected time t_3
- t_1 Time when dead wright is applied
- t_2 Time when selected load is uniformly applied
- t_3 Deformation at selected time

In the illustration, d_L is used as a reference value for deformation measurements. If d_s is used as the reference value, the illustration can be used, omitting the column for d_L (see [7.3](#)).

Figure 1 — Illustration of the different thicknesses and deformations

4 Principle

The compressive creep is determined by measuring the increase in deformation of a test specimen under constant compressive stress and specified conditions of temperature, humidity and time.

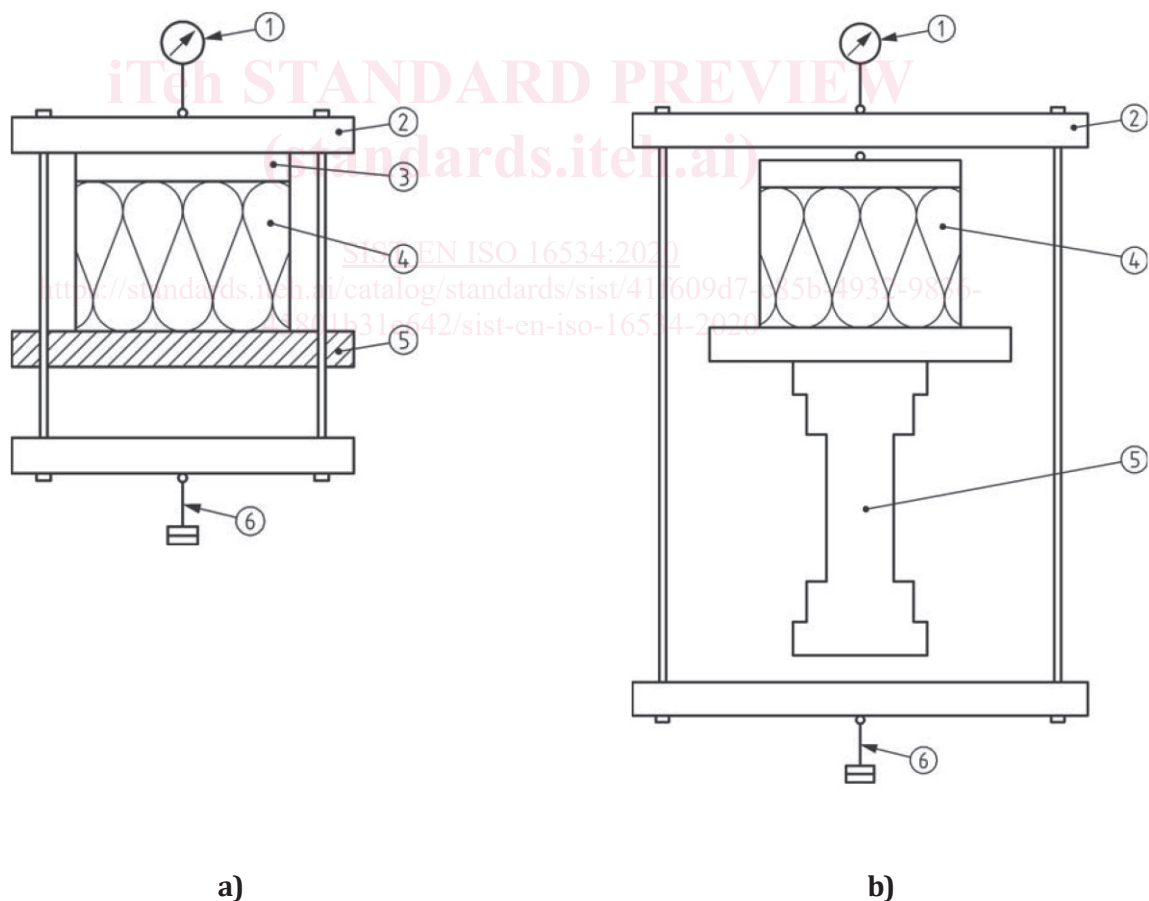
5 Apparatus

5.1 Loading device, consisting of two flat plates, one of which shall be movable, arranged so that they compress the test specimen in a vertical direction. The movable plate shall be guided in such a manner as to be self-aligning. The plates shall be capable of being loaded smoothly and without distortion so that, during the test, the static stress does not change by more than $\pm 5\%$.

5.2 Measuring device (e.g. dial gauge), capable of determining the distance between the two plates, i.e. the deformation of the test specimen, to an accuracy of 0,01 mm.

5.3 Suitable damping measures, to ensure the effects of external vibration are minimized (e.g. a substantial foundation and anchoring of the apparatus support).

Examples of the testing apparatus are given in [Figure 2](#).



Key

1	displacement transducer or dial gauge	4	test specimen
2	loading bridge	5	support beam
3	load distribution plate (movable, self-aligning)	6	loading by weights

Figure 2 — Examples of test apparatus