



Designation: C 931/C 931M – 02

## Standard Specification for Exterior Gypsum Soffit Board<sup>1</sup>

This standard is issued under the fixed designation C 931/C 931M; 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.

*This standard has been approved for use by agencies of the Department of Defense.*

### 1. Scope \*

1.1 This specification covers exterior gypsum soffit board, designed to be used for exterior soffits and carport ceilings that are completely protected from contact with liquid water.

NOTE 1—Specification C 840 contains application procedures for exterior gypsum soffit board.

1.2 The values stated in either inch-pound units or SI (metric) are to be regarded separately as the 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.

### 2. Referenced Documents

#### 2.1 ASTM Standards:

- C 473 Test Methods for Physical Testing of Gypsum Panel Products<sup>2</sup>
- C 645 Specification for Nonstructural Steel Framing Members<sup>2</sup>
- C 840 Specification for Application and Finishing of Gypsum Board<sup>2</sup>
- C 1264 Specification for Sampling, Inspection, Rejection, Certification, Packaging, Marking, Shipping, Handling, and Storage of Gypsum Board<sup>2</sup>
- E 84 Test Method for Surface Burning Characteristics of Building Materials<sup>3</sup>
- E 119 Test Methods for Fire Tests of Building Construction and Materials<sup>3</sup>

### 3. Materials and Manufacture

3.1 Gypsum soffit board shall consist of a noncombustible core, essentially gypsum, surfaced with paper bonded to the core.

3.2 Exterior gypsum soffit board, type X (special fire-resistant) designates exterior gypsum soffit board complying

with this specification that provides not less than 1-h fire-resistance for boards 5/8-in. (15.9-mm) thick or 3/4-h fire-resistance for boards 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 exterior gypsum soffit board joints staggered 16 in. (406 mm) on each side of the partition and tested in accordance with Test Methods E 119.

NOTE 2—Consult producers for independent test data on assembly details and fire-resistance classifications for other types of construction. See test reports or listings from recognized fire testing laboratories for assembly particulars, materials, and classifications.

3.3 Gypsum soffit board shall have a maximum flame-spread classification of 25 when tested in accordance with the requirements of Test Method E 84.

### 4. Physical Properties

#### 4.1 Flexural Strength:

4.1.1 Specimens shall be tested in accordance with Test Methods C 473. When tested face up and when tested face down the specimens shall have an average breaking load of not less than the following:

Thickness, in. (mm)	Method A		Method B	
	Load, lbf (N) Bearing Edges Across Fiber of Surfacing	Load, lbf (N) Bearing Edges Parallel to Fiber of Surfacing	Load, lbf (N) Bearing Edges Across Fiber of Surfacing	Load, lbf (N) Bearing Edges Parallel to Fiber of Surfacing
1/2 (12.7)	110 (489)	40 (178)	107 (476)	36 (160)
5/8 (15.9)	150 (668)	50 (222)	147 (654)	46 (205)

#### 4.2 Humidified Deflection:

4.2.1 When tested in accordance with Test Methods C 473, specimens taken from the gypsum soffit board shall have an average deflection of no more than the following:

Thickness, in. (mm)	Humidified Deflection, Eighths of an in. (mm)
1/2 (12.7)	7 (22)
5/8 (15.9)	4 (13)

#### 4.3 Core, End, and Edge Hardness:

4.3.1 When tested in accordance with Test Methods C 473,

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<sup>2</sup> Annual Book of ASTM Standards, Vol 04.01.

<sup>3</sup> Annual Book of ASTM Standards, Vol 04.07.

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

 **C 931/C 931M – 02**

specimens taken from the gypsum soffit board shall have an average hardness of not less than 15 lbf (67 N) when tested by Method A and 11 lbf (49 N) when tested by Method B for the core, ends, or edges.

**4.4 Nail Pull Resistance:**

4.4.1 When tested in accordance with Test Methods C 473, specimens taken from the gypsum soffit board shall have an average nail pull resistance of not less than the following:

Thickness, in. (mm)	Method A Nail Pull Resistance, lbf(N)	Method B Nail Pull Resistance, lbf (N)
1/2 (12.7)	80 (356)	77 (343)
5/8 (15.9)	90 (400)	87 (387)

**5. Dimensions and Tolerances**

5.1 *Thickness, nominal*—1/2 or 5/8 in. (12.7 or 15.9 mm) with tolerances in the nominal thickness of  $\pm 1/64$  in. (0.4 mm) and with local variations of  $\pm 1/32$  in. (0.8 mm) from the nominal thickness.

5.2 *Width, nominal*—up to 48 in. (1220 mm), with a tolerance of  $3/32$  in. (3 mm) under the specified width.

5.3 *Length, nominal*—from 4 to 16 ft (1220 mm to 4880

mm), inclusive, with tolerances of  $\pm 1/4$  in. (6 mm) from the specified length.

5.4 *Tapered Edge Depth*—The average thickness of the edge of recessed or tapered edge shall be not less than 0.020 in. [0.51 mm] but not more than 0.090 in. [2.29 mm] less than the average thickness of the gypsum soffit board.

5.5 *End Squareness*—Corners shall be square with a tolerance of  $\pm 1/8$  in. [3 mm] in the full width of the board.

5.6 *Edges*—Edges shall be either square, recessed, beveled or tapered.

**6. Finish and Appearance**

6.1 The surfaces of gypsum soffit board shall be true and free of imperfections that would render the board unfit for use with or without decoration.

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

7.1 Sampling, inspection, rejection, certification, packaging, marking, shipping, handling, and storage of exterior gypsum soffit board shall be in accordance with Specification C 1264.

**APPENDIX**

**(Nonmandatory Information)**

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 as given in 3.2 and the alternate definition given in this appendix, are intended only as a test to define the gypsum board 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. ALTERNATE DEFINITION FOR TYPE X**

X1.1 Exterior gypsum soffit board, type X (special fire-resistant) designates exterior gypsum soffit board providing a greater fire resistance than regular exterior gypsum soffit board of the same thickness. Type X (special fire-resistant) exterior gypsum soffit board, when tested in accordance with Test Methods E 119, shall provide the following minimum fire resistance for the assemblies described.

X1.1.1 One hour for a 5/8-in. (15.9-mm) thickness applied to a partition in a single layer application on each side of 35/8-in. (92-mm) deep non-loadbearing galvanized steel studs complying with Specification C 645, spaced 24 in. (610 mm) on center. The 5/8-in. (15.9-mm) thick exterior gypsum soffit board 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 1/2-in. (12.7-mm) thickness applied to a partition in a double layer application on each side of 21/2-in. (64-mm) deep non-loadbearing galvanized steel studs complying with Specification C 645, spaced 24 in. (610 mm) on center. The 48-in. (1220-mm) wide base layer shall be attached using 1-in. (25-mm) long drywall screws spaced 12 in. (305 mm) on center along board 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 48-in. (1220-mm) wide face layer shall be attached using 15/8-in. (41-mm) long drywall screws spaced 12 in. (305 mm) along board 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.

