



Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing¹

This standard is issued under the fixed designation C 1177/C 1177M; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This specification covers glass mat gypsum substrate, which is designed to be used as an exterior substrate for a weather barrier.

1.2 The values stated in either inch-pound units or SI (metric) are to be regarded separately as standard. Within the text, the SI units are shown in brackets. The values stated in each system shall be used independently of the other. Values from the two systems shall not be combined.

1.3 The text of this standard references notes and footnotes that provide explanatory material. These notes and footnotes (excluding those in tables and figures) shall not be considered as requirements of the standard.

2. Referenced Documents

2.1 ASTM Standards:

- C 11 Terminology Relating to Gypsum and Related Building Materials and Systems²
- C 473 Test Methods for Physical Testing of Gypsum Board Panel Products²
- C 645 Specification for Nonstructural Steel Framing Members²
- C 1264 Specification for Sampling, Inspection, Rejection, Certification, Packaging, Marking, Shipping, Handling, and Storage of Gypsum Board.²
- E 119 Test Methods for Fire Tests of Building Construction and Materials³

3. Terminology

3.1 Definitions shall be in accordance with Terminology C 11.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *glass mat, n*—a mat of glass fibers with or without a binder.

3.2.2 *edge, n*—the bound edge as manufactured.

3.2.3 *weather barrier, n*—a material that prevents the passage of rain, sleet and snow.

¹ This specification is under the jurisdiction of ASTM Committee C-11 on Gypsum and Related Building Materials and Systems and is the direct responsibility of Subcommittee C11.01 on Specifications and Test Methods for Gypsum Products.

Current edition approved Oct. 10, 1999. Published December 1999. Originally published as C 1177 – 91. Last previous edition C 1177 – 96.

² Annual Book of ASTM Standards, Vol 04.01.

³ Annual Book of ASTM Standards, Vol 04.07.

4. Materials and Manufacture

4.1 *Glass Mat Gypsum Substrate* shall consist of a noncombustible water-resistant core, essentially gypsum, surfaced with glass mat partially, or completely embedded in the core.

4.2 *Glass Mat Gypsum Substrate, type X (special fire-resistant)* designates glass mat gypsum substrate complying with this specification that provide not less than 1 h fire resistance for substrate 5/8 in. [15.9 mm] thick or 3/4 h fire resistance for substrate 1/2 in. [12.7 mm] thick, applied parallel with and on each side of load bearing 2 by 4 wood studs spaced 16 in. [406 mm] on center with 6d coated nails, 1 7/8 in. [48 mm] long, 0.0915 in. [2.3 mm] diameter shank, 1/4 in. [6.4 mm] diameter heads, spaced 7 in. [178 mm] on center with glass mat gypsum substrate joints staggered 16 in. [406 mm] on each side of the partition and tested in accordance with Test Methods E 119.

NOTE 1—Consult manufacturers for independent test data on assembly details and fire resistance classifications for other types of construction. See official fire test reports for assembly particulars, materials, and classifications.

5. Physical Properties

5.1 Specimens shall be taken from the samples obtained in accordance with Specification C 1264.

5.2 Specimens shall be tested in accordance with Methods C 473.

5.2.1 *Flexural Strength*—The specimens shall be tested face up and face down. The average breaking load shall not be less than the following:

Thickness, in. [mm]	Method B	
	Load, lbf [N] Bearing edges perpendicular to the substrate edge	Load, lbf [N] Bearing edges parallel to the substrate edge
1/4 [6.4]	50 [222]	40 [178]
1/2 [12.7]	100 [445]	80 [356]
5/8 [15.9]	140 [623]	100 [445]

5.2.2 *Humidified Deflection*—Specimens shall have an average deflection of not more than the following:

Thickness, in. [mm]	Humidified deflection, eighths of an in. [mm]
1/4 [6.4]	not applicable
1/2 [12.7]	2 [6]
5/8 [15.9]	1 [3]

5.2.3 *Core, End and Edge Hardness*—Specimens shall have