Designation: C1178/C1178M – 13

Standard Specification for Coated Glass Mat Water-Resistant Gypsum Backing Panel[1]

This standard is issued under the fixed designation C1178/C1178M; 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 coated glass mat water-resistant gypsum backing panel designed for use on ceilings and walls in bath and shower areas as a base for the application of ceramic or plastic tile.

1.2 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the standard. Within the text, the SI units are shown in brackets.

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:*[2]

C11 Terminology Relating to Gypsum and Related Building Materials and Systems

C22 Specification for Gypsum

C473 Test Methods for Physical Testing of Gypsum Panel Products

C645 Specification for Nonstructural Steel Framing Members

C1264 Specification for Sampling, Inspection, Rejection, Certification, Packaging, Marking, Shipping, Handling, and Storage of Gypsum Panel Products

E119 Test Methods for Fire Tests of Building Construction and Materials

3. Terminology

3.1 Definitions shall be in accordance with Terminology C11.

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 *face, n*—the coated surface.

3.2.4 *nominal thickness, n*—the manufacturer-stated fractional value of thickness of the gypsum panel product expressed in decimal value to the nearest one-thousandth (0.001) of an inch.

4. Materials and Manufacture

4.1 *Coated glass mat water-resistant gypsum backing panel* shall consist of a noncombustible water-resistant core, essentially gypsum complying with Specification C22, surfaced with glass mat, partially or completely embedded in the core, and with a water-resistant coating on one surface.

4.2 Coated glass mat water-resistant gypsum panels, type X (special fire-resistant) designates glass mat gypsum panels complying with this specification that provide not less than 1-h fire resistance rating for boards ⅝ in. [15.9 mm] thick or ¾-h fire resistance rating for panels ½ 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 ⅞ in. [48-mm] long, 0.0915 in. [2.3 mm] diameter shank, ¼ in. [6.4 mm] diameter heads, spaced 7 in. [178 mm] on center with glass mat gypsum panel joints staggered 16 in. [406 mm] on each side of the partition and tested in accordance with Test Methods E119.

NOTE 1—Consult manufacturers for independent test data on assembly details and fire resistance ratings for other types of construction. See fire test reports or listings from recognized fire testing laboratories for assembly particulars, materials, and ratings.

5. Physical Properties

5.1 Specimens shall be taken from the samples obtained in accordance with Specification C1264.

5.2 Specimens shall be tested in accordance with Test Methods C473.

[1] This specification is under the jurisdiction of ASTM Committee C11 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.

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[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

***A Summary of Changes section appears at the end of this standard**

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:

	Method B Load, lbf [N]	
Thickness, in. [mm]	Bearing edges perpendicular to the board edge	Bearing edges parallel to the board edge
¼ [6.4]	50 [222]	40 [178]
5⁄16 [7.9]	65 [289]	50 [222]
½ [12.7]	100 [445]	80 [356]
⅝ [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]
¼ [6.4]	not required
5⁄16 [7.9]	not required
½ [12.7]	2 [6]
⅝ [15.9]	1 [3]

5.2.3 *Core, End and Edge Hardness*—Specimens shall have an average hardness of not less than 15 lbf [67 N] when tested in accordance with Method B.

5.2.4 *Nail Pull Resistance*—Specimens shall have an average nail pull resistance of not less than the following when tested in accordance with Method B:

Thickness, in. [mm]	Nail pull resistance, lbf [N]
¼ [6.4]	40 [178]
5⁄16 [7.9]	50 [222]
½ [12.7]	70 [311]
⅝ [15.9]	90 [400]

5.2.5 *Water Resistance*—The three specimens selected shall have an average water absorption of not more than 5 weight % after 2-h immersion.

5.2.6 *Surface Water Absorption*—Specimens shall have an average surface water absorption of the face side of the panel not more than 0.5 g after 2 h of elapsed time.

6. Dimensions and Tolerances

6.1 Specimens shall be taken from the samples obtained in accordance with Specification C1264.

6.2 Thickness, width, and length shall be determined in accordance with Test Methods C473.

6.2.1 *Thickness*—The thickness shall be ¼ in., 5⁄16 in., ½ in. or ⅝ in. [6.4, 7.9, 12.7 or 15.9 mm], with tolerances of ± 0.015 in. [± 0.40 mm] and with local variations of ± 0.030 in. [± 0.80 mm].

