

Product Information Bulletin

Insulspan SIP System Vapour Permeance Characteristics

This bulletin discusses vapour permeance characteristics of the Insulspan SIP System in relation to vapor retarder requirements in the International Residential Code (IRC 2009 IRC 2012) and vapour barrier requirements in the National Building Code of Canada (NBC 2005 and NBC 2010).

IRC 2009 and 2012 VAPOR RETARDER

The IRC 2009 and 2012 typically requires that a Class II vapor retarder shall be installed on the warm-in-winter side of all insulated framed walls, floors and roof/ceilings comprising elements of the building thermal envelope in Climate Zones 5, 6, 7, 8 and Marine 4.

Typically, a Class II vapour retarder is defined as a material, membrane or covering such as foil, plastic sheeting, or insulation facing having a permeance rating of $>0.1 \text{ perm} \leq 1.0 \text{ perm}$, when tested in accordance with the desiccant method using Procedure A of ASTM E 96. Vapor retarders limit the amount of moisture vapor that passes through a material or wall assembly.

NBC 2005 VAPOR BARRIER

The NBC 2005 and 2010, Clause 9.25.4.2.(1) requires that thermally insulated wall, ceiling and floor assemblies shall be constructed with a vapour barrier so as to provide a barrier to diffusion of water vapour from the interior into wall spaces, floor spaces or attic or roof spaces.

A vapour barrier is defined in the NBC 2005 and 2010 as the elements installed to control the diffusion of vapour. NBC 2005, Clause 9.25.1.2.(1)(b) and NBC 2010, Clause 9.25.4.2.(1) require that the vapour barrier must have a vapour permeance less than $60 \text{ ng/Pa}\cdot\text{s}\cdot\text{m}^2$ when tested in accordance ASTM E96 dry cup method.

Insulspan SIP System

Plasti-Fab has conducted ASTM E96 tests on sections cut from a 4 1/2" thick Insulspan SIP consisting of one layer of 7/16" oriented strand board (OSB) laminated to each face of a 3 5/8" thick expanded polystyrene (EPS) core material. The vapour permeance for the 4 1/2" SIP test section was found to be $28 \text{ ng/Pa}\cdot\text{s}\cdot\text{m}^2$ (0.5 perm) which meets or exceeds the maximum permitted by codes for Class II vapor retarder and vapour barriers. The vapour permeance for the composite was measured for the minimum SIP thickness since the vapour permeance property of the EPS insulation core decreases as EPS thickness increases resulting in a lower vapour permeance property for the composite.

Individual panels in the Insulspan SIP System are connected together and sealed using polyurethane applied to the connection material. An additional method of ensuring continuity of the vapor retarder/vapour barrier for roof applications is application of panel seal tape over each joint. Continuity for wall and roof applications may also be achieved by application of gypsum board on the interior with low permeance paint finish applied.

Refer to the Insulspan SIP System installation Guide and typical details for additional information. **In all cases, before you start work, you are required to check with your local building inspector or development officer to ensure compliance with applicable building code requirements.**