



## STC Ratings and Steel Stud Framed Walls

Sound Transmission Class (STC) is an integer range of how well a framed wall attenuates sound

- Doubling the mass of a wall assembly does not double the STC
- An empty framed wall (steel studs and a layer of gypsum wallboard on each side) has an STC of approximately 35dB
- Adding an additional layer of gypsum wallboard (from two sheets to four sheets) increases the STC by about 5-6 points
- Adding cavity insulation increases the STC approximately 4-6 dB
- Fiberglass batts increase the STC to 39; Cellulose insulation increases the STC to 44
- Batt insulation must fit tight without gaps
- Batt thickness provides better sound control than batt density.
- Stud assembly must span from deck to ceiling
- Structurally decoupling the gypsum wallboard panels from each other (using resilient channel, a staggered stud assembly or a double stud wall) can yield an STC as high as 63 or more
- Other materials such as mass-loaded vinyl (MLV), "soundproof" gypsum wallboard, or liquid applied dampening compound may also improve STC ratings. (Refer to manufacturer specifications)

STC	What is heard
25	Normal speech can be understood easily and heard distinctly through wall.
30	Loud speech can be understood well, normal speech heard but not understood
35	Loud speech audible but not understood
40	Beginning of "privacy"
42	Loud speech heard as a murmur
45	Loud speech not audible
50	Very loud sounds such as musical instruments or stereo can be faintly heard
60+	Superior soundproofing. Most sounds inaudible

- **2 ½ inch metal studs (25 ga.) @ 24" o.c.**

Gypsum Wallboard (each side)	Finish	Insulation	STC*	Fire Rating
½ inch, single layer	one side	none	30-35	NR
5/8" type X, single layer	one side	none	35-39	1 hr.
5/8" type X, single layer	one side	2 ½" – 2 ¾" fiberglass batt	40-44	1 hr.
one layer ½", two layers ½" type X	one - two	none	35-40	NR
one layer 5/8", two layers 5/8" type X	one - two	none	40-44	1 hr.
one layer 5/8", two layers 5/8" type X	one - two	2 ½" – 2 ¾" fiberglass batt	44-49	1 hr.
½" type X, 2 layers each side	two each side	none	45-49	2 hr.
5/8" type X, 2 layers each side	two each side	none	45-49	2 hr.
5/8" type X, 2 layers each side	two each side	2 ½" – 2 ¾" fiberglass batt	55-59	2 hr.

**\*The STC ranges posted are for guide purposes only. Please confirm your assembly STC**

- **3 5/8 inch metal studs (25 ga.) @ 24" o.c.**

Gypsum Wallboard (each side)	Finish	Insulation	STC*	Fire Rating
½ inch, single layer	one side	none	35-39	NR
5/8" type X, single layer	one side	none	35-39	1 hr.
5/8" type X, single layer	one side	3 ½" – 4" fiberglass batt	45-50	1 hr.
one layer ½", two layers ½" type X	one - two	none	40-44	NR
one layer 5/8", two layers 5/8" type X	one - two	none	45-50	1 hr.
one layer 5/8", two layers 5/8" type X	one - two	3 ½" – 4" fiberglass batt	50-55	1 hr.
½" type X, 2 layers each side	two each side	none	45-50	2 hr.
5/8" type X, 2 layers each side	two each side	none	50-54	2 hr.
5/8" type X, 2 layers each side	two each side	3 ½" – 4" fiberglass batt	55-60	2 hr.

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