
Acoustics — Acoustic classification of dwellings

Acoustique — Système de classification acoustique des logements



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ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: 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).

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 43, *Acoustics*, Subcommittee SC 2, *Building acoustics*.

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

Building regulations typically specify requirements about acoustic conditions for new dwellings. However, complying with such requirements does not guarantee satisfactory conditions for the occupants. Thus, there is a need for a guideline with acoustic classes reflecting higher levels of acoustic comfort in new housing. In addition, this document provides a useful tool for characterizing acoustic conditions in older housing and for specifying the goal for acoustic upgrading, when renovating.

The classification guideline specifies criteria for six classes A, B, C, D, E and F for dwellings, class A being the highest class and F the lowest class. If no acoustic performance is required, or the performance is outside the indicated classes or not determined, it can be declared as NPD (no performance determined).

Acoustics — Acoustic classification of dwellings

1 Scope

This document describes criteria and procedures for acoustic classification of dwellings.

The purpose of this document is to make it easier for developers to specify a classified level of acoustic quality for a dwelling, and help users and builders to be informed about the acoustic conditions and define increased acoustic quality. The document can also be applied as a general tool to characterize the quality of the existing housing stock and includes provisions for classifying the acoustic quality before and after renovation has taken place. By the acoustic quality for a dwelling is understood the quality of the acoustic performances typically included in building regulations, e.g. sound insulation towards neighbouring premises and road traffic as well as sound from service equipment. Sound insulation and room acoustics internally in a dwelling are not included in the acoustic classes defined.

This document does not have a legal status in a country, unless decided by its own authorities. However, an additional purpose of this document is to help national authorities and standardization organisations to develop or revise national building regulations and acoustic classification schemes.

For the purpose of this document, the term "dwellings" refers to detached and attached dwelling-houses, buildings with several flats as well as individual dwellings, and a dwelling is the living space for a household.

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 717-1, *Acoustics — Rating of sound insulation in buildings and of building elements — Part 1: Airborne sound insulation*

ISO 717-2, *Acoustics — Rating of sound insulation in buildings and of building elements — Part 2: Impact sound insulation*

ISO 1996-1, *Acoustics — Description, measurement and assessment of environmental noise — Part 1: Basic quantities and assessment procedures*

ISO 1996-2, *Acoustics — Description, measurement and assessment of environmental noise — Part 2: Determination of sound pressure levels*

ISO 3382-2, *Acoustics — Measurement of room acoustic parameters — Part 2: Reverberation time in ordinary rooms*

ISO 10052, *Acoustics — Field measurements of airborne and impact sound insulation and of service equipment sound — Survey method*

ISO 12354-1, *Building acoustics — Estimation of acoustic performance of buildings from the performance of elements — Part 1: Airborne sound insulation between rooms*

ISO 12354-2, *Building acoustics — Estimation of acoustic performance of buildings from the performance of elements — Part 2: Impact sound insulation between rooms*

ISO 12354-3, *Building acoustics — Estimation of acoustic performance of buildings from the performance of elements — Part 3: Airborne sound insulation against outdoor sound*

EN 12354-5, *Building acoustics — Estimation of acoustic performance of building from the performance of elements — Part 5: Sound levels due to the service equipment*

EN 12354-6, *Building acoustics — Estimation of acoustic performance of buildings from the performance of elements — Part 6: Sound absorption in enclosed spaces*

ISO 16032, *Acoustics — Measurement of sound pressure level from service equipment in buildings — Engineering method*

ISO 16283-1, *Acoustics — Field measurement of sound insulation in buildings and of building elements — Part 1: Airborne sound insulation*

ISO 16283-2, *Acoustics — Field measurement of sound insulation in buildings and of building elements — Part 2: Impact sound insulation*

ISO 16283-3, *Acoustics — Field measurement of sound insulation in buildings and of building elements — Part 3: Façade sound insulation*

3 Terms and definitions

For the purposes of this document, the following terms and definitions 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 General

3.1.1

airborne sound insulation

insulation against airborne sound measured in accordance with ISO 16283-1 and determined in frequency bands (one-third-octave bands or octave bands) from which single-number ratings for the building performance can be obtained in accordance with ISO 717-1

Note 1 to entry: Single number ratings are expressed in decibels.

Note 2 to entry: Conversion between different single number quantities, e.g. between R'_w and $D_{nT,w'}$ is described in ISO 12354-1.

3.1.2

impact sound insulation

insulation against impact sound measured as an impact sound pressure level in accordance with ISO 16283-2 and determined in frequency bands (one-third octave bands or octave bands) from which single-number ratings for the building performance can be obtained in accordance with ISO 717-2

Note 1 to entry: Single number ratings are expressed in decibels.

Note 2 to entry: In ISO 717-2, it is referred to as impact sound pressure level.

Note 3 to entry: Conversion between different single number quantities, e.g. between $L'_{n,w}$ and $L'_{nT,w'}$ is described in ISO 12354-2.

3.1.3

airborne sound insulation of building envelopes

insulation against sound from the outside measured in accordance with ISO 16283-3 and determined in frequency bands (one-third-octave bands or octave bands) from which single-number ratings for the building performance can be obtained in accordance with ISO 717-1

Note 1 to entry: Single number ratings are expressed in decibels.