

Proposed Change 2226

Code Reference(s):	NBC25 Div.B 5.9.1.1. (first printing) NBC25 Div.B 9.29.5.2. (first printing)
Subject:	Environmental Separation
Title:	Fibre-reinforced Gypsum Panels
Description:	This proposed change introduces ASTM C1278/C1278M-24, "Standard Specification for Fiber-Reinforced Gypsum Panel," in the NBC.
Related Code Change Request(s):	CCR 1834

This change could potentially affect the following topic areas:

- | | |
|--|---|
| ☐ Division A | ☒ Division B |
| ☐ Division C | ☒ Design and Construction |
| ☐ Building operations | ☒ Housing |
| ☒ Small Buildings | ☒ Large Buildings |
| ☒ Fire Protection | ☐ Occupant safety in use |
| ☐ Accessibility | ☐ Structural Requirements |
| ☒ Building Envelope | ☐ Energy Efficiency |
| ☐ Heating, Ventilating and Air Conditioning | ☐ Plumbing |
| | ☐ Construction and Demolition Sites |

Problem

Several common fibre-reinforced gypsum panels are available on the market and used across Canada. However, Table 5.9.1.1. and Sentence 9.29.5.2.(1) of Division B of the National Building Code of Canada (NBC) do not currently reference a standard for panels made of this material, which limits the flexibility of design and construction. The NBC does not currently reference a performance standard for panels made of this material, which is safe, appropriate and commonly used. The absence of such a referenced performance standard in the NBC may add a regulatory barrier to the use of these panels and increase design and construction costs.

This proposed change updates the NBC to reflect standard industry practice and the gypsum products that are currently used in Canada.

Justification

This proposed change introduces references to ASTM C1278/C1278M-24, "Standard Specification for Fiber-Reinforced Gypsum Panel," in Table 5.9.1.1. and Sentence 9.29.5.2.(1), which would permit fibre-reinforced gypsum panels to be used in several applications.

This proposed change would improve flexibility in the design and construction of buildings and reduce costs and regulatory barriers since more options would be available to Code users.

For consistency with the existing requirements of Table 5.9.1.1., this proposed change also requires the flame-spread rating of gypsum panels to be determined in accordance with CAN/ULC-S102, "Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies."

PROPOSED CHANGE

NBC25 Div.B 5.9.1.1. (first printing)

[5.9.1.1.] 5.9.1.1. Compliance with Applicable Standards

- [1] 1)** Except as provided in Sentence (2) and elsewhere in this Part, materials and components, and their installation, shall conform to the requirements of the applicable standards in Table 5.9.1.1. where those materials or components are
- [a] a) incorporated into environmental separators or assemblies exposed to the exterior, and
 - [b] b) installed to fulfill the requirements of this Part.
- (See Note A-5.9.1.1.(1).)
- [2] 2)** The requirements for *flame-spread ratings* contained in thermal insulation standards shall be applied only as required in Part 3.

**Table [5.9.1.1.] 5.9.1.1.
Standards Applicable to Environmental Separators and Assemblies Exposed to the Exterior
Forming Part of Sentence [5.9.1.1.] 5.9.1.1.([1] 1)**

Issuing Agency	Document Number	Title of Document
ANSI	A135.6	Engineered Wood Siding
ASME	B18.6.1	Wood Screws (Inch Series)
ASTM	A123/A123M	Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
ASTM	A153/A153M	Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
ASTM	A653/A653M	Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
ASTM	C4	Standard Specification for Clay Drain Tile and Perforated Clay Drain Tile
ASTM	C73	Standard Specification for Calcium Silicate Brick (Sand-Lime Brick)
ASTM	C126	Ceramic Glazed Structural Clay Facing Tile, Facing Brick, and Solid Masonry Units
ASTM	C212	Standard Specification for Structural Clay Facing Tile
ASTM	C412M	Standard Specification for Concrete Drain Tile
ASTM	C444M	Standard Specification for Perforated Concrete Pipe
ASTM	C553	Standard Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications
ASTM	C612	Standard Specification for Mineral Fiber Block and Board Thermal Insulation
ASTM	C700	Standard Specification for Vitrified Clay Pipe, Extra Strength, Standard Strength, and Perforated
ASTM	C726	Standard Specification for Mineral Wool Roof Insulation Board

