Australian/New Zealand Standard™

Acoustics—Measurement of the reverberation time in rooms

Standards Australia

STANDARDS NEW ZEALAND

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee AV-004, Acoustics, Architectural. It was approved on behalf of the Council of Standards Australia on 29 June 2001 and on behalf of the Council of Standards New Zealand on 1 February 2002. It was published on 21 February 2002.

The following interests are represented on Committee AV-004:

Association of Australian Acoustical Consultants
Australian Acoustical Society
Australian Building Codes Board
Australian Chamber of Commerce and Industry
Australian Defence Force Academy
Australian Hearing
Building Industry Authority New Zealand
CSIRO Building, Construction and Engineering
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Australian/New Zealand Standard™

Acoustics—Measurement of the reverberation time in rooms

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee, AV-004, Acoustics, Architectural, to supersede AS 2460—1981, *Acoustics—Measurement of reverberation time in enclosures.*

The objective of this Standard is to specify methods for the measurement of reverberation time in rooms. This Standard applies to any room in which reverberation time is an important factor affecting the quality of sound in the room, or where reverberation control is used for noise control purposes.

During preparation of this Standard, cognizance was taken of ISO 3382:1997, *Acoustics—Measurement of the reverberation time of rooms with reference to other acoustical parameters.* This Standard incorporates a number of technical changes from ISO 3382:1997, most notably the specification for the nature of the sound source. Conventional loudspeakers, properly located and oriented, may be used as the test sound source in lieu of omnidirectional loudspeakers, where appropriate. An installed sound system may be used to excite the room under certain circumstances.

This Standard should be read by a person who has acquired through training, qualifications or experience, or a combination of these, the knowledge and skills enabling that person to perform the task required.

Appendix B, *Auditorium measures derived from impulse responses*, is technically equivalent to Annex A of ISO 3382:1997. It presents several quantities that can be obtained from measured impulse responses, namely, a further measure of reverberation (early decay time) and measures of relative sound levels, early/late energy fractions and lateral energy fractions. Subjective studies of the acoustical characteristics of auditoria have shown that these quantities are correlated with particular subjective aspects of the acoustical character of an auditorium. However, there is still work to be done in determining which measures are the most suitable as bases for standardization.

The term ‘informative’ has been used in this Standard to define the application of the appendix to which it applies. An ‘informative’ appendix is only for information and guidance.

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1 SCOPE

This Standard specifies methods for the measurement of reverberation time in rooms. It describes the measurement procedure, the apparatus needed, the coverage required, and the method of evaluating the data and presenting the test report.

2 APPLICATION

This Standard is applicable to any room in which reverberation time is important or where noise control by means of reverberation control is a consideration. Its application is not restricted to auditoria and concert halls. It is relevant to assessment of the suitability and quality of a wide variety of rooms for speech and music, including—

(a) industrial halls and factories;

(b) restaurants and coffee lounges;

(c) studios for listening to and recording music and speech;

(d) gymnasiums, swimming pools and school halls;

(e) lecture rooms and classrooms; and

(f) concert halls and opera houses.

This Standard does not apply to laboratory measurements in test facilities or reverberation rooms. Laboratory measurements require other specifications for averaging single measurements at prescribed source and microphone positions.

3 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS
1259 Acoustics—Sound level meters
1259.1 Part 1: Non-integrating

1633 Acoustics—Glossary of terms and related symbols

AS/NZS
4476 Acoustics—Octave-band and fractional-octave-band filters

ISO
3382 Acoustics—Measurement of the reverberation time of rooms with reference to other acoustical parameters

3741 Acoustics—Determination of sound power levels of noise sources using sound pressure—Precision methods for reverberation rooms

ITU
Rec. P.58 Head and torso simulator for telephonometry