

GA-229-2018
SHEAR VALUES FOR SCREW APPLICATION
OF GYPSUM BOARD ON WALLS

A series of tests was conducted in accordance with ASTM E72 to determine the shear resistance of gypsum board applied to one side of wood stud partitions 16 in. (406 mm) o.c. using Type S or W screws at different spacings. Parallel and perpendicular applications, with horizontal joints 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 in. (mm)	Direction of Application	Screw Type	Edge Screw Spacing in. (mm) o.c.	Field Screw Spacing in. (mm) o.c.	Average Ultimate Shear. lbs/ft (kg/m)	Test Report Number/Date*
½ (12.7)	Parallel	1¼" (32 mm) W #6	4 (102)	16 (406)	485 (723)	WHI-651-0253.02, Test A; 8/1/88 & 8/2/88
† ½ (12.7)	Parallel	1¼" (32 mm) W #6	4 (102)	12 (305)	472 (703)	WHI-651-0253.02, Test C; 8/1/88 & 8/2/88
½ (12.7)	Parallel	1¼" (32 mm) W #6	8 (203)	12 (305)	215 (320)	RAD-551, 9/85
½ (12.7)	Perpendicular	1¼" (32 mm) W #6	8 (203)	12 (305)	184 (274)	RAD-552, 9/85
‡ ½ (12.7)	Parallel	1¼" (32 mm) S #6	8 (203)	12 (305)	225 (335)	RAD-555, 9/85
‡ ½ (12.7)	Parallel	1¼" (32 mm) W #6	6 (152)	12 (305)	269 (401)	RAD-555, 9/85
‡ ½ (12.7)	Parallel	1¼" (32 mm) W #6	12 (305)	12 (305)	169 (252)	RAD-555, 9/85
⅝ (15.9)	Parallel	1¼" (32 mm) W #6	8 (203)	12 (305)	281 (417)	RAD-553, 9/85
⅝ (15.9)	Perpendicular	1¼" (32 mm) W #6	8 (203)	12 (305)	215 (320)	RAD-554, 9/85

* = WHI - Inchcape Testing Services/Warnock Hersey (now Intertek Testing Services, Inc. or ITS)

RAD - Resources Applications, Designs, and Controls, Inc. (RADCO)

† = Studs spaced 24 in. (610 mm)

‡ = Check test, only one specimen tested.

All other conditions being equal, the following conclusions can be drawn from these tests:

- Shear values are comparable for both Type S and W screws,
- Shear values for parallel application exceed those for perpendicular application,
- Shear values for ⅝ in. (15.9 mm) gypsum board exceed those for ½ in. (12.7 mm) gypsum board,
- Shear values increase with closer spacing of perimeter fasteners, and
- When compared to other shear test results, shear values for screws are higher than for nails.

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