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Acoustic quality criteria for music rehearsal rooms and spaces

Critères de qualité acoustique pour les salles et locaux de répétition musicale

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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).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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.

This document was prepared by Technical Committee ISO/TC 43, *Acoustics*, Subcommittee SC 2, *Building acoustics*.

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.

Introduction

The acoustic properties of a room are crucial for the interaction between the room and the musical instrument. When the acoustic response of a room works well with the instrument, good conditions are achieved for both audience and musicians.

There is a clear connection between the intended use of a music room, the type of music, the ensemble type and the size of the room. It is not possible to achieve satisfactory acoustic conditions for all music types and speech communication in a single room since the acoustic requirements for each use are different.

It is necessary to divide the spaces in accordance with their function and number of musicians or singers (both amateurs and professionals). There are different needs when it comes to the physical size of the room (net volume), timbre, reverberation, net room height and room geometry. The division into types of rooms in this document reflects the practical conditions in musical performance. The musicians play or sing individually (rehearsing or receiving teaching), in small groups (either with the same instruments, voices or in ensembles of three to six persons), in medium size groups/ensembles or in large groups/ensembles (choirs, marching bands, big bands, orchestras and other ensembles), see Reference [22].

The document describes criteria for any kind of rooms and spaces used for music rehearsal. The rooms used for music purposes vary from small practice rooms for one or a few musicians to very large rehearsal rooms and concert halls. In large concert halls, skilled acousticians are engaged for designing and planning the acoustics. In the practice rooms and rooms used for rehearsal or more unformal music performances, the acoustic environment is often not suited for this purpose.

This document is intended for municipalities and county councils, property developers, builders, consultants, architects, contractors, facility owners (public and private) and others who operate or own such buildings. The document may also be used by others, from the individual musician to large groups and associations. A large number of rooms and spaces are used for music rehearsal and performance in municipalities. It is important for property developers to emphasise participation by typical users of the building and the music rooms as early as possible, preferably during the conceptual or planning stages, of which this document should form one of the premises.

Annex A provides guidelines for determining the sound pressure level at forte applying the sound strength (G) of the room and the average sound power level at forte of the musical instruments in question. This leads to favourable range of net room volume and reverberation time for a certain ensemble type. Annex B provides guidelines concerning user processes for planning of rooms for music rehearsal.

Acoustic quality criteria for music rehearsal rooms and spaces

1 Scope

This document specifies differentiated criteria for acoustic conditions and characteristics for rooms and spaces used for music rehearsal. The criteria are specified for different types of music, regardless of the type of building in which the spaces are located. The document provides criteria for room acoustics in spaces used for music rehearsal, whether this is the primary use of the spaces or they are multi-purpose spaces. Together with the acoustic criteria, requirements are given for net room height, net room volume and net area.

Criteria for acoustic conditions are differentiated on the basis of three music types: amplified music, quiet acoustic music, and loud acoustic music.

This document is applicable to the planning of new buildings and the refurbishment of existing ones. The document can also be used to assess the suitability of existing spaces for different musical purposes. The document can be used for the adjustment of rooms and spaces whose primary purpose is not music rehearsal such as sports halls, classrooms, assembly halls, multi-purpose rooms, etc. Flexible acoustic solutions can be used in order to cover several purposes of use.

The criteria in this document do not apply to large, specialized concert halls, opera venues and similar spaces which are basically designed for concerts and performances, or specialized music recording studios.

The document does not deal with the need for logistics, storage rooms for instruments and other key support functions relating to music rehearsal. Sound insulation criteria are not included in this document.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 3382-2, *Acoustics — Measurement of room acoustic parameters — Part 2: Reverberation time in ordinary rooms*

ISO/PAS 20065, *Acoustics — Objective method for assessing the audibility of tones in noise — Engineering method*

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 https://www.electropedia.org/