

Product Performance Testing Methodology

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Sound Transmission Class (STC) Ratings for Concrete Masonry Blocks

Description:

Providing a quality indoor acoustic environment is becoming a higher priority in many cases; particularly in urban environments where noise from traffic and other outside sources can be a significant distraction, especially in schools, homes and the workplace. Concrete masonry walls provide excellent noise control due to their ability to effectively block airborne sound transmission over a wide range of frequencies.

Concrete masonry offers excellent noise control in two ways. First, it effectively blocks airborne sound transmission over a wide range of frequencies. Second, concrete masonry effectively absorbs noise, thereby diminishing noise intensity. Because of these abilities, concrete masonry has been used successfully in applications ranging from party walls to hotel separation walls, and even highway sound barriers.

Acoustic performance of a wall assembly is characterized by sound transmission class (STC) rating. Using the procedure described in ASTM E90 (Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements), the difference or sound transmission loss is measured in decibels at 18 different frequencies. The STC can be determined by plotting these transmission losses on a graph.

Table 1: Sound Transmission Class Ratings for Hollow Concrete Masonry Blocks

Product Dimension (mm) (Length x Width x Height)	Unit Weight (kg)	Gross Dry Density (kg/m ³) BS EN 772-13	Sound Transmission Class (STC) (dB) (Without Plaster) ASTM E90	Sound Transmission Class (STC) (dB) (With 15mm plaster on each side) ASTM E90
400 x 100 x 200	14	1750 - 1800	46	48
400 x 150 x 200	18	1500 - 1600	49	51
400 x 200 x 200	23	1450 - 1480	51	53

Table 2: Sound Transmission Class Ratings for Solid Concrete Masonry Blocks

Product Dimension (mm) (Length x Width x Height)	Unit Weight (kg)	Net Dry Density (kg/m ³) BS EN 772-13	Sound Transmission Class (STC) (dB) (Without Plaster) ASTM E90	Sound Transmission Class (STC) (dB) (With 15mm plaster on each side) ASTM E90
400 x 100 x 200	17	2090 to 2100	48	51
400 x 150 x 200	26	2090 to 2100	53	55
400 x 200 x 200	34	2090 to 2100	55	58