

Australian Standard™

**Acoustics—Rating of sound
absorption—Materials and systems**

[ISO title: Acoustics—Sound absorbers for use in buildings—
Rating of sound absorption]



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This Australian Standard was prepared by Committee AV-004, Acoustics, Architectural. It was approved on behalf of the Council of Standards Australia on 31 May 2002 and published on 10 July 2002.

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Australian Acoustical Society
Australian Building Codes Board
Australian Chamber of Commerce and Industry
Australian Defence Force Academy
Australian Hearing
Building Industry Authority New Zealand
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STANDARDS AUSTRALIA

RECONFIRMATION

OF

AS ISO 11654—2002

Acoustics—Rating of sound absorption—Materials and systems

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Technical Committee AV-004 has reviewed the content of this publication and in accordance with Standards Australia procedures for reconfirmation, it has been determined that the publication is still valid and does not require change.

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NOTES

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee AV-004, Acoustics, Architectural. After consultation with Stakeholders in both countries, Standards Australia and Standards New Zealand decided to develop this Standard as an Australian Standard rather than an Australian/New Zealand Standard.

The objective of this Standard is to provide a method by which the frequency-dependent values of the sound absorption coefficient can be converted into a single number. This single number rating can be used to formulate requirements and to describe acoustical properties of sound-absorbing products to be used for routine applications in normal offices, corridors, classrooms, hospitals, etc. For such general applications, the acoustic absorption at the median frequencies of 500 Hz, 1000 Hz and 2000 Hz is considered more important than the acoustic absorption at lower and higher frequencies. The single number rating obtained by the method of this Standard is not appropriate when products are to be used in environments requiring specialist acoustical design. In such cases, complete sound absorption data as a function of frequency are needed.

This Standard is identical with and has been reproduced from ISO 11654:1997, *Acoustics—Sound absorbers for use in buildings—Rating of sound absorption*.

This Standard uses the term ‘weighted sound absorption coefficient (α_w)’ to replace the term ‘Noise Reduction Coefficient (NRC)’, which is commonly used in Australia and New Zealand to specify the acoustic absorption characteristics of building materials. The NRC rating of a test sample is a single number determined as the arithmetic average of the acoustical absorption coefficients measured by one-third octave bands of noise centred on 250 Hz, 500 Hz, 1000 Hz and 2000 Hz. The calculated NRC is rounded to the nearest 0.05.

The above definition of NRC rating is found in older Standards from the American Society for Testing and Materials (ASTM), but the use of NRC in ASTM Standards has now been largely superseded. NRC rating is not defined in Australian Standards or in most of the textbooks available in Australia. As a consequence, there has been some confusion over the range of frequency measurements used to calculate the NRC rating of a product. In some cases, the 4000 Hz acoustical absorption coefficient has been included in the calculations and the result reported as the NRC value for the product. This practice tends to result in a higher absorption rating than the true NRC rating. The use of weighted sound absorption coefficient as a standardized single number rating is intended to overcome the confusion associated with the use of NRC rating.

As this Standard is reproduced from an International Standard, the following applies:

- (a) Its number appears on the cover and title page while the International Standard number appears only on the cover.
- (b) In the source text, ‘this International Standard’ should read ‘this Australian/New Zealand Standard’.
- (c) In Clause 5.4 *add* a new third paragraph as follows:
For each sound absorption ranking include details of the materials, mounting and depth of construction.
- (d) In Annex A *add* a new second paragraph as follows:
An unfavourable deviation occurs when the practical sound absorption coefficient, α_p , is less than the corresponding reference curve value.
- (e) A full point substitutes for a comma when referring to a decimal marker.

References to international Standards should be replaced by equivalent Australian, New Zealand or Australian/New Zealand Standards, as follows:

<i>Reference to International Standard or other publication</i>	<i>Australian/New Zealand Standard</i>
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ISO	AS
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354	Acoustics—Measurement of sound in a reverberation room
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1045	Acoustics—Measurement of sound absorption in a reverberation room
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The term ‘informative’ has been used in this Standard to define the application of the annex to which it applies. An ‘informative’ annex is only for information and guidance.