BS EN ISO 16283-3:2016

BSI Standards Publication

Acoustics — Field measurement of sound insulation in buildings and of building elements

Part 3: Façade sound insulation

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National foreword

This British Standard is the UK implementation of EN ISO 16283-3:2016. Together with BS EN ISO 16283-1:2014, it supersedes BS EN ISO 140-5:1998 which is withdrawn. Together with BS EN ISO 16283-1:2014 and BS EN ISO 16283-2:2015, it supersedes BS EN ISO 140-14:2004 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee EH/1/6, Building acoustics.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Acoustics - Field measurement of sound insulation in buildings and of building elements - Part 3: Façade sound insulation (ISO 16283-3:2016)

Acoustique - Mesurage in situ de l'isolement acoustique des bâtiments et des éléments de construction - Partie 3: Isolement aux bruits de façades (ISO 16283-3:2016)

Akustik - Messung der Schalldämmung in Gebäuden und von Bauteilen am Bau - Teil 3: Fassadenschalldämmung (ISO 16283-3:2016)

This European Standard was approved by CEN on 2 January 2016.

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European foreword

This document (EN ISO 16283-3:2016) has been prepared by Technical Committee ISO/TC 43 "Acoustics" in collaboration with Technical Committee CEN/TC 126 "Acoustic properties of building elements and of buildings" the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by August 2016, and conflicting national standards shall be withdrawn at the latest by August 2016.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN ISO 140-14:2004, EN ISO 140-5:1998.

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Endorsement notice

The text of ISO 16283-3:2016 has been approved by CEN as EN ISO 16283-3:2016 without any modification.

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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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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 43, *Acoustics*, Subcommittee SC 2, *Building acoustics*.

This first edition cancels and replaces ISO 140-5:1998 and ISO 140-14:2004, which have been technically revised.

ISO 16283 consists of the following parts, under the general title *Acoustics — Field measurement of sound insulation in buildings and of building elements*:

— *Part 1: Airborne sound insulation*

— *Part 2: Impact sound insulation*

— *Part 3: Façade sound insulation*

Introduction

ISO 16283 (all parts) describes procedures for field measurements of sound insulation in buildings. Airborne, impact, and façade sound insulation are described in ISO 16283-1, ISO 16283-2, and in this part of ISO 16283, respectively.

Field sound insulation measurements that were described previously in ISO 140-4, ISO 140-5, and ISO 140-7 were (a) primarily intended for measurements where the sound field could be considered to be diffuse and (b) not explicit as to whether operators could be present in the rooms during the measurement. ISO 16283 differs from ISO 140-4, ISO 140-5, and ISO 140-7 in that (a) it applies to rooms in which the sound field can or cannot approximate to a diffuse field, (b) it clarifies how operators can measure the sound field using a hand-held microphone or sound level metre, and (c) it includes additional guidance that was previously contained in ISO 140-14.

NOTE Survey test methods for field measurements of façade sound insulation are dealt with in ISO 10052.

INTERNATIONAL STANDARD ISO 16283-3:2016(E)

Acoustics — Field measurement of sound insulation in buildings and of building elements —

Part 3: Façade sound insulation

1 Scope

This part of ISO 16283 specifies procedures to determine the airborne sound insulation of façade elements (element methods) and whole façades (global methods) using sound pressure measurements. These procedures are intended for room volumes in the range from 10 m^3 to 250 m^3 in the frequency range from 50 Hz to 5 000 Hz.

The test results can be used to quantify, assess, and compare the airborne sound insulation in unfurnished or furnished rooms where the sound field can or cannot approximate to a diffuse field. The measured airborne sound insulation is frequency-dependent and can be converted into a single number quantity to characterize the acoustic performance using the rating procedures in ISO 717-1.

The element methods aim to estimate the sound reduction index of a façade element, for example, a window. The most accurate element method uses a loudspeaker as an artificial sound source. Other less accurate element methods use available traffic noise. The global methods, on the other hand, aim to estimate the outdoor/indoor sound level difference under actual traffic conditions. The most accurate global methods use the actual traffic as sound source. A loudspeaker can be used as an artificial sound source when there is insufficient level from traffic noise inside the room. An overview of the methods is given in Table 1.

The element loudspeaker method yields an apparent sound reduction index which, under certain circumstances, can be compared with the sound reduction index measured in laboratories in accordance with ISO 10140. This method is the preferred method when the aim of the measurement is to evaluate the performance of a specified façade element in relation to its performance in the laboratory.

The element road traffic method will serve the same purposes as the element loudspeaker method. It is particularly useful when, for different practical reasons, the element loudspeaker method cannot be used. These two methods will often yield slightly different results. The road traffic method tends to result in lower values of the sound reduction index than the loudspeaker method. In Annex D, this road traffic method is supplemented by the corresponding aircraft and railway traffic methods.

The global road traffic method yields the real reduction of a façade in a given place relative to a position 2 m in front of the façade. This method is the preferred method when the aim of the measurement is to evaluate the performance of a whole façade, including all flanking paths, in a specified position relative to nearby roads. The result cannot be compared with that of laboratory measurements.

The global loudspeaker method yields the sound reduction of a façade relative to a position that is 2 m in front of the façade. This method is particularly useful when, for practical reasons, the real source cannot be used; however, the result cannot be compared with that of laboratory measurements.