ANSI S12.9-1993/Part 3
(ASA 109-1993)

AMERICAN NATIONAL STANDARD

QUANTITIES AND PROCEDURES FOR DESCRIPTION AND MEASUREMENT OF ENVIRONMENTAL SOUND. PART 3: SHORT-TERM MEASUREMENTS WITH AN OBSERVER PRESENT

Accredited Standards Committee S12, Noise

Standards Secretariat
c/o Acoustical Society of America
120 Wall Street, 32nd Floor
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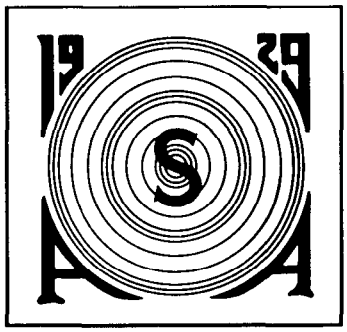

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AMERICAN NATIONAL STANDARD
Quantities and Procedures for Description and Measurement of Environmental Sound. Part 3: Short-term measurements with an observer present

ACCREDITED STANDARDS COMMITTEE S12, NOISE

ABSTRACT

This standard is the third in a series of parts concerning description and measurement of outdoor environmental sound. The standard describes recommended procedures for measurement of short-term, time-average environmental sound outdoors at one or more locations in a community for environmental assessment or planning for compatible land uses and for other purposes such as demonstrating compliance with a regulation. These measurements are distinguished by the requirement to have an observer present. Sound may be produced by one or more separate, distributed sources of sound such as a highway, factory, or airport. Methods are given to correct the measured levels for the influence of background sound.

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These standards are developed and published as a public service to provide standards useful to the public, industry, and consumers, and to Federal, State, and local governments.

This standard was approved by the American National Standards Institute as ANSI S12.9-1993/Part 3 on 12 November 1993.

An American National Standard implies a consensus of those substantially concerned with its scope and provisions An American National Standard is intended as a guide to aid the manufacturer, the consumer, and the general public The existence of an American National Standard does not in any respect preclude anyone, whether he has approved the standard or not, from manufacturing, marketing, purchasing, or using products, processes, or procedures not conforming to the standard. American National Standards are subject to periodic review and users are cautioned to obtain the latest editions.

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FOREWORD

[This Foreword is for information only, and is not a part of the American National Standard Quantities and Procedures for Description and Measurement of Environmental Sound Part 3: Short-term measurements with an observer present, ANSI S12 9-1993/Part 3 (ASA Catalog No 109-1993)]

This standard has been developed under the jurisdiction of Accredited Standards Committee S12, Noise, using the American National Standards Institute (ANSI) Accredited Standards Committee Procedure. The Acoustical Society of America provides the Secretariat for the Accredited Standards Committee S12, Noise.

Accredited Standards Committee S12, Noise, 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 occupation noise

This standard is the third in a series of parts concerning description and measurement of outdoor environmental sound. The standard describes recommended procedures for measurement of short-term, average environmental sound pressure levels outdoors in a community with an observer present. The first part, ANSI S12.9-1988/Part 1: American National Standard *Quantities and Procedures for Description and Measurement of Outdoor Environmental Sound: Part 1,* deals largely with definitions for standard quantities. The second part, is ANSI S12.9-1992 Part 2: American National Standard *Quantities and Procedures for Description and Measurement of Outdoor Environmental Sound: Part 2—Measurement of long-term, wide-area sound.*

This series uses the three parts of ISO 1996-1987, Description and Measurement of Environmental Noise, as a point of departure, but there are marked differences. The subject matter in ANSI S12.9-1993/Part 3 is not considered in the ISO documents.

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

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Working Group S12/WG15, Measurement and Evaluation of Outdoor Community Noise, which assisted Accredited Standards Committee S12, Noise, in the preparation of this standard, had the following membership:

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Suggestions for improvements in this standard will be welcomed. They should be sent to **Accredited Standards Committee S12, Noise, in care of the Standard Secretariat of the Acoustical Society of America, 120 Wall Street, 32nd Floor, New York, NY 10005-3993. Telephone (212) 248-0373. Telefax (212) 248-0146.**

CONTENTS

American National Standard Quantities and Procedures for Description and Measurement of Environmental Sound. Part 3: Short-term measurements with an observer present

INTRODUCTION

This standard is the third part of a series related to quantities and procedures for description and measurement of environmental sound. *Part 1* lists definitions for basic quantities that can be used separately or in combination to describe community sound and basic procedures for measurement of these quantities. *Part 2* provides procedures for measurement of long-term, wide-area time-average descriptors such as day–night sound exposure and yearly day–night average sound level; part 2 also establishes spatial and temporal sampling requirements so as to measure these time-average sound levels with a specified degree of precision and confidence. Long-term wide-area measurements take days or weeks or months to accomplish with the desired degree of accuracy and confidence. Normally, long-term sound level measurements are not made by an operator at a measurement site; they are measured by **unattended** instruments.

This present standard, *Part 3*, deals with basic measurements of sound **with an observer present**. Typically, the duration of these measurements ranges from several minutes to several hours.

NOTE: As an example, one hour (1 h) is used as the basic measurement duration in part 3. One hour is *not* a measurement duration required by this standard; it is only an example of a basic measurement duration, though a common one.

1 SCOPE

The scope of this standard includes the measurement, with an observer present, of quantities such as equivalent-continuous sound pressure level or sound exposure from a specific source or sources at a specified location. These measurements require several minutes to several hours to perform; they take less than one day to perform. Measurements may be obtained with a standard frequency weighting, may be frequency filtered in a defined manner, or may be frequency filtered by octave band or fractional octave band filters. This standard specifies procedures to effectively eliminate, to the extent possible, the contributions of extraneous background sound from the source-specific measurements. Measurement procedures in this standard require the presence of an instrument operator, and are not applicable to measurements by unattended instruments. This standard does not define specific measures or limits for environmental sounds or recommend measurement locations or durations.

2 PURPOSE

The purposes of this standard are to (a) specify procedures for measurement of environmental sound from a specific source or sources at a specified location, and (b) to specify procedures to effectively eliminate the contributions of extraneous background sounds from the source-specific measurements. Sound pressure levels are measured with an observer present to record the data described in this part.

3 APPLICATIONS

This standard is applicable to the measurement of quantities such as equivalent-continuous sound level or sound exposure from a specific source or sources with an observer present. A major application of this standard is testing for compliance with established regulations for the maximum level of the sound that may be produced by some source of sound. A second application is assessment of environmental sound.

4 REFERENCES TO OTHER STANDARDS

[The following Standards contain provisions which, through reference in this document, constitute provisions of this American National Standard At the time of approval by the American National Standards Institute, Inc. (ANSI), the editions indicated were valid. All Standards are subject to revision, and parties to agreements based on this American National Standard are encouraged to investigate the possibility of applying the most recent editions of the Standards listed below.]

4.1 American National Standards

(1) ANSI S1.43-199X, American National Standard Specification for Integrating–Averaging Sound Level Meters.

(2) ANSI S1.4-1983 (ASA 47-1983), American National Standard Specification for Sound Level Meters; and Amendment No. 1 in ANSI S1.4A-1985.