

Amvic ICF - STC Rating

Sound Transmission Class (STC) rating is used to classify building assemblies such as walls, floors and roofs with respect to sound attenuation of airborne sound. It is an integer rating which is used to correlate subjective impressions of sound transmission for typical indoor uses such as speech, television, radio and other similar sources in buildings (125-4000Hz range). In practice, STC values are tested in near optimal conditions in a laboratory environment but do provide a comparison point between assemblies. Similar to STC rating, there is also Field Sound Transmission Class (FSTC) and Apparent Sound Transmission Class (ASTC) ratings which are similar to STC but with some key differences. There are many real-life factors that can greatly impact the STC rating of an assembly including shared ducts, electrical outlets, recessed lighting, unsealed piping and junctions between assemblies.

Testing of FSTC is generally performed for in-situ assemblies but to be as independent of field conditions as much as possible to provide a final number for only the partition in question. It is still affected by background noise level, surface areas, sound absorption and volume of the space. For assemblies which are composed from various components (e.g. doors), the overall FSTC would be closest to the lowest FSTC value of any given component.

Since real life performance seldom aligns with laboratory testing, building code often encourages designers to over design separating assemblies. Sound traveling from one space to the next via ceiling and floor junctions is referred to as flanking transmission is not accounted for in standard STC lab testing. ASTC does take into account flanking noise and provides a better representation of acoustical performance as a whole.

	Standard	Amvic ICF Interior Wall ¹	Amvic ICF Exterior Wall ²
Airborne Sound Attenuation between Rooms in Buildings	ASTM E336		
Classification for Rating Sound Insulation	ASTM E413	ASTC 47	ASTC 48
Equivalent Sound Transmission Rating (STC)		STC 50	STC 51

Building codes recognize ASTC 47 as an equivalent to STC 50 as can be seen in the Ontario Building Code (OBC) section 9.11. Sound Transmission.

9.11.1. Protection from Airborne Noise

9.11.1.1 Required protection

- 1) Except as provided in Sentences (2) and (3), a *dwelling unit* shall be separated from every other space in a *building* in which noise may be generated by
 - a) a separating assembly and adjoining constructions, which together provide an *apparent sound transmission class (ASTC)* rating of not less than 47, or
 - b) a separating assembly providing a *sound transmission class (STC)* rating of not less than 50 and adjoining constructions that conform to Article 9.11.1.4. (See note A-9.11.14.)

¹ Testing completed on Amvic R22 6" (152mm) ICF with 1/2" (13mm) gypsum boards mechanically attached to the webs on both sides.

² Testing completed on Amvic R22 6" (152mm) ICF with 1/2" (13mm) gypsum board mechanically attached to the webs on the interior and stucco on the exterior.

Note: Although STC rating roughly reflects the decibel reduction in noise for a particular assembly; STC should not be misconstrued as an exact measure of the number of decibels of sound an assembly can stop. STC 45 wall assembly reduces incoming noise by roughly 45dB of sound.

Note: STC values are logarithmic values and cannot simply be added. Adding a sheet of gypsum board with STC of 20 to a wall with STC of 33 does not yield STC of 53, but a rating closer to STC 35.