



Designation: E1332 – 90 (Reapproved 2003)

## Standard Classification for Determination of Outdoor-Indoor Transmission Class<sup>1</sup>

This standard is issued under the fixed designation E1332; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

### INTRODUCTION

This classification is part of a set of ratings for the sound isolating properties of materials, building elements, and structures. It is based on A-weighted reduction of a transportation noise source. Other ratings include Classification E413 that rates the ability of a partition to reduce speech and other sounds within a limited frequency range, and Classification E989 that provides a rating method for comparing the impact-insulation properties of floor-ceiling assemblies.

### 1. Scope

1.1 The purpose of this classification is to provide a single-number rating that can be used for comparing building facade designs, including walls, doors, windows, and combinations thereof. This rating is designed to correlate with subjective impressions of the ability of building elements to reduce the overall loudness of ground and air transportation noise.<sup>2</sup> It is intended to be used as a rank ordering device.

1.2 The rating does not necessarily relate to the perceived aesthetic quality of the transmitted sound. Different facade elements with similar ratings may differ significantly in the proportion of low and high frequency sound that they transmit. It is best to use specific sound transmission loss values, in conjunction with actual spectra of outdoor and indoor sound levels, for making final selections of facade elements.

1.3 Excluded from the scope of this classification are applications involving noise spectra differing markedly from those described in 4.1. Thus excluded, for example, would be certain industrial noises with high levels at frequencies below the 80 Hz one-third octave band, relative to levels at higher frequencies. However, for any source with a spectrum similar to those in 4.1, this classification provides a more reliable ranking of the performance of partitions and facade elements than do other classifications such as Classification E413.

1.4 *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.*

<sup>1</sup> This classification is under the jurisdiction of ASTM Committee E33 on Environmental Acoustics and is the direct responsibility of Subcommittee E33.03 on Sound Transmission.

Current edition approved Oct. 1, 2003. Published October 2003. Originally approved in 1990. Last previous edition approved in 1998 as E1332 - 90 (1998). DOI: 10.1520/E1332-90R03.

<sup>2</sup> This classification may be used in conjunction with Test Method E90 or Guide E966.

### 2. Referenced Documents

2.1 *ASTM Standards*:<sup>3</sup>

C634 Terminology Relating to Building and Environmental Acoustics

E90 Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements

E413 Classification for Rating Sound Insulation

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

E989 Classification for Determination of Impact Insulation Class (IIC)

2.2 *ANSI Standard*:

S1.4 Specifications for Sound Level Meters<sup>4</sup>

2.3 *ISO Standard*:

ISO 532 Acoustics—Method for Calculating Loudness Level<sup>4</sup>

### 3. Terminology

3.1 *Definitions*—For definitions used in this classification, see Terminology C634.

### 4. Significance and Use

4.1 This classification provides the A-weighted sound level reduction for a test specimen, based upon the sound spectrum given in Table 1. The spectrum shape is an average of three typical spectra from transportation sources (aircraft takeoff, freeway, and railroad passby). A study showed that this classification correlated well with the A-weighted and loudness reductions (see ISO 532) calculated for each of the typical

<sup>3</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

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