

ANSI/ASA S12.62-2012 / ISO 9613-2:1996 (MOD)  
(a Modified Nationally Adopted International Standard)

Reaffirmed by ANSI  
October 5, 2017

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## AMERICAN NATIONAL STANDARD

# Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation

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ANSI/ASA S12.62-2012 /  
ISO 9613-2:1996 (MOD)

Accredited Standards Committee S12, Noise

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**ANSI/ASA S12.62-2012 / ISO 9613-2:1996 (MOD)**  
(A Modified Nationally Adopted International Standard)

AMERICAN NATIONAL STANDARD

**Acoustics – Attenuation of sound during propagation  
outdoors – Part 2: General method of calculation**

**Secretariat:**

**Acoustical Society of America**

**Approved on September 5, 2012 by:**

**American National Standards Institute, Inc.**

**Abstract**

This modified Nationally Adopted International Standard specifies an engineering method for calculating the attenuation of sound during propagation outdoors in order to predict the levels of environmental noise at a distance from a variety of sources. The method predicts the equivalent continuous A-weighted sound pressure level (as described in parts 1 to 3 of ISO 1996) under meteorological conditions favorable to propagation from sources of known sound emission.

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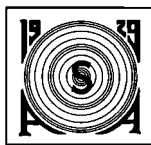
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## Contents

1	Scope .....	1
2	Normative references.....	2
3	Definitions .....	2
4	Source description .....	4
5	Meteorological conditions .....	4
6	Basic equations.....	5
7	Calculation of the attenuation terms .....	6
	7.1 Geometrical divergence ( $A_{div}$ ) .....	6
	7.2 Atmospheric absorption ( $A_{atm}$ ) .....	6
	7.3 Ground effect ( $A_{gr}$ ) .....	7
	7.4 Screening ( $A_{bar}$ ).....	11
	7.5 Reflections .....	17
8	Meteorological correction ( $C_{met}$ ).....	19
9	Accuracy and limitations of the method.....	21
	<b>Annex A</b> (informative) Additional types of attenuation ( $A_{misc}$ ) .....	23
	A.1 Foliage ( $A_{fol}$ ) .....	23
	A.2 Industrial sites ( $A_{site}$ ).....	24
	A.3 Housing ( $A_{hous}$ ) .....	24
	Bibliography .....	26

## Figures

Figure 1	– Three distinct regions for determination of ground attenuation .....	8
Figure 2	– Functions $a'$ , $b'$ , $c'$ and $d'$ representing the influence of the source-to-receiver distance $d_p$ and the source or receiver height $h$ , respectively, on the ground attenuation $A_{gr}$ (computed from equations in table 3) .....	10
Figure 3	– Method for evaluating the mean height $h_m$ .....	11
Figure 4	– Plan view of two obstacles between the source (S) and the receiver (R) .....	12
Figure 5	– Different sound propagation paths at a barrier .....	13
Figure 6	– Geometrical quantities for determining the pathlength difference for single diffraction.....	14

Figure 6a – U.S. MODIFICATION: Plan view showing distances described in Equation 16 and Figure 6, elevation view, for a thin single barrier. In this case, $d_{ss}$ and $d_{sr}$ are the projections of the lines on the horizontal plane. ....	14
Figure 7 – Geometrical quantities for determining the pathlength difference for double diffraction .....	15
Figure 7a – U.S. MODIFICATION: Plan view showing distances described in Equation 17 and Figure 7, elevation view, for a thick barrier. In this case, $d_{ss}$ and $d_{sr}$ are the projections of the lines on the horizontal plane. ....	15
Figure 7b – U.S. MODIFICATION: Plan view showing distances described in Equation 17 and Figure 7, elevation view, for a multiple barrier. In this case, $d_{ss}$ and $d_{sr}$ are the projections of the lines on the horizontal plane. ....	16
Figure 8 – Specular reflection from an obstacle .....	18
Figure 9 – Estimation of sound reflection coefficient for a cylinder.....	19
Figure 10 – Meteorological correction $C_{met}$ .....	20
Figure A.1 – Attenuation due to propagation through foliage increases linearly with propagation distance $d_f$ through the foliage .....	23
Figure A.2 – The attenuation $A_{site}$ increases linearly with the propagation distance $d_s$ through the installations at industrial plants .....	24

## Tables

Table 1 - Symbols and units.....	3
Table 2 – Atmospheric attenuation coefficient $\alpha$ for octave bands of noise .....	7
Table 3 – Expressions to be used for calculating ground attenuation contributions $A_s$ , $A_r$ , and $A_m$ in octave bands.....	9
Table 4 – Estimates of the sound reflection coefficient $\rho$ .....	19
Table 5 – Estimated accuracy for broadband noise of $L_{AT}(DW)$ calculated using equations (1) to (10).....	22
Table A.1 – Attenuation of an octave band of noise due to propagation distance $d_f$ through dense foliage.....	24
Table A.2 – Attenuation coefficient of an octave band of noise during propagation through installations at industrial plants .....	24

## Foreword

[This Foreword is for information only and is not a part of ANSI/ASA S12.62-2012/ISO 9613-2:1996 (MOD) American National Standard Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation.]