Issuing Agency	Document Number	Title of Document
ASTM	C834 ⁽¹⁾	Standard Specification for Latex Sealants
ASTM	C836/C836M	Standard Specification for High Solids Content, Cold Liquid-Applied Elastomeric Waterproofing Membrane for Use with Separate Wearing Course
ASTM	C840 ⁽¹⁾ ⁽²⁾	Standard Specification for Application and Finishing of Gypsum Board
ASTM	C920	Standard Specification for Elastomeric Joint Sealants
ASTM	C991	Standard Specification for Flexible Fibrous Glass Insulation for Metal Buildings
ASTM	C1002	Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs
ASTM	C1177/C1177M	Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing
ASTM	C1178/C1178M	Standard Specification for Coated Glass Mat Water-Resistant Gypsum Backing Panel
ASTM	C1184 ⁽¹⁾	Standard Specification for Structural Silicone Sealants
ASTM	C1278/C1278M-24 ⁽³⁾	Standard Specification for Fiber-Reinforced Gypsum Panel
ASTM	C1280	Standard Specification for Application of Exterior Gypsum Panel Products for Use as Sheathing
ASTM	C1311 ⁽¹⁾	Standard Specification for Solvent Release Sealants
ASTM	C1330 ⁽¹⁾	Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid-Applied Sealants
ASTM	C1396/C1396M ⁽⁴⁾	Standard Specification for Gypsum Board
ASTM	C1658/C1658M ⁽⁵⁾	Standard Specification for Glass Mat Gypsum Panels
ASTM	D1227/D1227M	Standard Specification for Emulsified Asphalt Used as a Protective Coating for Roofing
ASTM	D3019/D3019M ⁽⁶⁾	Standard Specification for Lap Cement Used with Asphalt Roll Roofing, Non-Fibered, and Fibered
ASTM	D3679 ⁽⁷⁾	Standard Specification for Rigid Poly (Vinyl Chloride) (PVC) Siding
ASTM	D4477 ⁽⁸⁾	Standard Specification for Rigid (Unplasticized) Poly(Vinyl Chloride) (PVC) Soffit
ASTM	D4479/D4479M	Standard Specification for Asphalt Roof Coatings – Asbestos-Free
ASTM	D4637/D4637M	Standard Specification for EPDM Sheet Used in Single-Ply Roof Membrane
ASTM	D4811/D4811M	Standard Specification for Nonvulcanized (Uncured) Rubber Sheet Used as Roof Flashing
ASTM	D6878/D6878M	Standard Specification for Thermoplastic Polyolefin Based Sheet Roofing

Issuing Agency	Document Number	Title of Document
ASTM	D7254 ⁽⁹⁾	Standard Specification for Polypropylene (PP) Siding
ASTM	D7793 ⁽¹⁰⁾	Standard Specification for Insulated Vinyl Siding
ASTM	E2190	Standard Specification for Insulating Glass Unit Performance and Evaluation
BNQ	BNQ 3624-115	Polyethylene (PE) Pipe and Fittings for Soil and Foundation Drainage
CGSB	CAN/CGSB-12.1	Safety Glazing
CGSB	CAN/CGSB-12.2-M	Flat, Clear Sheet Glass
CGSB	CAN/CGSB-12.3-M	Flat, Clear Float Glass
CGSB	CAN/CGSB-12.4-M	Heat Absorbing Glass
CGSB	CAN/CGSB-12.8	Insulating glass units
CGSB	CAN/CGSB-12.9	Spandrel glass
CGSB	37-GP-9Ma	Primer, Asphalt, Unfilled, for Asphalt Roofing, Dampproofing and Waterproofing
CGSB	CAN/CGSB-37.50-M	Hot-Applied, Rubberized Asphalt for Roofing and Waterproofing
CGSB	CAN/CGSB-37.54	Polyvinyl Chloride Roofing and Waterproofing Membrane
CGSB	CAN/CGSB-51.33-M	Vapour Barrier Sheet, Excluding Polyethylene, for Use in Building Construction
CGSB	CAN/CGSB-51.34	Polyethylene sheet for use in building construction – Material specification
CSA	A23.1	Concrete materials and methods of concrete construction
CSA	CAN/CSA-A82	Fired masonry brick made from clay or shale
CSA	CAN3-A93-M	Natural Airflow Ventilators for Buildings
CSA	CAN/CSA-A123.2	Asphalt-Coated Roofing Sheets
CSA	A123.3	Asphalt Saturated Organic Roofing Felt
CSA	CAN/CSA-A123.4	Asphalt for Constructing Built-Up Roof Coverings and Waterproofing Systems
CSA	A123.5	Asphalt shingles made from glass felt and surfaced with mineral granules
CSA	CAN/CSA-A123.16	Asphalt-coated glass-base sheets
CSA	A123.17	Asphalt Glass Felt Used in Roofing and Waterproofing
CSA	A123.23	Product specification for polymer-modified bitumen sheet, prefabricated and reinforced
CSA	A123.24	Standard test method for wind resistance of vegetated roof assembly
CSA	A123.25	Asphalt core boards used in roofing
CSA	A123.51	Asphalt shingle application on roof slopes 1:6 and steeper
CSA	A165.1	Concrete block masonry units

