

IIC – IMPACT INSULATION CLASS

Quick Explanation

IIC is a single-number rating of the sound isolation of impact noise, such as footfall noise or chair scraping on one floor, and the sound level on the floor below. A higher number is better than a lower number. The IBC requirement for multi-unit apartments, as well as the ANSI S12.60 recommendation is for IIC 50. A concrete floor/ceiling assembly is approximately IIC 26. Generally, for hard floor surfaces, adding carpet to the floor will almost always result in at least IIC 50.

More Than You Wanted to Know

IIC is similar to STC (Sound Transmission Class) except that the test noise source is a tapping machine. This machine is similar in size to a shoeshine box (approximately 2' x 1' x 1').



There are small hammers activated by cams which drop to the floor at rapid intervals. Sound pressure levels are measured in the receiving room at one-third-octave bands with centers from 100 Hz to 3150 Hz. A reference contour is adjusted relative to the normalized impact sound pressure level values (based on the amount of absorption in the receiving room) until the requirements in the standard are satisfied. The IIC curve is similar to the STC curve. No measured 1/3 octave band value may be more than 8 dB above the reference contour, and the sum of discrepancies above the contour may not exceed 32. The IIC is the contour value at 500 Hz. An example of curve resulting in IIC 49 is shown below in Table 1.

Caveats

Although this metric is widely used and is referenced by the IBC and ANSI S12.60, it is not an ideal standard for impact noise because it does not adequately deal with low frequency impact noise. The standard is good for clicking noises, such as hard heels. It is not a good predictor of satisfaction in cases where there is low frequency noise involved, such as people walking heavily on their heels or bouncing a ball upstairs. In other words, while this standard may bring you to the letter of the law, it may not bring satisfaction.

