Second edition
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Acoustics — Measurement of room acoustic parameters —

Part 3: Open plan offices

Acoustique — Mesurage des paramètres acoustiques des salles —

Partie 3: Bureaux ouverts

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Foreword

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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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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 products and buildings,* in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This second edition cancels and replaces the first edition (ISO 3382-3:2012), which has been technically revised. The main changes compared to the previous edition are as follows:

— new single-number quantity, comfort distance, added, and privacy distance removed;

— sole use of omnidirectional sound source in all measurement phases emphasized;

— definitions (Clause 3), measurement conditions (Clause 4), and determination of single-number values (Clause 5) clarified;

— use of impulse response method better described and a new Annex B added;

— Clause 6 “Precision” and an informative Annex D were added;

— STI is determined in conformity with IEC 60268-16 using weighting factors α and β for male gender;

A list of all parts in the ISO 3382 series can be found on the ISO website.

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Introduction

Open-plan office is a large and open office space where large number of occupants can simultaneously work in well-defined workstations. Both flexible offices and activity-based offices often involve spaces that resemble open-plan offices. Open working areas, which can be considered as open-plan offices, can also be found in many libraries, hospital wards, industrial workplaces, and schools.

Noise and lack of speech privacy are among the largest contributors to environmental dissatisfaction in open-plan offices[1]. Colleagues' speech is the main source of office noise. Inadequate room acoustic design of the office is one reason to the perception of noise and lack of speech privacy. Distraction due to colleagues' speech weakens the ability to concentrate and reduces work performance, especially in tasks requiring cognitive resources. Insufficient speech privacy prevents confidential conversations. Several experimental studies suggest that distraction can be reduced by reducing speech intelligibility[2] [3]. A large field survey supports that reduced speech intelligibility is associated with reduced noise disturbance[4]. According to Reference [4], many of the single-number quantities described in this standard are associated with the perceived noise disturbance in open-plan offices.

The outcomes of this method describe the acoustic performance of the open-plan office in a standardized condition where a single occupant is speaking with normal speech effort[5]. The background sound caused by building appliances or sound masking system is considered in the measurements. The measurements are conducted in an unoccupied open-plan office because the method concerns the permanent building properties and stable room acoustic conditions as well as ISO 3382-1 and ISO 3382-2. The activity sound caused by the occupants does not belong to the scope of this standard, although the level of activity sound can be significantly larger than the level of background sound.

The method uses omnidirectional sound source to provide reproducible results between measurement operators. Furthermore, the speaking direction of occupant in the office workstation is not always known nor constant in time. The use of directional sound sources would lead into different results between measurement operators due to different choices of source direction and source directivities.

Room acoustic quality can be affected by the amount and positioning of wall and ceiling sound absorption materials, room geometry, workstations, screens, other furniture, floor coverings, and background sound level (e.g., masking sound). Presentation of acoustic design guidelines is beyond the scope of this document because literature gives sufficient advice how to reach good room acoustic quality[5][6][7].