



MORRISON HERSHFIELD

January 31, 2019

Raymond Belanger
Manager/Technical Sales Specialist
Quik-Therm Insulation Solutions Inc.

Dear Raymond:

**Re: 2018 British Columbia Building Code Requirements
Foamed Plastic Insulation in Exterior Walls of Mid-Rise Combustible Construction**

Morrison Hershfield (MH) has been requested to comment on the Code provisions related to exterior cladding for mid-rise combustible construction under the 2018 British Columbia Building Code (BCBC).

Exterior Cladding Options

Articles 3.2.2.50. and 3.2.2.58 permit up to 6 storey buildings of Group C and Group D major occupancies to be of combustible construction. The requirements of Subsection 3.1.4. Combustible Construction therefore apply to such buildings, and specifically Article 3.1.4.8. Exterior Cladding applies to mid-rise combustible (i.e. wood) buildings:

3.1.4.8. Exterior Cladding

1) The exterior cladding on each exterior wall of buildings conforming to Article 3.2.2.50. or 3.2.2.58. shall consist of

a) noncombustible cladding, or

b) a wall assembly that satisfies the criteria of Clause 3.1.5.5.(1)(b). (See Note A-3.1.4.8.(1).) (See also Notes A-3.1.5.5.(1)(b)(i) and A-3.1.5.5.(1)(b)(ii).)

Two options are presented for exterior cladding on exterior walls of mid-rise wood buildings. In Clause a) the cladding is required to be noncombustible, which is a defined term meaning materials that meet the acceptance criteria of ULC-S114. In Clause b) the wall assembly is required to be tested in accordance with ULC-S134 by reference to Article 3.1.5.5.

The Appendix notes for each of these Articles further clarify that Clause a) requires a noncombustible finish on the exterior of a wall assembly, and Clause b) requires a wall assembly tested to ULC-S134 (emphasis added):

A-3.1.4.8.(1) Exterior Cladding. *The requirements in Sentence 3.1.4.8.(1) are intended to limit the potential for fire spread on the exterior cladding of buildings of combustible construction through the use of noncombustible finishes on the exterior of the wall assembly or the use of a cladding/wall assembly that has been assessed with regard to its ability to resist flame propagation up the outside of a building...*

A-3.1.5.5. Combustible Cladding on Exterior Walls.... For the purposes of this Article, a cladding system is considered as those materials outboard of the sheathing membrane.

It is noted that the reference in A-3.1.5.5. to a cladding system applies to all Sentences of Article 3.1.5.5. and applies when Clause 3.1.4.8.(1)(b) is the selected option for exterior cladding on a mid-rise wood building. However, when Clause 3.1.4.8.(1)(a) is the selected option, the exterior cladding compliance is achieved by a noncombustible finish, so Article 3.1.5.5. and its appendix note are not applicable when using Clause 3.1.4.8.(1)(a).

Protection of Foamed Plastic on the Exterior Building Face

When foamed plastic is proposed for the exterior wall in mid-rise wood building governed by Article 3.2.2.50. or 3.2.2.58., the requirements of Article 3.2.3.8. also apply:

3.2.3.8. Protection of Exterior Building Face

1) Except as permitted by Sentence (3) and in addition to the requirements of Sentences 3.2.3.7.(1) and (2) and where the maximum permitted area of unprotected openings is greater than 10% of the exposing building face, foamed plastic insulation used in an exterior wall of a building more than 3 storeys in building height shall be protected on its exterior surface by

a) concrete or masonry not less than 25 mm thick, or

b) noncombustible material that complies with the criteria for testing and the conditions of acceptance stated in Sentence (2) when tested in conformance with CAN/ULC-S101, "Fire Endurance Tests of Building Construction and Materials."

Sentence 3.2.3.8.(2) includes requirements for the fire exposed size of the wall assembly, joints, a 15 minute test duration, and test pass criteria. Sentence 3.2.3.8.(3) waives the requirements of Sentence 3.2.3.8.(1) for wall assemblies that comply with Article 3.1.5.5.

Protection of Foamed Plastic on the Interior

An interior thermal barrier is also required by Article 3.1.4.2. when foamed plastic insulation is located in the exterior wall, regardless of the compliance option selected under Article 3.1.4.8.

Summary

Under the 2018 British Columbia Building Code, foamed plastic is permitted to be used in the exterior wall of a mid-rise wood building (governed by Article 3.2.2.50. or 3.2.2.58) when the following conditions are satisfied:

- the exterior cladding (i.e. outer finish over the foamed plastic insulation) is noncombustible, as required by Clause 3.1.4.8.(1)(a),
- the exterior noncombustible material over the foamed plastic when tested as an assembly passes the 15 minute ULC-S101 test per the prescribed criteria as required by Article 3.2.3.8., and

- an interior thermal barrier such as gypsum board is provided as required by Article 3.1.4.2.

Please contact the undersigned if there are any questions.

Sincerely,
Morrison Hershfield Limited



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