

Product Information Bulletin

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Code Requirements for Air Barrier and Vapour Barrier Systems

The Advantage ICF System® combines expanded polystyrene (EPS) insulation panels with a web and interlock connector system that results in a concrete wall of uniform thickness. The table below outlines National Building Code of Canada 2005 (NBC), Alberta Building Code 2006 (ABC), British Columbia Building Code 2006 (BCBC) and Ontario Building Code 2006 (OBC) provisions applicable to walls using insulating concrete forming (ICF) construction.

Air Barrier Systems - NBC, ABC, BCBC and OBC Subsection 9.25.3.

Thermally insulated wall assemblies shall be constructed so as to include an air barrier system that will provide a continuous barrier to air leakage.	Article 9.25.3.1.
Air barrier systems shall possess the characteristics necessary to provide an effective barrier to air infiltration and exfiltration under differential air pressure due to stack effect, mechanical systems or wind.	NBC, ABC and BCBC Sentence 9.25.3.2.(1).
Sheet and panel type materials intended to provide the principal resistance to air leakage shall have an air leakage characteristic not greater than 0.02 L/(s•m ²) @ 75 Pa. Note: The same requirement is also in NBC, ABC, BCBC and OBC Sentence 5.4.1.2.(1).	OBC Sentence 9.25.3.2.(1).

Advantage ICF System properties in relation to Code Requirements:

The air leakage characteristic for 25-mm thick type 2 expanded polystyrene (EPS) insulation is recognized as 0.0214 L/(s•m ²) @ 75 Pa.	Table A-9.25.1.2.B
Based upon the above, the Advantage ICF System consisting of two layers of CAN/ULC-S701, Type 2 EPS insulation @ 67-mm (2-5/8") thickness and a minimum 152 mm (6") thick monolithic concrete core would provide the required air leakage characteristic of less than 0.02 L/(s•m ²) @ 75 Pa.	
NBC 2010 Revision - The air leakage characteristics and water vapour permeance values for a number of common materials are given in Table A-9.25.5.1.(1). The air leakage characteristic for 50-mm reinforced concrete is listed as "negligible."	

Vapour Barrier Systems – NBC, ABC, BCBC and OBC Subsection 9.25.4.

Thermally insulated walls must be constructed with a vapour barrier so as to provide a barrier to diffusion of water vapour from the interior into wall spaces.	Article 9.25.4.1.
The material providing the vapour barrier property must have a permeance not greater than 60 ng/(Pa•s•m ²) when measured using ASTM E96, desiccant method (dry cup).	Sentence 9.25.4.2.(1)

Advantage ICF System properties in relation to Code Requirements:

The vapour permeance characteristic for each 67-mm (2-5/8") thick EPS insulation panel that form the concrete wall in the Advantage ICF System is less than 40 ng/(Pa•s•m ²) which meets the requirements of Sentence 9.25.4.2.(1) and the requirements per NBC 2010, Sentence 9.25.4.2.(6).	
NBC 2010 Revision - Sentence 9.25.4.2.(6) states that where foamed plastic insulation functions as the vapour barrier, it shall be sufficiently thick so as to meet the requirement of Sentence (1).	

Note: In order to meet code provisions for air and vapour barrier systems, continuity must be maintained at all openings in walls and at floor/roof connection using approved sealing materials.