



TECHNICAL BULLETIN

STC Ratings & Steel Stud Framed Walls

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

- Doubling the mass of a wall assembly does not double the STC rating.
- An empty framed wall (steel studs and a layer of gypsum wallboard on each side) has an STC of approximately 35
- Adding an additional layer of gypsum wallboard to each side (from two sheets to four sheets) increases the STC by about 5-6 points.
- Adding cavity insulation increases the STC approximately 4-6 points
- Fiberglass batts increase the STC about 4 points; Cellulose insulation increases the STC about 9 points
- 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 1/2" metal studs (25 ga.) @ 24" o.c.

Gypsum Wallboard (each side)	Finish	Insulation	STC	Fire Rating
1/2", one layer	one side	none	36	NR
5/8" type X, one layer	one side	none	39	1 hr.
5/8" type X, one layer	one side	2 1/2" – 2 3/4" fiberglass batt	47	1 hr.
1/2", one layer, 1/2" type X, two layers	one - two	none	39	NR
5/8", one layer, 5/8" type X, two layers	one - two	none	44	1 hr.
5/8", one layer, two layers 5/8" type X	one - two	2 1/2" – 2 3/4" fiberglass batt	52	1 hr.
1/2" type X, two layers each side	two each side	none	45	2 hr.
5/8" type X, two layers each side	two each side	none	48	2 hr.
5/8" type X, two layers each side	two each side	2 1/2" – 2 3/4" fiberglass batt	57	2 hr.

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

Gypsum Wallboard (each side)	Finish	Insulation	STC	Fire Rating
1/2", one layer	one side	none	39	NR
5/8" type X, one layer	one side	none	39	1 hr.
5/8" type X, one layer	one side	3 1/2" – 4" fiberglass batt	50	1 hr.
1/2", one layer, 1/2" type X, two layers	one - two	none	42	NR
5/8", one layer, 5/8" type X, two layers	one - two	none	47	1 hr.
5/8", one layer, two layers 5/8" type X	one - two	3 1/2" – 4" fiberglass batt	55	1 hr.
1/2" type X, two layers each side	two each side	none	50	2 hr.
5/8" type X, two layers each side	two each side	none	52	2 hr.
5/8" type X, two layers each side	two each side	3 1/2" – 4" fiberglass batt	58	2 hr.