

GA-254-2017

FIRE-RESISTANT GYPSUM SHEATHING

Gypsum sheathing is manufactured with a water-resistive gypsum core and paper facer, intended for use as a substrate under exterior wall claddings in any climate. Gypsum sheathing is designed to be mechanically attached to the outside surface of exterior wall framing spaced up to 24 in. (610 mm) o.c. using nails, screws, or staples.

USES

Gypsum sheathing is covered with a water/weather resistive barrier and can be used with virtually all exterior wall claddings, including wood siding and shingles, panel siding, vinyl or metal siding, masonry or brick veneer, Portland cement stucco, and Exterior Insulation and Finish Systems (EIFS). Refer to GA-253 *Application of Gypsum Sheathing* for more information on uses, limitations and installation of gypsum sheathing.

Mechanically attached exterior wall claddings are attached through the sheathing and into the wall framing. The performance of Exterior Insulation and Finish Systems (EIFS) and recommendations for the proper method of attachment are the sole responsibility of the EIFS manufacturer and/or applicator.

Fire Protection

The noncombustible core of gypsum sheathing protects the building from fires occurring outside the building, even when covered by combustible siding. When exposed to high temperatures, chemically combined water in the gypsum is gradually released, providing thermal protection until this process is completed. In addition to its fire resistance properties, gypsum sheathing has a low flame spread rating¹ of less than 25. Where fire-rated and/or sound control systems are desired or required, the test report or listing should be reviewed for complete information on systems and component parts used to achieve the necessary fire or sound rating.² **NOTE:** The building code does not require joint finishing and fastener treatment of square edge gypsum sheathing.

Structural Integrity

Racking tests have been conducted for the Gypsum Association by an independent laboratory to determine allowable shear values in accordance with ASTM E72 Standard Test Methods of Conducting Strength Tests of Panels for Building Construction. Refer to GA-253 *Application of Gypsum Sheathing* for details.

Shear Walls

In areas where potential wind or seismic forces require shear walls to resist lateral forces, building codes provide allowable shear values for walls having gypsum sheathing applied to wood framing. Values for specific construction details and limitations are contained in the building codes.

Vapor Permeability

Gypsum sheathing typically has an average vapor permeance of 20 perms per ASTM E96/E96M *Standard Test Method for Water Vapor Transmission of Materials* (dry cup method). This is well above the accepted minimum of five perms when the “U” value of the wall is less than 0.25 Btu/h ft² °F (1.42 W/m² °K) and a vapor retarder not exceeding one perm is installed on the interior side of the framing and avoids a double vapor retarder condition.

Code Compliance

Gypsum sheathing complies with building code requirements for use as structural sheathing in frame construction. Consult the local building code for specific details of construction and permissible shear values.

STORAGE

Gypsum sheathing shall be properly supported on a level platform and fully protected from weather, direct sun-light exposure, and condensation. Refer to GA-801 *Handling Gypsum Panel Products*, for proper storage and handling requirements.

WEATHER PROTECTION

Gypsum sheathing is designed for use as a substrate that is covered by an exterior wall cladding. Local weather conditions will dictate the length of time gypsum sheathing may be permitted to be exposed; however it should perform satisfactorily if exposed to the elements for up to one month. The gypsum sheathing shall be covered immediately with a water-resistive barrier if exposure time will be extended or weather conditions will be severe.

For specific weather resistive barrier requirements consult the local building code or cladding manufacturer.

Window and Door Openings

To keep water from entering the stud cavity, it is recommended that rough openings be properly protected by flashing, weeps, or caulking. Follow the window and door manufacturers’ recommendations for proper installation.

DESCRIPTION

Gypsum sheathing is manufactured to meet the requirements of ASTM C1396/C1396M *Standard Specification for Gypsum Board* has the following characteristics:

	½ in. (12.7 mm)	5/8 in. (15.9 mm)
	Sheathing*	Type X Sheathing*
Width	4 ft (1220 mm)	4 ft (1220 mm)
Standard Lengths	8 ft (2440 mm)	8 ft (2440 mm)
Edges	Square	Square
Surface	Water resistive	Water resistive
R-value	0.45 (RSI 0.079)	0.48 (RSI 0.085)
* ASTM C 1396/C 1396M also covers other lengths and thicknesses. (Consult individual manufacturers for their product specifications).		

APPLICATION

Gypsum sheathing is to be installed in accordance with GA-253 *Application of Gypsum Sheathing*.

¹ Tested in accordance with ASTM E119 *Standard Test Methods for Fire Tests of Building Construction and Materials* or CAN/ULC-S101 *Fire Endurance Tests of Building Construction and Materials*.

² See GA-600 *Fire Resistance and Sound Control Design Manual* for specific system details.

* Characteristics, properties, or performance of materials or systems herein described are based on data obtained under controlled test conditions. The Gypsum Association and its member companies make no warranties or other representations as to the characteristics, properties, or performance of any materials in actual construction.

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NOTES:

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