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Standardi za lastnosti stavb - Definicija in računanje indikatorjev površine in prostornine

Performance standards in building -- Definition and calculation of area and space indicators

Normes de performance dans le bâtiment -- Définition et calcul des indicateurs de surface et de volume

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Performance standards in building — Definition and calculation of area and space indicators

Normes de performance dans le bâtiment — Définition et calcul des indicateurs de surface et de volume

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Foreword

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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 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 59, *Buildings and civil engineering works*, Subcommittee SC 15, *Framework for the description of housing performance*.

This third edition cancels and replaces the second edition (ISO 9836:2011), of which it constitutes a minor revision with the following changes plus other minor editorial modifications:

— in Figure 1, the intra-muros area has been changed;

— in 5.1.7.3, ISO 6241:1984, Tables 1 and 2 has been changed to ISO 19208:2016, Table B.1;

— in 5.4, ISO 6241:1984, Table 2 has been changed to ISO 19208:2016;

— in Bibliography, references have been added;

— in 5.1.11 g) and A.2, the decimal point expression has been corrected.

Introduction

The surface area and volume indicators derived from measuring spaces in buildings can be used to compare aspects of value, such as the proportion of space or volume which can be utilized functionally. As approximate values for planning, they can be a basis for further developments.

Reference to surface area and volume indicators when assessing buildings, which either already exist or which are in the planning stage, indirectly indicates certain economic characteristics of the buildings. Thus, the relationship between the area taken up by the building and the usable area indicates whether the building costs and materials have been used to their best advantage.

In the same way, the relationship between the area of the building envelope and the usable area shows the extent to which basic savings have been made on the envelope and the running costs of the heating and air conditioning systems.

As far as the determination of the economic performance of whole buildings is concerned, surface area and volume indicators contain basic data for calculation and comparison of capital costs and for running costs and maintenance. They give a basis for the minimization of running costs by limiting the amount of space and the cost of individual materials. For example, if the area of the external walls is small compared to the usable area, this would indicate not only relatively low energy costs but also relatively low cleaning and maintenance costs for facades.

NOTE Examples of using building loss factors for a new construction are given in Annex A.

Performance standards in building — Definition and calculation of area and space indicators

1 Scope

This document specifies the definition and calculation of surface area and volume indicators.

In defining area measurement, this document uses three measurement concepts:

a) the intra-muros and extra-muros concept used in many parts of the world;

b) the wall centre method of measurement used in many parts of the world;

c) variations on these methods to comply with certain national laws or for particular types of buildings.

The surface area and volume indicators defined in this document are intended for practical use, as a basis for measuring various aspects of the performance of buildings or as a planning aid. In other words, they should enable judgement to be made on functional, technical and economic aspects of buildings.

This document is intended to be used when establishing

— specifications for the geometric performance of a building and its spaces (e.g. in design, purchasing procedures, etc., or in building regulations where appropriate),

— technical documentation relating to the performance of whole buildings prepared by designers, contractors and manufacturers,

— the amount of floor area that will not be effectively available for the placement of an individual's workplace, furniture, equipment, or for circulation, and

— evaluation, comparison or control of the properties of a building which are connected to its geometric performance.

NOTE Although there are a variety of methods of area measurement around the world depending on the country and/or types of buildings, all measuring methods are not necessarily of practical use because of inability to identify real area (e.g. the wall centre method of measurement). Thus, this document specializes in the measurement solely for practical use.

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 6707-1, *Building and civil engineering — Vocabulary — Part 1: General terms*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 6707-1 and the following apply.

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 http://www.iso.org/obp

3.1
surface area indicator
amount of certain types of area (e.g. usable area) and the relationship between different types of area (e.g. area occupied by structure/usable area)

3.2
volume indicator
amount of certain types of volume (e.g. net volume) and the relationship between different types of volume (e.g. gross volume/net volume)

Note 1 to entry: An example of a relationship indicator of volume is gross volume/net volume.

3.3
mixed surface area and volume indicator
indicator relating a type of volume to a type of area (e.g. gross volume/usable area) and a type of area to a type of volume

Note 1 to entry: Clause 5 gives further definitions of the different surface area and volume indicators, together with the appropriate calculation methods.

Note 2 to entry: An example of a mixed relationship indicator is area of building envelope/net volume.

3.4
building loss feature
feature or element of a building in which a portion of the floor area is not available for an individual's activities, or for furniture, equipment or circulation

Note 1 to entry: Examples of places in which a portion might not be available because of a building loss feature are workplaces, corridors, etc.

Note 2 to entry: A building loss feature may be a physical element such as a column, or the configuration of an element such as the curve of a wall, or the configuration of a fire escape route which is mandated by regulation but not needed for normal circulation.

3.5
effective building loss area
portion of the floor area that is not physically occupied by building material yet is not fully available for an individual's activities, or for furniture, equipment or for circulation, because of a building loss feature

Note 1 to entry: Examples of places in which a portion might not be available because of a building loss feature are workplaces, corridors, etc.

3.6
actual building loss area
portion of the floor area that is not available for an individual's activities, or for furniture, equipment or for circulation, because it is physically occupied by a building loss feature, or is required to be vacant by law or regulation or by a lease

Note 1 to entry: Examples of places in which a portion might not be available because of a building loss feature are workplaces, corridors, etc.

3.7
perimeter encroachment
form of building loss feature which prevents effective use of floor area near a wall or other geometrically regular building form

Note 1 to entry: Examples of a perimeter encroachment include pilaster, convector, baseboard heating unit and radiator.

4 Units

Surface area and volume indicators are obtained by measuring the plan and elevation of the building. Their units of measurement differ according to the type of calculation (m^2: m^3: m^2/m^2: m^3/m^3: m^2/m^3: m^3/m^2).

5 Intra-muros calculation methods and list of indicators for geometric performance

5.1 Surface areas

NOTE See Figure 1.

5.1.1 Calculation principles

5.1.1.1 Surfaces which are horizontal or vertical are measured by their actual dimensions. For calculations of area and space, inclined planes are measured by their vertical projection onto an (imaginary) horizontal plane or vertical plane as appropriate. For calculations of heat gain or loss, the actual exposed surface area shall be used instead of the projected area.

5.1.1.2 The surface areas are expressed in square metres, to two decimal places.

5.1.2 Covered area

5.1.2.1 The covered area is the area of ground covered by buildings in their finished state.

5.1.2.2 The covered area is determined by the vertical projection of the external dimensions of the building onto the ground.

The following are not included in covered area:

— construction or parts of construction not projecting above the surface of the ground;

— secondary components, e.g. external staircases, external ramps, canopies, horizontal sun-shields, roof overhangs, street lighting;

— the areas of outdoor facilities, e.g. greenhouses and outhouses.

5.1.3 Total floor area

5.1.3.1 The total floor area of a building is the total area of all floor levels. Floor levels may be storeys which are either completely or partially under the ground, storeys above ground, attics, terraces, roof terraces, service floors or storage floors (see Figure 1).

It is necessary to distinguish between

a) floor areas which are enclosed and covered on all sides,

b) floor areas which are not enclosed on all sides up to their full height, but which are covered, such as recessed balconies, and

c) floor areas which are contained within components (e.g. parapets, fascias, handrails), but which are not covered, such as open balconies.