

Acoustics - Determination and application of measurement uncertainties in building acoustics - Part 2: Sound absorption (ISO 12999-2:2020)

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

See Eesti standard EVS-EN ISO 12999-2:2020 sisaldab Euroopa standardi EN ISO 12999-2:2020 ingliskeelset teksti.	This Estonian standard EVS-EN ISO 12999-2:2020 consists of the English text of the European standard EN ISO 12999-2:2020.
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English Version

Acoustics - Determination and application of measurement  
uncertainties in building acoustics - Part 2: Sound  
absorption (ISO 12999-2:2020)

Acoustique - Détermination et application des  
incertitudes de mesure dans l'acoustique des  
bâtiments - Partie 2: Absorption acoustique (ISO  
12999-2:2020)

Akustik - Bestimmung und Anwendung der  
Messunsicherheiten in der Bauakustik - Teil 2:  
Schalldämpfung (ISO 12999-2:2020)

This European Standard was approved by CEN on 5 July 2020.

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EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

## European foreword

This document (EN ISO 12999-2:2020) 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of an identical text or by endorsement, at the latest by January 2021, and conflicting national standards shall be withdrawn at the latest by January 2021.

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

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## Endorsement notice

The text of ISO 12999-2:2020 has been approved by CEN as EN ISO 12999-2:2020 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](http://www.iso.org/directives)).

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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](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee 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 12999 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](http://www.iso.org/members.html).

## Introduction

An assessment of uncertainties that is comprehensible and close to reality is indispensable for reporting and applying measured sound absorption. Uncertainties should preferably be determined following the principles of ISO/IEC Guide 98-3.

ISO/IEC Guide 98-3 specifies a detailed procedure for the uncertainty evaluation that is based upon a complete mathematical model of the measurement procedure. At the current knowledge, it is impossible to formulate these models for sound absorption measurements according to ISO 354 and evaluations according to ISO 11654 or similar. To come to uncertainties all the same, the concept of reproducibility and repeatability is applied in this document. This concept offers the possibility to state the uncertainty of a method and of measurements carried out according to the method, based on the results of inter-laboratory measurements.

Observed uncertainties are probably caused by different laboratory designs. When the method of ISO 354 for measuring sound absorption is modified, other uncertainties than the ones given in this document can be applicable.

# Acoustics — Determination and application of measurement uncertainties in building acoustics —

## Part 2: Sound absorption

### 1 Scope

This document specifies how to calculate:

- the uncertainty of sound absorption coefficients and equivalent sound absorption areas measured according to ISO 354;
- the uncertainty of the practical and weighted sound absorption coefficients determined according to ISO 11654;
- the uncertainty of the object sound absorption coefficient according to ISO 20189; and
- the uncertainty of the single number rating determined according to EN 1793-1.

Furthermore, the use of uncertainties in reporting measured or weighted sound absorption coefficients is explained.

### 2 Normative references

There are no normative references in this document.

### 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

##### **measurand**

quantity intended to be measured

EXAMPLE The sound absorption coefficient of a particular test specimen measured according to ISO 354.

[SOURCE: ISO/IEC Guide 99:2007, 2.3, modified — The Notes to entry have been deleted and the example has been added.]

#### 3.2

##### **measurement result**

value attributed to a *measurand* (3.1), obtained by following the complete set of instructions given in a measurement procedure

Note 1 to entry: The measurement result is the sound absorption coefficient in one-third octave bands according to the procedure of ISO 354 or a (single number) value according to a rating procedure of EN 1793-1 or ISO 11654.