Issuing Agency	Document Number	Title of Document
CSA	A165.2	Concrete Brick Masonry Units
CSA	A165.3	Prefaced concrete masonry units
CSA	CAN/CSA-A179	Mortar and Grout for Unit Masonry
CSA	CAN/CSA-A220 Series	Concrete Roof Tiles
CSA	CAN/CSA-A371	Masonry Construction for Buildings
CSA	A3001	Cementitious Materials for Use in Concrete
CSA	B182.1	Plastic drain and sewer pipe and pipe fittings
CSA	G40.21	Structural quality steel
CSA	G401	Corrugated steel pipe and buried structures
CSA	CAN/CSA-O80 Series	Wood preservation
CSA	O118.1	Western Red Cedar Shakes and Shingles
CSA	O118.2	Eastern White Cedar Shingles
CSA	O121	Douglas fir plywood
CSA	O141	Softwood Lumber
CSA	O151	Canadian softwood plywood
CSA	O153	Poplar plywood
CSA	O325	Construction sheathing
CSA	O437.0	OSB and Waferboard
HPVA	ANSI/HPVA HP-1	American National Standard for Hardwood and Decorative Plywood
ULC	CAN/ULC-704.1	Standard for Thermal Insulation, Polyurethane and Polyisocyanurate, Boards, Faced
ULC	CAN/ULC 712.1	Standard for Thermal Insulation – Light Density, Open Cell Spray Applied Semi-Rigid Polyurethane Foam – Material Specification
ULC	CAN/ULC 712.2	Standard for Thermal Insulation – Light Density, Open Cell Spray Applied Semi-Rigid Polyurethane Foam – Installation
ULC	CAN/ULC 717.1	Standard for Flat Wall Insulating Concrete Form (ICF) Units – Material Properties
ULC	CAN/ULC-S701.1	Standard for Thermal Insulation, Polystyrene Boards
ULC	CAN/ULC-S702.1	Standard for Mineral Fibre Thermal Insulation for Buildings, Part 1: Material Specification
ULC	CAN/ULC-S703	Standard for Cellulose Fibre Insulation (CFI) for Buildings
ULC	CAN/ULC-S705.1	Standard for Thermal Insulation – Spray Applied Rigid Polyurethane Foam, Medium Density – Material Specification

Issuing Agency	Document Number	Title of Document
ULC	CAN/ULC-S705.2	Standard for Thermal Insulation – Spray Applied Rigid Polyurethane Foam, Medium Density – Application
ULC	CAN/ULC-S706.1	Standard for Insulating Wood Fibre Boards for Buildings
ULC	CAN/ULC-S710.1	Standard for Bead-Applied One Component Polyurethane Air Sealant Foam, Part 1: Material Specification
ULC	CAN/ULC-S711.1	Standard for Bead-Applied Two Component Polyurethane Air Sealant Foam, Part 1: Material Specification

Notes to Table [\[5.9.1.1.\]](#) 5.9.1.1.:

- (1) See Note A-Table 5.9.1.1.
 - (2) Flat wall insulating concrete form units shall conform to CAN/ULC 717.1, in lieu of ASTM E2634, as indicated in ASTM C840.
 - (3) The flame-spread rating of gypsum panels shall be determined in accordance with CAN/ULC-S102, in lieu of ASTM E84, as indicated in ASTM C1278/C1278M-24.
 - (4) The *flame-spread rating* of gypsum board shall be determined in accordance with CAN/ULC-S102, in lieu of ASTM E84, as indicated in ASTM C1396/C1396M.
 - (5) The *flame-spread rating* of gypsum panels shall be determined in accordance with CAN/ULC-S102, in lieu of ASTM E84, as indicated in ASTM C1658/C1658M.
 - (6) For the purpose of compliance with Part 5, ASTM D3019/D3019M shall only apply to the non-fibered and non-asbestos-fibered types of asphalt roll roofing.
 - (7) The *flame-spread rating* of rigid polyvinyl chloride siding shall be determined in accordance with CAN/ULC-S102.2, in lieu of ASTM E84, as indicated in ASTM D3679.
 - (8) The *flame-spread rating* of rigid polyvinyl chloride soffits shall be determined in accordance with CAN/ULC-S102.2, in lieu of ASTM E84, as indicated in ASTM D4477.
 - (9) The *flame-spread rating* of polypropylene siding shall be determined in accordance with CAN/ULC-S102.2, in lieu of ASTM E84, as indicated in ASTM D7254.
 - (10) The *flame-spread rating* of insulated vinyl siding shall be determined in accordance with CAN/ULC-S102.2, in lieu of ASTM E84, as indicated in ASTM D7793.
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NBC25 Div.B 9.29.5.2. (first printing)
[\[9.29.5.2.\]](#) 9.29.5.2. Materials

