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Acoustics — Measurement of sound absorption in a reverberation room

Acoustique — Mesurage de l'absorption acoustique en salle réverbérante



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Contents

Page

Foreword.....	iv
Introduction	v
1 Scope.....	1
2 Normative references	1
3 Terms and definitions.....	1
4 Principle	3
5 Frequency range	3
6 Test arrangement.....	3
6.1 Reverberation room and diffusion of sound field	3
6.2 Test specimens	4
6.3 Temperature and relative humidity	5
7 Measurement of reverberation time.....	5
7.1 General	5
7.2 Interrupted noise method.....	6
7.3 Integrated impulse response method	7
7.4 Evaluation of reverberation times based on decay curves	9
8 Expression of results.....	9
8.1 Method of calculation	9
8.2 Precision	11
8.3 Presentation of results	12
9 Test report	13
Annex A (normative) Diffusivity of the sound field in the reverberation room.....	14
Annex B (normative) Test specimen mountings for sound absorption tests.....	15
Bibliography	21

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 354 was prepared by Technical Committee ISO/TC 43, *Acoustics*, Subcommittee SC 2, *Building acoustics*.

This second edition cancels and replaces the first edition (ISO 354:1985), which has been technically revised, as follows:

- an integrated impulse response method has been introduced;
- the requirement to measure at least 36 decays has been added;
- mounting conditions according to ISO 354:1985:Amd.1:1997 and mounting conditions Type B and Type J have been introduced.

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Introduction

When a sound source operates in an enclosed space, the level to which reverberant sound builds up, and the subsequent decay of reverberant sound when the source is stopped, are governed by the sound-absorbing characteristics of the boundary surfaces, the air filling the space, and objects within the space. In general, the fraction of the incident sound power absorbed at a surface depends upon the angle of incidence. In order to relate the reverberation time of an auditorium, office, workshop, etc., to the noise reduction that would be effected by an absorbing treatment, knowledge of the sound-absorbing characteristics of the surfaces, usually in the form of a suitable average over all angles of incidence, is required. Since the distribution of sound waves in typical enclosures includes a wide and largely unpredictable range of angles, a uniform distribution is taken as the basic condition for the purposes of standardization. If, in addition, the sound intensity is independent of the location within the space, the sound distribution is called a diffuse sound field, and the sounds reaching a room surface are said to be at random incidence.

The sound field in a properly designed reverberation room closely approximates a diffuse field. Hence, sound absorption measured in a reverberation room closely approximates the sound absorption that would be measured under the basic conditions assumed for standardization.

The purpose of this International Standard is to promote uniformity in the methods and conditions of measurement of sound absorption in reverberation rooms.