

Sound Advice

Helpful Information from *Stewart Acoustical Consultants*

A member firm of the National Council of Acoustical Consultants
7330 Chapel Hill Road, Suite 101, Raleigh, NC 27607

The information in this document is not provided as a consulting service or as a solution to any specific problem.

919-858-0899

copyright 2005

www.sacnc.com

STC, ASTC & NIC, Measures of Structural Blockage of Speech-like Sounds

by Noral D. Stewart

Major revisions to ASTM standard E336 in 2005 have significantly changed the way isolation between rooms and the apparent sound insulating properties of partitions are measured in the field and rated.

The overall isolation between two spaces is measured by the **Noise Reduction, NR**, between the two spaces which varies with frequency, and rated by the single number **Noise Isolation Class, NIC**. For rooms less than 150 cubic meters (and prior to 2005 for all rooms) this is based on the average level over the room. Now, when either room is more than 150 cubic meters, measurements in both rooms are done only 1 to 2 meters from the partition. This means that the acoustics of the room has less influence on the result. For the same partition used in various locations, the results will be more similar than in the past when results varied widely depending on room size and absorption in the room. Results in large rooms will better indicate the perceptions of people near the partition where complaints often occur. The major difference in results will be in the case of large meeting and banquet halls where the NIC by the new method can be several points lower than by the old method. This should be considered in specifying performance. The NIC includes the effect of flanking around a partition that can be significant. Note also that the NIC can be different in different directions between the two spaces.

The actual sound insulating property of a partition exclusive of any flanking around it is measured by the **Transmission Loss, TL**, which varies with frequency, and rated by the single number **Sound Transmission Class, STC**. This is best measured in a special laboratory. When measured successfully in the field, the results must be labeled **Filed Transmission Loss, FTL**, and **Field Sound Transmission Class, FSTC**. Field measurement of these results requires that the rooms meet certain size, shape, and acoustical requirements that often do not exist. To report these results also requires that it be proven that all the sound leakage between spaces actually came through the partition and not by some other path. This can be extremely difficult. If all other requirements are met but some possibility exists of “flanking” around the partition, the results must be labeled as **Minimum FTL** and **Minimum FSTC**. While this has previously been required by the standard, users have not always complied with the requirement. The standard now makes this requirement clearer.

The 2005 standard provides for a new measurement called **Apparent Transmission Loss, ATL**, and rating **Apparent Sound Transmission Class, ASTC**. These apply to the condition as found without any attempt to eliminate structural flanking. Some of the room size, shaping, and acoustical requirements are also relaxed making it possible to measure these results in more cases. The result is not purely a function of the partition since flanking is included. It is the apparent performance of the partition without the room acoustics influence. The ASTC and NIC results will be similar varying by only 0-2 points in many cases. However, the NIC could be several points less than the ASTC when a receiving room has all hard surfaces. The ATL-ASTC measurement is more complex and time consuming and thus more expensive than the NR-NIC measurement.