



Designation: E 1332 – 90 (Reapproved 1998)

Standard Classification for Determination of Outdoor-Indoor Transmission Class¹

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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 E 413 that rates the ability of a partition to reduce speech and other sounds within a limited frequency range, and Classification E 989 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.² 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 E 413.

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.*

2. Referenced Documents

2.1 ASTM Standards:

- C 634 Terminology Relating to Environmental Acoustics³
- E 90 Test Method for Laboratory Measurement of Airborne-Sound Transmission Loss of Building Partitions³
- E 413 Classification for Rating Sound Insulation³
- E 966 Guide for Field Measurement of Airborne Sound Insulation of Building Facades and Facade Elements³
- E 989 Classification for Determination of Impact Insulation Class (IIC)³

2.2 ANSI Standard:

- S1.4 Specifications for Sound Level Meters⁴

2.3 ISO Standard:

- ISO 532 Acoustics—Method for Calculating Loudness Level⁴

3. Terminology

3.1 *Definitions*—For definitions used in this classification, see Terminology C 634.

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 spectra for the one-third octave band range of 50 to 5000 Hz. The calculated numeric value of OITC is based on the measured sound transmission loss values for a particular building facade and depends only on the shape of the reference source spectrum used in the calculation. The values shown in

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² This classification may be used in conjunction with Test Method E 90 or Guide E 966.

³ *Annual Book of ASTM Standards*, Vol 04.06.

⁴ Available from American National Standards Institute, 11 W. 42nd St., 13th Floor, New York, NY 10036.