6.2.2 *Width*—The nominal width shall be up to 48 in. [1220 mm], with a tolerance of 3⁄32 in. [3 mm] under the specified width.

6.2.3 *Length*—The tolerance in length shall be ± ¼ in. [± 6 mm]

6.2.4 *End Squareness*—Corners shall be square with a tolerance of ± ¼ in. [±6 mm] in the full width of the panel.

6.3 *Edges and Ends*—The edges and ends shall be straight and either square or tapered.

7. Finish and Appearance

7.1 Coated glass mat water-resistant gypsum backing panel shall have surfaces true and free of imperfections that render the panel unfit for its designed use.

8. Sampling, Inspection, Rejection, Certification, Packaging, Marking, Shipping, Handling, and Storage

8.1 Shall be in accordance with Specification C1264.

9. Keywords

9.1 bath; ceilings; ceramic or plastic tile; construction; core; end and edge hardness; fire-resistant; flexural strength; glass mat; gypsum; humidified deflection; immersion; nail pull resistance; shower; surface water absorption; type X; walls; water absorption; water resistance; water-resistant

APPENDIX

(Nonmandatory Information)

X1. ALTERNATE DEFINITION FOR TYPE X

This Appendix gives general information and also suggestions for inclusions to be made elsewhere by the specifier. They are not part of this specification.

The definition of type X in 4.2 and the alternate definition given in this appendix are intended only as a test to define the coated glass mat water-resistant gypsum backing panels as meeting the requirements of type X. These tests do not indicate a preferred application nor do they limit the use of the product in other fire rated assemblies.

All gypsum panel products for which type X is defined, except gypsum lath and gypsum shaftliner board, use the same test for type X products, therefore the type X definition indicates a consistent level of fire resistance.

X1.1 Coated glass mat water-resistant gypsum panels, type X (special fire-resistant) designates glass mat gypsum panels providing a greater fire resistance than regular glass mat water-resistant gypsum panels of the same thickness. Type X (special fire-resistant) glass mat water-resistant gypsum panels, when tested in accordance with Test Methods E119, shall provide the following minimum fire resistance ratings for the assemblies described:

X1.1.1 One hour for a ⅝ in. [15.9 mm] thickness applied to a partition in a single layer application on each side of 3 ⅝ in. [92 mm] deep non-load bearing galvanized steel studs complying with Specification C645 spaced 24 in. [610 mm] on center. The ⅝ in. [15.9 mm] thick glass mat water-resistant gypsum panels 48 in. [1220 mm] wide shall be attached using 1 in. [25 mm] long drywall screws spaced 8 in. [203 mm] on center along the edges and ends, and 12 in. [305 mm] along intermediate studs. All joints shall be oriented parallel to and located over studs and staggered on opposite sides of the assembly; and

X1.1.2 Two hours for a ½ in. [12.7 mm] thickness applied to a partition in a double layer application on each side of 2 ½ in. [64 mm] deep non-load bearing galvanized steel studs complying with Specification C645 spaced 24 in. [610 mm] on center. The base layer 48 in. [1220 mm] wide shall be attached using 1 in. [25 mm] long drywall screws spaced 12 in. [305 mm] on center along panel edges, ends and along intermediate studs. Joints shall be oriented parallel to and located over studs and staggered on opposite sides of the assembly. The face layer 48 in. [1220 mm] wide shall be attached using 1 ⅝ in. [41 mm] long drywall screws spaced 12 in. [305 mm] along panel edges, ends and along intermediate studs. Joints shall be oriented parallel to and located over studs, offset 24 in. [610 mm] from the base layer joints, and staggered on opposite sides of the assembly.

SUMMARY OF CHANGES

Committee C11 has identified the location of selected changes to this specification since the last issue, C1178/C1178M – 11, that may impact the use of this specification. (Approved Oct. 1, 2013)

(1) Revised 2.1 and 4.1.