Advantage ICF PIB 221

Party Wall Sound Transmission Requirements per NBC 2010

ADVANTAGE ICF SYSTEM®
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Product Information Bulletin

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Party Wall Sound Transmission Requirements - NBC 2010

The Advantage ICF System® combines rigid expanded polystyrene (EPS) insulation panels with a web and interlock connector system that results in a concrete wall of uniform thickness. This bulletin addresses sound transmission class ratings for party walls constructed with the Advantage Insulating Concrete Forming (ICF) System. National Building Code of Canada 2010 (NBC 2010), Article 9.11.1.1., provides acceptable methods using either ASTM E90, ***Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements***, or by field measurement using ASTM E336, ***Measurement of Airborne Sound Attenuation between Rooms in Buildings***.

STC rating is a widely accepted system of classifying walls or partitions for sound insulation value. Essentially, the STC rating provides a basis of comparing against a standard for sound deadening of a structure at various frequencies. A high STC rating indicates a more efficient sound absorption characteristic as indicated in Table 1 below.

Table 1 - Sample STC Ratings – A Practical Means of Assessing

STC Rating	Comparative Description
25	Normal speech can be understood fairly well
30	Loud speech can be understood fairly well.
35	Loud speech is audible, but generally not intelligible
42	Loud speech is now audible as a murmur.
45	You have to strain to hear loud speech at all
48	Some loud speech is barely audible.
50	Loud speech is not audible.

NBC 2010, Sentence 9.11.2.1.(1) states that every dwelling unit shall be separated from every other space in a building in which noise may be generated by a wall with a minimum STC rating of 50.

NBC 2010 Table A-9.10.3.1.B indicates that a 130-mm thick monolithic concrete floor or ceiling slab with no finish on either side would provide an STC rating of 52. Results of STC testing for concrete walls reported in Portland Cement Association (PCA) Research and Development Bulletin RD 066, ***Sound Transmission Loss Through Concrete and Concrete Masonry Walls***, indicate a 152-mm (6”) plain concrete wall provided a measured STC of 57.

To verify field performance, independent Field Sound Transmission Class (FSTC) tests were conducted using ASTM E336 to assess party wall applications constructed using the Advantage ICF System. The party walls tested were constructed with one layer of 12.7 mm (1/2”) gypsum board fastened directly on each side of an Advantage ICF System wall with a 152-mm (6”) reinforced concrete core sandwiched between two panels of EPS insulation. The measured range of values for this Advantage ICF System party wall assembly was found to be FSTC 50 to 54. FSTC ratings can be up to 5 points lower than the lab STC rating for a particular wall assembly due to flanking.

Based upon the above, it would be expected that party walls constructed with 12.7 mm (1/2”) gypsum board fastened directly to each side of an Advantage ICF System wall with a 152-mm (6”) reinforced concrete core would exceed minimum STC requirements per NBC 2010 Article 9.11.2.1.