INTERNATIONAL STANDARD

ISO 10848-5

First edition
2020-08

Acoustics — Laboratory and field measurement of the flanking transmission for airborne, impact and building service equipment sound between adjoining rooms —

Part 5: Radiation efficiencies of building elements

Acoustique — Mesurage en laboratoire et sur site des transmissions latérales du bruit aérien, des bruits de choc et du bruit d'équipement technique de bâtiment entre des pièces adjacentes —

Partie 5: Efficacité de rayonnement des éléments de construction

Reference number
ISO 10848-5:2020(E)

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Published in Switzerland

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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 ISO/TC 43, *Acoustics*, Subcommittee SC 2, *Building acoustics,* in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 126, *Acoustic properties of building elements and of buildings,* in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

A list of all parts in the ISO 10848 series can be found on the ISO website.

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

ISO 10848 (all parts) specifies laboratory and field measurement methods to characterize the flanking transmission of one or several building components.

This document describes the measurement of the radiation efficiency of an element using structure-borne excitation and/or acoustical excitation. Both these radiation efficiencies are required to estimate the sound reduction index due to resonant transmission only, according to ISO 12354-1:2017, Annex B.

For Type B elements as defined in ISO 10848-1 and ISO 12354-1, the radiation efficiency of an element using structure-borne excitation is required to calculate flanking transmission. It is also required to estimate adaptation terms used in predicting service equipment sound according to EN 12354-5.

Acoustics — Laboratory and field measurement of the flanking transmission for airborne, impact and building service equipment sound between adjoining rooms —

Part 5: Radiation efficiencies of building elements

1 Scope

This document specifies measurement methods to characterize in the laboratory the acoustic radiation of a building element when it is directly excited by an airborne or structure-borne source. It is applicable to single-leaf and double-leaf elements (see ISO 12354-1:2017 Annex F, F2). The measured quantity can be used as input data for prediction methods, such as ISO 12354-1 and ISO 12354-2, to compare products, or to express a requirement.

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 10140-5, *Acoustics — Laboratory measurement of sound insulation of building elements — Part 5: Requirements for test facilities and equipment*

ISO 10848-1:2017, *Acoustics — Laboratory and field measurement of flanking transmission for airborne, impact and building service equipment sound between adjoining rooms — Part 1: Frame document*

ISO 12999-1, *Acoustics — Determination and application of measurement uncertainties in building acoustics — Part 1: 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
average velocity level
L_v
ten times the common logarithm of the ratio of the time and space averaged mean-square normal velocity of an element to the squared reference velocity, for which the time averaged velocity at position i is determined as follows:

$$v_i = \frac{1}{T_m} \int_0^{T_m} v_i^2(t)\,\mathrm{d}t$$