

**Acoustics - Measurement of room acoustic parameters -
Part 3: Open plan offices (ISO 3382-3:2012)**

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NATIONAL FOREWORD

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English Version

**Acoustics - Measurement of room acoustic parameters - Part 3:
Open plan offices (ISO 3382-3:2012)**

Acoustique - Mesurage des paramètres acoustiques des
salles - Partie 3: Bureaux ouverts (ISO 3382-3:2012)

Akustik - Messung von Parametern der Raumakustik - Teil
3: Durchgehende Räume (ISO 3382-3:2012)

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Foreword

This document (EN ISO 3382-3:2012) has been prepared by Technical Committee ISO/TC 43 "Acoustics" in collaboration with the 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of an identical text or by endorsement, at the latest by August 2012, and conflicting national standards shall be withdrawn at the latest by August 2012.

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Endorsement notice

The text of ISO 3382-3:2012 has been approved by CEN as a EN ISO 3382-3:2012 without any modification.

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Introduction

The phrase “open plan offices” in the context of this part of ISO 3382 covers offices and similar spaces where a large number of people can work, have a conversation, or concentrate independently in well-defined work stations. In open plan offices, the occupants are affected by activities surrounding them. Insufficient acoustic conditions lead to distraction and a lack of speech privacy. Distraction weakens the ability to concentrate and reduces productivity, especially in tasks requiring cognitive resources. Low speech privacy prevents confidential or partly confidential conversations. Speech can be intrusive for the listener, whereas for the speaker, it can be desirable to avoid involuntary spread of speech of a private nature.

The design of open plan spaces includes careful consideration of the layout of the workstations and mutual arrangement of teams or workgroups. Other factors affecting the acoustical performance of open plan spaces are sound absorption, height of screens and storage units, background noise, degree of workstation enclosure, distance between workstations, and room dimensions. The reverberation time of a room used to be regarded as the predominant indicator of its acoustical properties. However, there is evidence that other types of measurements such as rate of spatial decay of sound pressure levels, speech transmission index and background noise levels are needed for a more complete evaluation. If reverberation time is considered relevant, it should be measured in accordance with ISO 3382-2.

This part of ISO 3382 specifies a measurement method which results in single number quantities indicating the general acoustical performance of open plan offices. The principal aim is good speech privacy between workstations. The measurement method and resulting single number quantities correspond well with perceived acoustic conditions of the worker.

Furniture strongly affects acoustic conditions. Therefore, the measurements are performed only when the room is completely finished, including furniture. Measurement in an unfurnished room does not describe the perceived acoustical conditions. It is also important that the measurements are carried out when people are absent, but with the normal daytime background noise, whether it is caused by ventilation, traffic noise or an artificial masking sound system. If people are present, the background noise level varies strongly with time and the determination of reliable results becomes impossible.

The single number quantities are designed to represent the situation where a single person is talking and the rest are silent. Therefore, the measurements are made by using a single loudspeaker. If many people speak simultaneously, the masking is increased and the degree of distraction gets weaker (see Reference [10]). Therefore, the results describe the most distracting situation. However, this part of ISO 3382 can be used to determine the room acoustic quality of, for example, call centres where many speakers are active continuously. In such cases, the sound environment caused by many simultaneous speakers may cause a positive speech masking effect and the results of this part of ISO 3382 may underestimate the perceived speech privacy.

Acoustics — Measurement of room acoustic parameters —

Part 3: Open plan offices

1 Scope

This part of ISO 3382 specifies methods for the measurement of room acoustic properties in open plan offices with furnishing. It specifies measurement procedures, the apparatus needed, the coverage required, the method for evaluating the data, and the presentation of the test report.

The measurement results can be used to evaluate room acoustic properties in open plan offices. This part of ISO 3382 is intended for medium and large size open plan offices.

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.

ISO 3382-1, *Acoustics — Measurement of room acoustic parameters — Part 1: Performance spaces*

ISO 3740, *Acoustics — Determination of sound power levels of noise sources — Guidelines for the use of basic standards*

ISO 3744, *Acoustics — Determination of sound power levels and sound energy levels of noise sources using sound pressure — Engineering methods for an essentially free field over a reflecting plane*

ISO 14257, *Acoustics — Measurement and parametric description of spatial sound distribution curves in workrooms for evaluation of their acoustical performance*

ISO 16032, *Acoustics — Measurement of sound pressure level from service equipment in buildings — Engineering method*

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

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

IEC 60268-16:2011, *Sound system equipment — Part 16: Objective rating of speech intelligibility by speech transmission index*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1

spatial sound distribution of the A-weighted sound pressure level of speech

curve which shows how the A-weighted sound pressure level decreases as a function of the distance from the sound source emitting noise with the sound power spectrum of normal speech