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Committee E33 on Building and Environmental Acoustics
Subcommittee E33.03 on Sound Transmission

Research Report: E33-1015

Interlaboratory Study to Establish Precision Statements for ASTM E2964, Standard Test Method for Measurement of the Normalized Insertion Loss of Doors

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1. Introduction:

This is a study of reproducibility and repeatability for a field test of normalized door insertion loss and door transmission class using both scanning and fixed microphone methods.

2. Test Method:

The Test Method used for this ILS is E2964-14. To obtain a copy of E2964, go to ASTM's website, www.astm.org, or contact ASTM Customer Service by phone at 610-832-9585 (8:30 a.m. - 4:30 p.m. Eastern U.S. Standard Time, Monday through Friday) or by email at service@astm.org.

3. Participants:

The following firms participated in this interlaboratory study based on field measurements made at Masonite Corporation in West Chicago, IL:

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4. Description of Samples:

There was one door used in this study installed between two rooms of a building at the Masonite Innovation Center in West Chicago, IL. The door was supplied and installed by Masonite staff. The door was selected with an expectation of achieving a rating of DTC 35 to 40. After testing it was discovered that the bottom seal was not operating properly which resulted in lower achieved ratings.

5. Interlaboratory Study Instructions

Laboratory participants were emailed the test program instructions. For a copy of the instructions, please see Annex A.

6. Description of Equipment/Apparatus[1]:

For information on the equipment/apparatus used by each laboratory, see Annex B.

7. Data Report Forms:

Each laboratory was provided with a data report form for the collection of data. A copy of the data is provided in Annex C.

Please note: The laboratories have been randomly coded and cannot be identified herein.

8. Statistical Data Summary:

A summary of the statistics calculated from the data returned by the participating laboratories is provided in Annex D.

9. Precision and Bias Statement:

9.1 *Precision*— The precision of this test method has been established based on a combination of initial tests of repeatability conducted prior to the 2014 standard adoption, and then a study based on ASTM interlaboratory study methods conducted in 2017. In the initial study, repeated tests were conducted by the same person with the same equipment on the same door with a single sound source. Five tests were conducted using both scanning and fixed microphone methods on a door without seals using different source locations for each measurement. Five tests were conducted on a second door with seals using the fixed microphone method and the same source location for each measurement. The details of this initial study are given in ASTM Research Report No. RR E33-1014.[i] In the test conducted as part of the ASTM Interlaboratory Study program, each of six participants tested a single door using both the fixed microphone and scanned microphone method. Results for one of the six participants was excluded due to a change in door performance for that test. One of these participants repeated the test by the fixed microphone method a total of five times. The details of this are given in ASTM Research Report No. E33-1015.[ii]

[1] The equipment listed was used to develop a precision statement for E2964-14. This listing is not an endorsement or certification by ASTM International.