

# BC BUILDING CODE INTERPRETATION COMMITTEE

A joint committee with members representing  
**AIBC, APEGBC, BOABC, POABC**

File No: 06-0105

INTERPRETATION

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Interpretation Date:	January 17, 2012
Building Code Edition:	BC Building Code 2006
Subject:	Location of vapour barrier in exterior walls
Keywords:	Outboard/Inboard Thermal Insulation, Vapour Barrier
Building Code Reference(s):	9.25.1.2.(2), Table 9.25.1.2., A-9.25.1.2., 9.25.4.3.(2)

## Question:

In a Part 9 single family home in the Metro Vancouver area, is it necessary for the polyethylene vapour barrier to be located on the warm side of the wall assembly, immediately behind the interior wall sheathing?

## Interpretation:

No, but it is the preferred location.

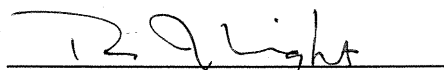
Clause 9.25.1.2.(2)(a) requires that sheet vapour barriers such as polyethylene be located on the warm side of an exterior wall assembly as described in Clause 9.25.1.2.(2)(b).

Clause 9.25.1.2.(2)(b) permits sheet vapour barriers such as polyethylene to be positioned within an exterior wall assembly provided that the ratio of outboard to inboard thermal resistance meets the requirements of Table 9.25.1.2.

Sentence 9.25.4.3.(1) requires that a vapour barrier be installed to protect the entire surfaces of thermally insulated walls.

Sentence 9.25.4.3.(2) requires that vapour barriers be installed sufficiently close to the warm side of insulation to prevent condensation at design conditions. Appendix note A-9.25.4.3.(2) clarifies that vapour barriers can be located partway through the insulation provided that the temperature of the inside face of the vapour barrier will not fall below the dew point of the heated interior air.

For the Metro Vancouver area, the heating degree-days is less than 4999, so the minimum ratio of total thermal resistance outboard of the vapour barrier to total thermal resistance inboard of the vapour barrier is 0.20.



R. J. Light, Committee Chair

The views expressed are the consensus of the joint committee with members representing AIBC, APEGBC, BOABC, and POABC, which form the BC Building Code Interpretation Committee. The purpose of the committee is to encourage uniform province wide interpretation of the BC Building Code. These views should not be considered as the official interpretation of legislated requirements based on the BC Building Code, as final responsibility for an interpretation rests with the local *Authority Having Jurisdiction*. The views of the joint committee should not be construed as legal advice.

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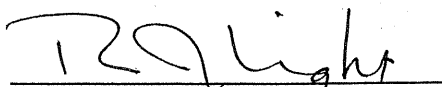
Refer to Appendix note A-9.25.1.2. for the following example:

e.g. Total Outboard Thermal Insulation = 1.02 RSI  
Total Inboard Thermal Insulation = 2.31 RSI  
Ratio outboard/inboard =  $1.02/2.31 = 0.44 > 0.20$  OK

Since the Metro Vancouver area is also subject to high relative humidity, most building envelope professionals recommend that the vapor barrier be located much closer to the warm side of the exterior wall than may be permitted by Table 9.25.1.2.

It should be noted that Figure A-9.25.1.2. In Division B Appendix A indicates the plane of low air and vapour permeance to be partway through the wall, but this Figure also shows a Type 2 vapour barrier immediately inside the interior gypsum board sheathing. The use of 2 surfaces of low vapour permeance is not generally advisable and the more interior location is less risky and preferable when considering condensation related to vapour diffusion and air leakage.

The more critical aspect of the construction of an exterior wall is the continuity of the air barrier. It is critical that the air barrier be continuous over the entire wall surface. The most common approach in single family wood frame construction is to locate the air barrier and the vapour barrier in the same plane, immediately inside the interior wall sheathing using polyethylene sheet with taped joints and all electrical outlets boxes with polyethylene back boxes that are also taped to the vapour barrier. Alternately, the interior gypsum board wall sheathing together with gaskets and the framing is used to form a continuous air barrier.



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