

**ANSI/ASA S12.44-1997**  
(Formerly ANSI S12.44-1997)

Reaffirmed by ANSI  
July 17, 2002

Reaffirmed by ANSI  
September 12, 2007

Reaffirmed by ANSI  
September 5, 2012

Reaffirmed by ANSI  
September 29, 2017

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## AMERICAN NATIONAL STANDARD

# **Methods for Calculation of Sound Emitted by Machinery and Equipment at Workstations and Other Specified Positions from Sound Power Level**

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ANSI/ASA S12.44-1997  
(Formerly ANSI S12.44-1997)

Accredited Standards Committee S12, Noise

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Standards Secretariat  
Acoustical Society of America  
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AMERICAN NATIONAL STANDARD

# **Methods for Calculation of Sound Emitted by Machinery and Equipment at Workstations and Other Specified Positions from Sound Power Level**

Secretariat  
**Acoustical Society of America**

Approved 27 January 1997  
**American National Standards Institute, Inc.**

## **Abstract**

This Standard provides a method for determining emission sound pressure levels from the sound power level produced by all types of machinery and equipment at workstations and other specified locations. These sound pressure levels are, in general, less than those that would be measured when the machinery or equipment is operating in its normal surroundings where the environment may influence the measurement of an emission sound pressure level.

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## Foreword

[This foreword is for information only and is not an integral part of American National Standard Methods for Calculation of Sound Emitted by Machinery and Equipment at Workstations and Other Specified Positions From Sound Power Level S12.44-1997.]

This American National Standard was developed as a national counterpart to *International Standard ISO 11203:1995 Acoustics—Noise Emitted by Machinery and Equipment—Determination of Emission Sound Pressure Levels at a Workstation and at Other Specified Positions*.

This Standard was developed under the jurisdiction of Accredited Standards Committee S12, Noise, which has the following scope:

*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.*

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

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This Standard is closely related to ANSI S12.43-1997 *American National Standard Methods for Measurement of Sound Emitted by Machinery and Equipment at Workstations and Other Specified Positions.*

The ad hoc Working Group which assisted Accredited Standards Committee S12, Noise, in the preparation of this standard, had the following membership:

W. J. Galloway, Chairman

B. M. Brooks	R. J. Peppin	R. W. Young
A. H. Marsh	P. D. Schomer	

Suggestions for improvement will be welcomed. They should be made in writing to Accredited Standards Committee S12, Noise, in care of the Standards Secretariat, Acoustical Society of America, 120 Wall Street, 32nd floor, New York, New York, 10005-3993.

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## American National Standard

# Methods for Calculation of Sound Emitted by Machinery and Equipment at Workstations and Other Specified Positions from Sound Power Level

## 1 Scope

### 1.1 General

This Standard specifies two methods for determining the emission sound pressure levels of machinery and equipment, at workstations and at other specified positions nearby, by calculation from the sound power level. The principal purpose of this determination is to permit comparison of the performance of different units of a given family of machinery or equipment, under defined environmental conditions and standardized mounting and operating conditions.

Emission sound pressure levels are determined with the same frequency weighting and time weighting, or in the same frequency bands, as those for which the corresponding sound power levels were determined.

#### NOTES

1 This Standard is closely related to the measurement of emission sound pressure levels of machinery and equipment at workstations and other specified positions as specified in ANSI S12.43-1997. Guidance on the selection of a measurement method from ANSI S12.43-1997 or a method of calculating emissions sound pressure levels from sound power levels as specified in this Standard is provided in annex A of S12.43-1997. That annex, including its table and figures, is also included in this Standard as annex A.

2 At any given position in relation to a particular machine, and for given mounting and operating conditions, the emission sound pressure levels

determined by the methods of this Standard will in general be less than the directly measured sound pressure levels for the same machine in the typical workroom where it is used. This is because of reverberation and the contributions of other machines. Commonly observed differences are 1 dB to 5 dB. In extreme cases, the difference may be greater.

### 1.2 Types of noise and noise sources

This Standard is, in principle, applicable to moving or stationary machines, for indoor or outdoor use, particularly those machines which are mass produced. The methods of this Standard are not applicable to highly directional sound sources used outdoors.

This Standard is particularly applicable to machines for which the largest dimension is less than or equal to 1 m. It is also applicable to larger machines in certain cases (see 6.2.3).

This Standard is applicable to all types of sounds for which methods for determining the sound power level are available.

### 1.3 Test environment

The test environment to be used is that which is specified for the determination of the sound power level in accordance with the Standards of the ANSI S12.30 series.

### 1.4 Specified positions

This Standard is applicable to workstation positions and other specified positions in the vicinity of the source under test where emission sound pressure levels are to be determined. It is not applicable to workstations and other defined positions which are situated inside a cab or a cabin, or behind an acoustical screen.

A workstation position can be a single point, corresponding to the specified position of a standing or seated operator. It can also be a specified path.

NOTE - More detailed specifications regarding seated, standing, stationary, or moving operators, as well as information concerning bystanders, are provided in ANSI S12.43-1997.