Australian/New Zealand Standard™

Acoustics—Recommended design sound levels and reverberation times for building interiors

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 30 November 2000 and on behalf of the Council of Standards New Zealand on 24 November 2000. It was published on 11 December 2000.

The following interests are represented on Committee AV-004:

Acoustics Consulting Interests, New Zealand
Association of Australian Acoustical Consultants
Australian Acoustical Society
Australian Building Codes Board
Australian Chamber of Commerce and Industry
Australian Defence Force Academy
Australian Hearing
CSIRO Building, Construction and Engineering
Department of Public Works and Services, N.S.W.
New Zealand Acoustical Society
RMIT University
The Royal Australian Institute of Architects
University of Auckland, New Zealand
University of Sydney

Keeping Standards up-to-date

Standards are living documents which reflect progress in science, technology and systems. To maintain their currency, all Standards are periodically reviewed, and new editions are published. Between editions, amendments may be issued. Standards may also be withdrawn. It is important that readers assure themselves they are using a current Standard, which should include any amendments which may have been published since the Standard was purchased.

Detailed information about joint Australian/New Zealand Standards can be found by visiting the Standards Australia web site at www.standards.com.au or Standards New Zealand web site at www.standards.co.nz and looking up the relevant Standard in the on-line catalogue.

Alternatively, both organizations publish an annual printed Catalogue with full details of all current Standards. For more frequent listings or notification of revisions, amendments and withdrawals, Standards Australia and Standards New Zealand offer a number of update options. For information about these services, users should contact their respective national Standards organization.

We also welcome suggestions for improvement in our Standards, and especially encourage readers to notify us immediately of any apparent inaccuracies or ambiguities. Please address your comments to the Chief Executive of either Standards Australia International or Standards New Zealand at the address shown on the back cover.

Australian/New Zealand Standard™

Acoustics—Recommended design sound levels and reverberation times for building interiors

Originated as AS 2107—1977.
Previous edition AS 2107—1987.
Jointly revised and designated AS/NZS 2107:2000.

Jointly published by Standards Australia International Ltd, GPO Box 5420, Sydney, NSW 2001 and Standards New Zealand, Private Bag 2439, Wellington 6020

ISBN 0 7337 3719 6

PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee AV-004, Acoustics, Architectural to supersede AS 2107—1987, *Acoustics—Recommended design sound levels and reverberation times for building interiors.*

The objectives of the revision are to update and expand guidance on design sound levels and to provide more extensive recommendations regarding reverberation times.

In previous editions of this Standard, the recommended design sound levels for different areas of occupancy in buildings listed in Table 1 were mostly given in terms of A-weighted decibels, dB(A). However, the recommended design sound levels for some public buildings, including auditoriums, conference centres, theatres and opera halls, were given in terms of noise rating (NR) numbers.

NR numbers are obtained by fitting a sound spectrum to a group of curves according to certain rules. The curves were proposed in 1969 by the International Standards Organization in an effort to combine the results of various methods of specifying acceptable noise levels over a wide range of activities. The NR curves were an attempt to broaden the application of the noise criteria (NC) rating system, which had been developed by Beranek in 1957. The NC system was developed specifically for commercial buildings and related the spectrum of the noise to the disturbance it caused to spoken communication.

Over the last few decades, the use of A-frequency weighted measurements for assessing the acceptability of noise has been generally adopted. In view of the continuing evolution and development of various noise rating and grading curves, NR numbers are not used in this edition.

For the purposes of this Standard, the word ‘shall’ refers to practices which are mandatory for compliance with this Standard. The word ‘should’ refers to practices which are advised or recommended. 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. Similarly, the Notes in this Standard are of an advisory nature only to give explanation or guidance on recommended design considerations or technical procedures, or to provide an informative cross-reference to other documents or publications. Notes to clauses in this Standard do not form a mandatory part for compliance with this Standard.

Where the number of an IEC, ISO or New Zealand Standard is provided in brackets after an Australian Standard number, the IEC, ISO or New Zealand Standard applies to New Zealand only and the Australian Standard applies to Australia only.

CONTENTS

STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

Australian/New Zealand Standard

Acoustics—Recommended design sound levels and reverberation times for building interiors

1 SCOPE

This Standard recommends design criteria for conditions affecting the acoustic environment within occupied spaces. The ambient sound levels recommended take into account the function of the area(s) and apply to the sound level measured within the space unoccupied but ready for occupancy (see Note 1). The Standard is applicable to steady-state or quasi-steady-state sounds. The reverberation times recommended are for the occupied state of the enclosure.

This Standard also specifies methods of measuring the ambient sound level and reverberation time in occupied spaces in new and existing buildings.

NOTES:

1 The sound level during occupancy will usually be increased owing to the activities of the occupants.

2 Reverberation times for selected spaces (music studios, cabarets and theatre restaurants, and spaces for speech) are given in Appendix A. See also Clause 5.3.

3 Specialist acoustic advice should be sought for auditoriums or studios.

2 APPLICATION

This Standard is intended for use by designers of acoustic environments within occupied spaces in new and existing buildings. Design considerations include the selection and assessment of—

(a) building materials and services used in these spaces;

(b) building components that exclude noise external to the building (e.g. traffic noise, industrial noise); and

(c) building components that exclude noise within the building (e.g. building services noise).

This Standard is not intended for use in evaluating occupancy noise.

This Standard is not intended for either the assessment or prescription of acceptable noise levels from transient or variable noises such as—

(i) aircraft noise (see AS 2021 [NZS 6805]);

(ii) construction noise such as jackhammers and pile-drivers (see AS 2436 [NZS 6803]);

(iii) railway noise;

(iv) crowd noise, e.g. from parades and sporting events; and

(v) emergency vehicle audible warning devices.

NOTE: See Appendix B for guidance regarding sound level measurements to determine the compliance with specifications of noise levels of plant and equipment that have been used in occupied spaces.