INTERNATIONAL STANDARD

ISO
7345

Thermal performance of buildings and building components — Physical quantities and definitions

Performance thermique des bâtiments et des matériaux pour le bâtiment — Grandeurs physiques et définitions

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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).

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

For an explanation on 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 the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 163, *Thermal performance and energy use in the built environment*.

This third edition of ISO 7345 cancels and replaces the second edition (ISO 7345:1987), which has been technically revised.

This edition includes the following significant changes with respect to the previous edition:

— title of the standard updated from '*Thermal insulation — Physical quantities and definitions*' to '*Thermal performance of buildings and building elements — Physical quantities and definitions*';

— title of ISO/TC 163 corrected (Foreword);

— ISO 31-4 replaced by ISO 80000-5 in the note in the Scope and added to the Bibliography;

— symbols, names and definitions (in 3.3 and 3.4) adapted to current state ($\Lambda \to L$, $\Lambda_l \to L_{2D}$, $U_l \to \Psi$, coefficient of heat loss → heat transfer coefficient);

— "areal" used instead of "surface" in quantity names (Clause 3) where "surface" was meant to distinguish between a length-related quantity ("linear") and an area-related quantity (now "areal") with similar name;

— Formula in 3.1.4 corrected;

— subscript *l* added in 3.4;

— added a Note 1 to entry in 3.1.11 and a Note 3 to entry in 3.1.13;

— *H'* added in 3.2.2 as an alternative name for F_s;

— added "for homogeneous solids" to A.1 in Annex A.

Introduction

This document is intended to be used in conjunction with other vocabularies related to thermal insulation. These include:

— ISO 7945, *Thermal insulation — Physical quantities and definitions*

— ISO 9251, *Thermal insulation — Heat transfer conditions and properties of materials — Vocabulary*

— ISO 9346, *Thermal insulation — Mass transfer — Physical quantities and definitions*

— ISO 9229, *Thermal insulation — Thermal insulating materials and products — Vocabulary*

— ISO 9288, *Thermal insulation — Heat transfer by radiation — Physical quantities and definitions*

NOTE   Annex A provides an explanation of the concept of thermal conductivity.

Thermal performance of buildings and building components — Physical quantities and definitions

1 Scope

This document defines physical quantities used in the thermal performance of buildings and building elements, and gives the corresponding symbols and units.

NOTE   Because the scope of this document is restricted to thermal performance and energy use in the built environment, some of the definitions it contains differ from those given ISO 80000-5.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

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

3.1 Physical quantities and definitions

3.1.1
heat
quantity of heat
Q
Note 1 to entry: Unit: J.

3.1.2
heat flow rate
Φ
quantity of heat transferred to or from a system divided by time

$$\Phi = \frac{dQ}{dt}$$

Note 1 to entry: Unit: W.

3.1.3
density of heat flow rate
q
heat flow rate divided by area

$$q = \frac{d\Phi}{dA}$$

Note 1 to entry: The word "density" should be replaced by "areal density" when it may be confused with *linear density* (3.1.4).

Note 2 to entry: Unit: W/m^2.

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