

Protection of Foamed Plastics (CA)

This technical bulletin is aimed at providing additional information in relation to the building code for proper thermal protection for foamed plastics in the building envelope by answering the following questions:

1. Which materials or systems are considered “finishing systems” that would trigger the installation of electrical service within the wall?
2. Does the Ontario Building Code (O. Reg. 332/12) require a specific fire rating for the thermal barrier protecting foamed plastics?
3. How is OBC Division B Clause 3.1.5.12.(2)(b) applied to insulating concrete form walls?

Question 1

Which materials or systems are considered “finishing systems” that would trigger the installation of electrical service within the wall?

The Electricity Act (O. Reg. 164/99) has adopted CSA’s document “Canadian Electrical Code Part I, C22. 1-15” as amended by the document entitled “Ontario Amendments to the Canadian Electrical Code Part I, C22.1”. Section 26 of the Canadian Electrical Code Part I, C22. 1-15 provides the following requirements for receptacles for residential occupancies:

Section 26 — Installation of electrical equipment

Receptacles for residential occupancies

26-710 General (see Appendices B and G)

This Rule applies to receptacles for all residential occupancies (including dwelling units and single dwellings) as follows:

- (a) for the purposes of this Rule, “finished wall” means any wall finished to within 450mm of the floor with drywall, wood panelling, or like material;

Section 26-710 (a) states that a “finished wall” is any wall which has drywall, wood paneling or like material installed within 450mm of the floor.

Question 2

Does the Ontario Building Code (O. Reg. 332/12) require a specific fire rating for the thermal - barrier protecting foamed plastics?

Sentence 9.10.17.10.(1) in Division B of the Ontario Building Code (O. Reg. 332/12) provides requirements for the protection of foamed plastics in a wall or ceiling assembly:

9.10.17.10. Protection of Foamed Plastics

(1) Except as provided in Sentence (2), foamed plastics that form part of a wall or ceiling assembly in *combustible construction* shall be protected from adjacent space in the *building*, other than adjacent concealed spaces within *attic or roof spaces*, crawl spaces and wall assemblies, by,

- (a) one of the finishes described in Subsections 9.29.4. to 9.29.9.,
- (b) sheet metal mechanically fastened to the supporting assembly independent of the insulation and having a thickness of not less than 0.38 mm and a melting point not below 650°C provided the building does not contain a Group C major occupancy, or
- (c) any thermal barrier that meets the requirements of Clause 3.1.5.12.(2)(e).

(2) This section is not applicable to the posed question.

According to Clause 9.10.17.10.(1)(a), foamed plastics forming part of a wall assembly in combustible construction shall be protected from adjacent space in the building with:

- Plaster (to the requirements of 9.29.4.)
- Gypsum board finish with taped joints (to the requirements of 9.29.5.)
- Plywood (to the requirements of 9.29.6.)
- Hardboard (to the requirements of 9.29.7)
- Insulating finish board (to the requirements of 9.29.8)
- Particleboard, OSB or waferboard finish (to the requirements of 9.29.9)

Clause 9.10.17.10.(1)(b) does not apply to residential occupancy but permits sheet metal in other Part 9 construction. Article 9.10.17.10.(1)(c) references Clause

3.1.5.12(2)(e) which states:

3.1.5.12. Combustible Insulation and its Protection

(2) Foamed plastic insulation having a *flame-spread rating* not more than 25 on any exposed surface, or any surface that would be exposed by cutting through the material in any direction, is permitted in a *building* required to be of *noncombustible construction* provided the insulation is protected from adjacent space in the *building*, other than adjacent concealed spaces within wall assemblies, by a thermal barrier consisting of,

- (e) any thermal barrier that meets the requirements of classification B when tested in conformance with CAN/ULC-S124, “Test for the Evaluation of Protective Coverings for Foamed Plastic”.

Clause 3.1.5.12.(2)(e) referenced in 9.10.17.10.(1)(c) provides an additional option for compliance. The clause states that foamed plastic can be protected from adjacent space by any thermal barrier meeting the requirements of classification B when tested to CAN/ULC-S124.

The code does not explicitly state a required fire resistance rating for the thermal protection applied to foam plastic.

Question 3

How is OBC Division B Clause 3.1.5.12.(2)(b) applied to insulating concrete form walls?

Sentence 3.1.5.12.(2) in Division B of the Ontario Building Code (O. Reg. 332/12) provides requirements for the protection of foamed plastics from adjacent space in a building permitted to be of noncombustible construction.

3.1.5.12. Combustible Insulation and its Protection

(2) Foamed plastic insulation having a flame-spread rating not more than 25 on any exposed surface, or any surface that would be exposed by cutting through the material in any direction, is permitted in a building required to be of *non-combustible construction* provided the insulation is protected from adjacent space in the building, other than adjacent concealed spaces within wall assemblies, by a

thermal barrier consisting of,

- (a) not less than 12.7 mm thick gypsum board mechanically fastened to a supporting assembly independent of the insulation,
- (b) lath and plaster, mechanically fastened to a supporting assembly independent of the insulation,
- (c) masonry,
- (d) concrete, or
- (e) any thermal barrier that meets the requirements of classification B when tested in conformance with CAN/ULC-S124, “Test for the Evaluation of Protective Coverings for Foamed Plastic”.

Sentence 3.1.5.12.(2) permits the use of combustible insulation (foamed plastic) in non-combustible construction provided that:

1. The foamed plastic does not have a flame spread rating of more than 25 even if protected by an integral membrane, and
2. It is protected by a thermal barrier listed in Clause (a) through (e).

Clause 3.1.5.12.(2)(b) specifies that in the case of lath and plaster used as a thermal barrier to protect foamed plastic, the lath and plaster needs to be fastened to a supporting assembly independent of the insulation. The lath and plaster should therefore be attached in a manner where in the case of a fire, the thermal barrier will stay in place even if the foamed plastic melts. This could include:

- Direct attachment to the concrete,
- Attachment to the webs supporting the foamed plastic as long as the attachment spacing complies with the code,
- Attachment to strapping. The strapping would need to be attached directly to the concrete or to the webs, or
- Attached to a structurally independent interior wall built in front of the ICF wall.

There is no reference to the requirements of 3.1.5.12.(2)(b) in Part 9 of Division B. In other words, it does not apply to small buildings under the scope of Part 9.