



SHEAR VALUES FOR SCREW APPLICATION OF GYPSUM BOARD ON WALLS (GA-229-96)

A series of tests was conducted in accordance with ASTM E 72 to determine the shear resistance of gypsum board applied to one side of wood stud partitions 16" o.c. using Type S or W screws at different spacings. Parallel and perpendicular applications, with horizontal joint unblocked, were evaluated. The results are summarized below. These values represent average ultimate shear. Appropriate safety factors should be considered for design use.

Board Thickness	Direction of Application	Screw Type	Edge Screw Spacing	Field Screw Spacing	Average Ultimate Shear/lin.ft.	Test Report Number/Date *
1/2"	Parallel	1 1/4" W #6	4" o.c.	16" o.c.	485 lbs	WHI-651-0253.02, Test A; 8/1/88 & 8/2/88
† 1/2"	Parallel	1 1/4" W #6	4" o.c.	12" o.c.	472 lbs	WHI-651-0253.02, Test C; 8/1/88 & 8/2/88
1/2"	Parallel	1 1/4" W #6	8" o.c.	12" o.c.	215 lbs	RAD-551, 9/85
1/2"	Perpendicular	1 1/4" W #6	8" o.c.	12" o.c.	184 lbs	RAD-552, 9/85
‡ 1/2"	Parallel	1 1/4" S #6	8" o.c.	12" o.c.	225 lbs	RAD-555, 9/85
‡ 1/2"	Parallel	1 1/4" W #6	6" o.c.	12" o.c.	269 lbs	RAD-555, 9/85
‡ 1/2"	Parallel	1 1/4" W #6	12" o.c.	12" o.c.	169 lbs	RAD-555, 9/85
5/8"	Parallel	1 1/4" W #6	8" o.c.	12" o.c.	281 lbs	RAD-553, 9/85
5/8"	Perpendicular	1 1/4" W #6	8" o.c.	12" o.c.	215 lbs	RAD-554, 9/85

* = WHI - Inchcape Testing Services/Warnock Hersey
 RAD - Resources Applications, Designs, and Controls, Inc. (RADCO)
 † = Studs spaced 24" o.c.
 ‡ = Check test, only one specimen tested.

The following conclusions can be drawn from these tests:

All other conditions being equal,

1. Shear values are comparable for both Type S and W screws,
2. Shear values for parallel application exceed those for perpendicular application,
3. Shear values for 5/8" gypsum board exceed those for 1/2" gypsum board,
4. Shear values increase with closer spacing of perimeter fasteners, and
5. When compared to other shear test results, shear values for screws are higher than for nails.

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