



Standard Guide for Applying Environmental Noise Measurement Methods and Criteria¹

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1. Scope

1.1 This guide covers many measurement methods and criteria for evaluating environmental noise. It includes the following:

1.1.1 The use of weightings, penalties, and normalization factors;

1.1.2 Types of noise measurements and criteria, indicating their limitations and best uses;

1.1.3 Sources of criteria;

1.1.4 Recommended procedures for criteria selection;

1.1.5 A catalog of selected available criteria; and

1.1.6 Suggested applications of sound level measurements and criteria.

1.2 *Criteria Selection*—This guide will assist users in selecting criteria for the following:

1.2.1 Evaluating the effect of existing or potential outdoor sounds on a community; or

1.2.2 Establishing or revising local noise ordinances, codes, or bylaws, including performance standards in zoning regulations.

1.3 *Reasons for Criteria*—This guide discusses the many reasons for noise criteria, ways sound can be measured and specified, and advantages and disadvantages of the most widely used types of criteria. The guide refers the user to appropriate documents for more detailed information and guidance. The listing of specific criteria includes national government regulatory requirements. Users needing further general background on sound and sound measurement are directed to the books listed in the References section.

1.4 *Criteria in Regulations*—Certain criteria are specified to be used by government regulation, law, or ordinance for specific purposes. Ease of enforcement and cost impact on government are considerations for these criteria. They may not be the most appropriate criteria in some circumstances. This guide will discuss the limitations of these criteria.

1.5 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:²

C634 Terminology Relating to Building and Environmental Acoustics

E966 Guide for Field Measurements of Airborne Sound Attenuation of Building Facades and Facade Elements

E1014 Guide for Measurement of Outdoor A-Weighted Sound Levels

E1503 Test Method for Conducting Outdoor Sound Measurements Using a Digital Statistical Sound Analysis System

2.2 ANSI Standards:³

ANSI S1.1 Acoustical Terminology

ANSI S1.4 Part 1, Electroacoustics – Sound Level Meters – Part 1: Specifications

ANSI S1.11 Part 1, Electroacoustics – Octave-Band and Fractional-Octave-Band Filters – Part 1: Specifications

ANSI S1.13 Measurement of Sound Pressure Levels in Air

ANSI S3.4 Procedure for the Computation of Loudness of Noise

ANSI S3.14 Rating Noise with Respect to Speech Interference

ANSI S12.4 Method for Assessment of High-Energy Impulsive Sounds with Respect to Residential Communities

ANSI S12.7 Methods for Measurement of Impulse Noise

ANSI S12.9 Quantities and Procedures for Description and Measurement of Environmental Sound – Part 1: Basic Quantities and Definitions; Part 2: Measurement of Long-Term, Wide-Area Sound; Part 3: Short Term Measurements with an Observer Present; Part 4: Noise Assessment

¹ This guide is under the jurisdiction of ASTM Committee E33 on Building and Environmental Acoustics and is the direct responsibility of Subcommittee E33.09 on Community Noise.

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

³ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.