INTERNATIONAL STANDARD

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Building acoustics — Estimation of acoustic performance of buildings from the performance of elements —

Part 4: Transmission of indoor sound to the outside

Acoustique du bâtiment — Calcul de la performance acoustique des bâtiments à partir de la performance des éléments —

Partie 4: Transmission du bruit intérieur à l'extérieur

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Contents

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 15712-4 was prepared by CEN/TC 126, *Acoustic properties of building products and of buildings* (as EN 12354-4:2000), and was adopted without modification by Technical Committee ISO/TC 43, *Acoustics*, Subcommittee SC 2, *Building acoustics*.

Throughout the text of this document, read "...this European Standard..." to mean "...this International Standard...".

Building acoustics — Estimation of acoustic performance of buildings from the performance of elements —

Part 4:
Transmission of indoor sound to the outside

1 Scope

This European Standard describes a calculation model for the sound power level radiated by the envelope of a building due to airborne sound inside that building, primarily by means of measured sound pressure levels inside the building and measured data which characterize the sound transmission by the relevant elements and openings in the building envelope. These sound power levels, together with those of other sound sources in or in front of the building envelope, form the basis for the calculation of the sound pressure level at a chosen distance from a building as a measure for the acoustic performance of buildings.

The prediction of the inside sound pressure level from knowledge of the indoor sound sources is outside the scope of this European Standard.

The prediction of the outdoor sound propagation is outside the scope of this European Standard.

NOTE For simple propagation conditions an approach is given for the estimation of the sound pressure level in informative annex E.

This European Standard describes the principles of the calculation model, lists the relevant quantities and defines its applications and restrictions. It is intended for acoustical experts and provides the framework for the development of application documents and tools for other users in the field of building construction, taking into account local circumstances.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN ISO 140-3, *Acoustics – Measurement of sound insulation in buildings and of building elements – Part 3 : Laboratory measurements of airborne sound insulation of building elements (ISO 140-3:1995).*

EN ISO 140-5, *Acoustics – Measurement of sound insulation in buildings and of building elements – Part 5 : Field measurements of airborne sound insulation of façade elements and façades (ISO 140-5:1998).*

EN 20140-10, *Acoustics – Measurement of sound insulation in buildings and of building elements – Part 10 : Laboratory measurement of airborne sound insulation of small building elements (ISO 140-10:1991).*

EN ISO 7235, *Acoustics – Measurement procedures for ducted silencers - Insertion loss, flow noise and total pressure loss (ISO 7235:1991).*

3 Relevant quantities

The symbols used for the purposes of this European Standard are given in annex A.

3.1 Quantities to express building performance

3.1.1 Sound power level L_{w}

The sound power level of a substitute point sound source.

3.1.2 Directivity correction D_{c}

The deviation in decibels of the sound pressure level of a point sound source in a specified direction from the level of an omni-directional point source producing the same sound power level.