

**Acoustics - Measurement of room acoustic parameters -
Part 1: Performance spaces**

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN ISO 3382-1:2010 sisaldab Euroopa standardi EN ISO 3382-1:2009 ingliskeelset teksti.

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English Version

**Acoustics - Measurement of room acoustic parameters - Part 1:
Performance spaces (ISO 3382-1:2009)**

Acoustique - Mesurage des paramètres acoustiques des
salles - Partie 1: Salles de spectacles (ISO 3382-1:2009)

Akustik - Messung von raumakustischen Parametern - Teil
1: Aufführungsplätze (ISO 3382-1:2009)

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Foreword

This document (EN ISO 3382-1:2009) 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of an identical text or by endorsement, at the latest by December 2009, and conflicting national standards shall be withdrawn at the latest by December 2009.

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Endorsement notice

The text of ISO 3382-1:2009 has been approved by CEN as a EN ISO 3382-1:2009 without any modification.

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Introduction

The reverberation time of a room was once regarded as the predominant indicator of its acoustical properties. While reverberation time continues to be regarded as a significant parameter, there is reasonable agreement that other types of measurements, such as relative sound pressure levels, early/late energy ratios, lateral energy fractions, interaural cross-correlation functions and background noise levels, are needed for a more complete evaluation of the acoustical quality of rooms.

This part of ISO 3382 establishes a method for obtaining reverberation times from impulse responses and from interrupted noise. The annexes introduce the concepts and details of measurement procedures for some of the newer measures, but these do not constitute a part of the formal specifications of this part of ISO 3382. The intention is to make it possible to compare reverberation time measurements with higher certainty and to promote the use of and consensus in measurement of the newer measures.

Annex A presents measures based on squared impulse responses: a further measure of reverberation (early decay time) and measures of relative sound levels, early/late energy fractions and lateral energy fractions in auditoria. Within these categories, there is still work to be done in determining which measures are the most suitable to standardize upon; however, since they are all derivable from impulse responses, it is appropriate to introduce the impulse response as the basis for standard measurements. Annex B introduces binaural measurements and the head and torso simulators (dummy heads) required to make binaural measurements in auditoria. Annex C introduces the support measures that have been found useful for evaluating the acoustic conditions from the musicians' point of view.

Acoustics — Measurement of room acoustic parameters —

Part 1: Performance spaces

1 Scope

This part of ISO 3382 specifies methods for the measurement of reverberation time and other room acoustical parameters in performance spaces. It describes the measurement procedure, the apparatus needed, the coverage required, and the method of evaluating the data and presenting the test report. It is intended for the application of modern digital measuring techniques and for the evaluation of room acoustical parameters derived from impulse responses.

2 Normative references

The following referenced documents are indispensable for the application 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.

IEC 61260, *Electroacoustics — Octave-band and fractional-octave-band filters*

IEC 61672-1, *Electroacoustics — Sound level meters — Part 1: Specifications*

3 Terms and definitions

For the purposes of this part of ISO 3382, the following terms and definitions apply.

3.1

decay curve

graphical representation of the decay of the sound pressure level in a room as a function of time after the sound source has stopped

[ISO 354:2003, 3.1]

NOTE 1 It is possible to measure this decay either after the actual cut-off of a continuous sound source in the room or derived from the reverse-time integrated squared impulse response of the room (see Clause 5).

NOTE 2 The decay directly obtained after non-continuous excitation of a room (e.g. by recording a gunshot with a level recorder) is not recommended for accurate evaluation of the reverberation time. This method ought only be used for survey purposes. The decay of the impulse response in a room is in general not a simple exponential decay, and thus the slope is different from that of the integrated impulse response.

3.2

interrupted noise method

method of obtaining decay curves by direct recording of the decay of sound pressure level after exciting a room with broadband or band limited noise

[ISO 354:2003, 3.3]