- [1] 1)** Except as provided in Sentence (2) regarding *flame-spread ratings*, gypsum board shall conform to
- [a] a) ASTM C1177/C1177M, "Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing",
 - [b] b) ASTM C1178/C1178M, "Standard Specification for Coated Glass Mat Water-Resistant Gypsum Backing Panel",

[c] --) [ASTM C1278/C1278M-24, "Standard Specification for Fiber-Reinforced Gypsum Panel"](#),

[d] c) ASTM C1396/C1396M, "Standard Specification for Gypsum Board", or

[e] d) ASTM C1658/C1658M, "Standard Specification for Glass Mat Gypsum Panels".

- [2] 2)** The *flame-spread ratings* of gypsum board shall be determined in accordance with CAN/ULC-S102, "Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies".

Impact analysis

No additional costs are expected to be incurred as a result of adding references to this standard in Table 5.9.1.1. and Sentence 9.29.5.2.(1). The proposed change simply adds more options of panel material. Formally including more gypsum board products that are commonly used in the construction industry would remove potential regulatory barriers to the use of gypsum board products that are more appropriate for the end use.

Adding a reference in the NBC for fibre-reinforced gypsum panels could reduce costs where designers spend time and resources to identify appropriate materials for panels and to verify that fibre-reinforced gypsum panels perform as intended.

Enforcement implications

This proposed change can be enforced by the existing Code-enforcement infrastructure. The industry and regulators should already be familiar with the products that conform to this standard, which was first published in 1999. As such, no additional training is anticipated to be necessary for Code users. Formally including more gypsum board products commonly used in construction and clarifying the application of requirements for flame-spread ratings for these products would simplify enforcement of the NBC.

Who is affected

Adding references to this standard would decrease the likelihood of confusion for building officials, building owners, designers, specification writers, contractors, and manufacturers since there would be explicit minimum performance requirements in the NBC for fibre-reinforced gypsum panels.

OBJECTIVE-BASED ANALYSIS OF NEW OR CHANGED PROVISIONS

NBC25 Div.B 5.9.1.1. (first printing)

[\[5.9.1.1.\]](#) 5.9.1.1. ([\[1\]](#) 1)

[F20,F22,F51,F54,F55,F61,F63,F80-OH1.1,OH1.2] [F41,F55-OH1.1] [F55,F61,F80-OH1.3]

[\[5.9.1.1.\]](#) 5.9.1.1. ([\[1\]](#) 1)

[F20,F80-OS2.1] [F20,F22,F51,F61,F63,F80-OS2.3] [F51-OS2.5]

[\[5.9.1.1.\]](#) 5.9.1.1. ([\[1\]](#) 1) [F20-OS2.2] [F80-OS2.3]

[\[5.9.1.1.\]](#) 5.9.1.1. ([\[1\]](#) 1) [F80,F61,F63-OS3.1]

[\[5.9.1.1.\]](#) 5.9.1.1. ([\[1\]](#) 1) [F80,F61,F63-OH4] Applies to floor assemblies.

[5.9.1.1.] 5.9.1.1. ([1] 1) ([a] a) [F61,F63-OS1.4] Applies where required life safety systems are incorporated in environmental separators.

[5.9.1.1.] 5.9.1.1. ([1] 1) [F20,F80-OP2.1,OP2.3] [F22,F80-OP2.4]

[5.9.1.1.] 5.9.1.1. ([1] 1) [F42-OH2.5]

[5.9.1.1.] 5.9.1.1. ([2] 2) no attributions

NBC25 Div.B 9.29.5.2. (first printing)

[9.29.5.2.] 9.29.5.2. ([1] 1) [F20,F80-OP2.1,OP2.3] [F22,F80-OP2.4]

[9.29.5.2.] 9.29.5.2. ([1] 1) [F20,F80-OS2.1,OS2.3]

[9.29.5.2.] 9.29.5.2. ([1] 1) [F20,F22,F80-OS1.2] Applies where interior finishes are required to act as fire protection for foamed plastics or to contribute to the required fire resistance of assemblies.

[9.29.5.2.] 9.29.5.2. ([1] 1) [F20,F22,F80,F81-OH1.1,OH1.2] Applies where interior finishes support or serve as required environmental separation elements.

[9.29.5.2.] 9.29.5.2. ([2] 2) [F02,F03-OS1.2]