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**Thermal insulating products  
for building applications —  
Determination of long-term water  
absorption by diffusion**

*Produits isolants thermiques destinés aux applications du bâtiment —  
Détermination de l'absorption d'eau à long terme par diffusion*



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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)

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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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This document was prepared by the European Committee for Standardization (CEN) Technical Committee CEN/TC 88, *Thermal insulating materials and products*, in collaboration with ISO Technical Committee TC 163, *Thermal performance and energy use in the built environment*, Subcommittee SC 1, *Test and measurement methods*, in accordance with the agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This second edition cancels and replaces the first edition (ISO 16536:2012), which has been technically revised. The main changes compared to the previous edition are as follows:

- The content in 6.4 and 10 has been revised to reflect the conditions for tropical countries.

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).

# Thermal insulating products for building applications — Determination of long-term water absorption by diffusion

## 1 Scope

This document specifies the equipment and procedures for determining the long-term water absorption of test specimens by diffusion. It is applicable to thermal insulating products. It is intended to simulate the water absorption of products subjected to high relative humidities, approximating to 100 %, on both sides and subjected to a water vapour pressure gradient for a long period of time e.g. inverted roof or unprotected ground insulation.

The test is not applicable for all types of thermal insulating products. The relevant product standard should state for which of its products, if any, this test is applicable.

NOTE For unprotected ground insulation the temperature of 50 °C could be replaced by a lower temperature, when more data is available.

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

## 3 Terms and definitions

No terms and definitions are listed in this document.

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

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

## 4 Principle

The long-term water absorption by diffusion is determined by measuring the increase in the mass of a test specimen subjected to a water vapour pressure difference and temperature gradient for a period of 28 days.

## 5 Apparatus

- 5.1 **Balance**, capable of determining the mass of a specimen to an accuracy of 0,1 g.
- 5.2 **Corrosion resistant container**, a frame supporting the test specimens.
- 5.3 **Heating device**, a thermostat, which provides water temperature control to  $(50 \pm 1)$  °C.
- 5.4 **Cooling plate**, thermally insulated on the outside, operating at a temperature of  $(1 \pm 0,5)$  °C.