

Halo Exterra is a rigid insulation foam board made of Type 1 Neopor® Plus GPS (EPS with infused graphite particles), and coated with a clear perforated polypropylene film. The perforations allow Exterra to maintain a higher air and vapour permeance, which makes it suitable for use as exterior continuous insulation, and as a water resistive barrier. The higher air and vapour permeance of Exterra lets moisture vapour escape the wall assembly and dry towards the outside.

In comparison, a comparable leading XPS rigid insulation product exhibits properties of low air and vapour permeance. This XPS product is a vapour barrier, in accordance with the National Building Code of Canada¹ (less than 60 ng/Pa-m²-s). And because a vapour barrier on the warm side of the wall assembly is still required by code, a double vapour barrier wall assembly is created when this XPS product is used on the exterior. This can result in more moisture trapped within the wall assembly - reducing the drying capacity of the wall assembly to the exterior.

As shown in the table below, this XPS product has a vapour permeance less than 60 ng/Pa-m²-s and an air leakage rate less than 0.1 L/s-m² @ 75 Pa, which according to the National Building Code of Canada 2010 (NBCC) is considered a low permeance material².

The NBCC requires low permeance materials to be placed on the warm side of the wall assembly – the interior side of the wall. However, this XPS product does not comply with this requirement. Therefore, in accordance with the NBCC, wall assemblies using this XPS product on the exterior must then show compliance by determining the outboard to inboard ratio of the wall assembly.

Due to the high permeance of Exterra, as exterior insulation it is readily code compliant, and does not require outboard to inboard calculations. (The controlling air and vapour barrier, or low permeance material, in an Exterra wall assembly is the polyethylene vapour barrier located on the warm side of the wall assembly, as required by code).

1. NBCC 2010, Section 9.25.4.2, defines a vapour barrier to have a permeance not greater than 60 ng/Pa-s-m².
2. NBCC 2010, Section 9.25.5.1, defines low permeance materials and requirements.

		Thickness, in			Vapour Barrier	Air Barrier
		1	1.5	2		
Comparable leading XPS product 20 psi (140 kPa), Type 3, R-5/in	R-value	5	7.5	10	Y	Y
	Vapour perm ² (ng/Pa-m ² -s)	45	30	< 30		
	Air leakage (L/s-m ² @ 75Pa)	< 0.01	< 0.01	< 0.01		
Exterra 10 psi (70 kPa), Type 1, R-4.7/in	R-value ³	5	7.5	10	N	N
	Vapour perm ¹ (ng/Pa-m ² -s)	> 77	77	71		
	Air leakage ¹ (L/s-m ² @ 75Pa)	> 0.1	> 0.1	> 0.1		

1. Based on independent testing on 1.5" and 1" thick Exterra samples.
2. Source: Available data from leading XPS product. The thicker the insulation the lower the permeance.
3. Based on data from BASF at nominal R5/in (actual thickness = 1.06")

The low permeance properties of this XPS product can have a negative effect on the overall health of the wall assembly when used as exterior insulation. Exterra was designed to have higher air and vapour permeance to allow for a more breathable, healthier wall assembly.

Comparable Leading XPS Product Wall Assembly	Exterra Wall Assembly
Creates a double vapour barrier wall assembly, which can trap more moisture within the wall assembly, and hinder the drying rate to the exterior.	Perforated to be more breathable allowing moisture in the wall assembly to dry properly to the exterior.
Not readily code compliant. Must meet outboard to inboard ratio requirements, and will only apply to specific climate zones.	Readily code compliant. Controlling air and vapour barrier is the polyethylene vapour barrier placed on the warm side of the wall assembly, per code. Can apply to all climate zones.

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