This standard comprises a part of a group of definitions, standards, and specifications for use in noise. It was developed and approved by Accredited Standards Committee S12 Noise, under its approved operating procedures. Those procedures have been accredited by the American National Standards Institute (ANSI). The Scope of Accredited Standards Committee S12 is as follows:

*Standards, specifications, and terminology in the field of acoustical noise pertaining to methods of measurement, evaluation, and control, including biological safety, tolerance, and comfort, and physical acoustics as related to environmental and occupational noise.*

This standard is an editorially modified version of ISO 9613-2:1996 *Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation*, which was prepared by ISO/TC 43/SC 1, Noise. In conformance with ANSI and ISO rules, the words "this American National Standard" replace the words "this part of ISO 9613" where they appear in the ISO document, decimal points were substituted in place of the decimal commas used in ISO documents, and American English spelling is used in place of British English spelling. In addition, figures were added to help clarify geometry and some editorial changes were made to improve clarity. All editorial additions and modifications are shown in a **bold blue font within a blue box** and are identified as U.S. Modifications. Technically, there is no difference between this version and ISO 9613-2:1996.

Annexes A and B of ANSI/ASA S12.62-2012 / ISO 9613-2:1996 (MOD) are for information only.

At the time this Standard was submitted to Accredited Standards Committee S12, Noise for approval, the membership was as follows:

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Working Group S12/WG 31, Predicting Sound Pressure Levels Outdoors, which assisted Accredited Standards Committee S12, Noise, in the development of this standard, had the following membership.

R.J. Peppin, Chair

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Suggestions for improvements to this standard will be welcomed. They should be sent to Accredited Standards Committee S12, Noise, in care of the Standards Secretariat of the Acoustical Society of America, 35 Pinelawn Road, Suite 114E, Melville, New York 11747-3177. Telephone: 631-390-0215; FAX: 631-390-0217; E-mail: [asastds@aip.org](mailto:asastds@aip.org).

This is a preview of "ANSI/ASA S12.62-2012...". [Click here to purchase the full version from the ANSI store.](#)

# AMERICAN NATIONAL STANDARD

## Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation

### 1 Scope

This American National Standard specifies an engineering method for calculating the attenuation of sound during propagation outdoors in order to predict the levels of environmental noise at a distance from a variety of sources. The method predicts the equivalent continuous A-weighted sound pressure level (as described in parts 1 to 3 of ISO 1996) under meteorological conditions favorable to propagation from sources of known sound emission.

These conditions are for downwind propagation, as specified in 5.4.3.3 of ISO 1996-2:1987 or, equivalently, propagation under a well-developed moderate ground-based temperature inversion, such as commonly occurs at night. Inversion conditions over water surfaces are not covered and may result in higher sound pressure levels than predicted from this American National Standard.

The method also predicts a long-term average A-weighted sound pressure level as specified in ISO 1996-1 and ISO 1996-2. The long-term average A-weighted sound pressure level encompasses levels for a wide variety of meteorological conditions.

The method specified in this American National Standard consists specifically of octave-band algorithms (with nominal midband frequencies from 63 Hz to 8 kHz) for calculating the attenuation of sound which originates from a point sound source, or an assembly of point sources. The source (or sources) may be moving or stationary. Specific terms are provided in the algorithms for the following physical effects:

- geometrical divergence;
- atmospheric absorption;
- ground effect;
- reflection from surfaces;
- screening by obstacles.

Additional information concerning propagation through housing, foliage and industrial sites is given in annex A.

This method is applicable in practice to a great variety of noise sources and environments. It is applicable, directly or indirectly, to most situations concerning road or rail traffic, industrial noise sources, construction activities, and many other ground-based noise sources. It does not apply to sound from aircraft in flight, or to blast waves from mining, military or similar operations.

To apply the method of this American National Standard, several parameters need to be known with respect to the geometry of the source and of the environment, the ground surface characteristics, and the source strength in terms of octave-band sound power levels for directions relevant to the propagation.

NOTE 1 If only A-weighted sound power levels of the sources are known, the attenuation terms for 500 Hz may be used to estimate the resulting attenuation.