

Product Information Bulletin

Vancouver Building Code Bylaw 10908 - PlastiSpan Insulation Options

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This bulletin provides **PlastiSpan®** and **PlastiSpan HD** insulation options for foundation wall and concrete slab insulation systems meeting of Vancouver Building Code Bylaw 10908 requirements.

Table 1 – CAN/ULC-S701 Material Properties

Material Properties	Test Methods	Units	CAN/ULC-S701 ¹	
			1	2
Thermal Resistance <i>Minimum per 25 mm (inch)</i>	ASTM C518	m ² ·°C/W (ft ² ·h·°F/BTU)	0.65 (3.75)	0.70 (4.04)
Compressive Resistance <i>Minimum @ 10% Deformation</i>	ASTM D1621	kPa (psi)	70 (10)	110 (16)
Flexural Strength <i>Minimum</i>	ASTM C203	kPa (psi)	170 (25)	240 (35)
Water Vapour Permeance <i>Maximum</i>	ASTM E96	ng/(Pa·s·m ²) (Perms)	300 (5.2)	200 (3.5)
Water Absorption² <i>Maximum</i>	ASTM D2842	% By volume	6.0	4.0
Dimensional Stability <i>Maximum, 7 Days @ 70 ± 2°C (158 ± 4°F)</i>	ASTM D2126	% Linear Change	1.5	1.5
Limiting Oxygen Index <i>Minimum</i>	ASTM D2863	%	24	24
Surface Burning Characteristics <i>Classification or Rating</i>	CAN/ULC S102.2	Flame Spread	290	
		Smoke Developed	Over 500	

Vancouver Building Bylaw 10908 – Energy Efficiency Requirements

Table 2 provides minimum thermal resistance of insulation for foundation walls and concrete slabs per Table 10.2.1.1.A of Vancouver Building Bylaw 10908 forming part of Sentence 10.2.1.1.(2).

Table 2 - Minimum Thermal Resistance for Walls and Floors Below or In Contact with Ground

Building Assembly	RSI Value Required
Foundation Walls for one and two family dwellings - Effective rating	3.85
Concrete Slabs on Ground at, above, or below grade	

2012 British Columbia Building Code (BCBC) energy efficiency requirements are based upon minimum **effective thermal resistance (RSI_{eff}/R_{eff})** of building assemblies which includes the effect of thermal bridging due to repetitive structural members such as wood framing members in wall or roof assemblies.

1. **PlastiSpan** and **PlastiSpan HD** insulation properties are third party certified to CAN/ULC-S701, **Standard for Thermal Insulation, Polystyrene, Boards and Pipe Covering**, and are listed by the Canadian Construction Materials Centre (CCMC) under evaluation listing numbers 12424-L (Type 1) and 12425-L (Type 2).
2. The water absorption laboratory test method involves complete submersion under a head of water for 96 hours. The water absorption values above are applicable to specific end-use design requirements only to the extent that the end-use conditions are similar to test method requirements.

2012 BCBC, Subsection 9.36.2. provides the following formula for calculating RSI_{eff}/R_{eff} .

$$RSI_{eff} (R_{eff}) = \frac{100\%}{RSI_F (R_F)} \times \% \text{ with Framing} + \frac{100\%}{RSI_C (R_C)} \times \% \text{ Area Cavity} + RSI(R) \text{ Continuous Material Layers}$$

Table 3 provides an example of basement slab insulation system using continuous **PlastiSpan HD** insulation installed beneath the slab to ensure more uniform floor surface temperature. The **effective thermal resistance** with continuous insulation is calculated by adding up the values for each component.

Table 3 – $RSI_{eff} (R_{eff})$ Calculation per Concrete Slab with Continuous Insulation

Concrete Slabs on Ground at, above, or below grade		
System Description	RSI_{eff}	R_{eff}
Horizontal Air Film (above floor)	0.16	0.9
102 mm (4") Basement Slab	0.04	0.2
76 mm (3") PlastiSpan HD Insulation	2.13	12.1
Polyethylene Moisture Barrier	----	----
Total Effective Thermal Resistance	2.33	13.2

Table 4 provides foundation wall insulation options using continuous exterior **PlastiSpan HD** insulation or interior **PlastiSpan** insulation on the foundation wall in combination with an interior wood frame wall with cavity insulation to meet minimum **effective** thermal resistance per Vancouver Building Bylaw 10908.

Table 4 – Continuous Exterior or Interior Foundation Wall Insulation

Option 1 – Exterior Foundation Wall Insulation with PlastiSpan HD Insulation			
System Description	RSI_F	RSI_C	Continuous Materials
64 mm (2.5") PlastiSpan HD Insulation	----	----	1.78
200 mm (8") Concrete Wall	----	----	0.08
2 x 4 Wood studs @ 600 mm (24") o.c.	0.76	----	----
Cavity Insulation	----	2.29	----
Vapour Barrier	----	----	----
13 mm (1/2") Gypsum Wall Board	----	----	0.08
Inside Air Film	----	----	0.12
Total	0.76	2.29	2.06
% Area of Each Component	13%	87%	100%
Total $RSI_{eff} (R_{eff})$	$RSI-3.87 (R22.0)$		
Option 2 – Interior Foundation Wall Insulation with PlastiSpan Insulation			
System Description	RSI_F	RSI_C	Continuous Materials
200 mm (8") Concrete Wall	----	----	0.08
76 mm (3") PlastiSpan Insulation	----	----	1.98
2 x 4 Wood studs @ 600 mm (24") o.c.	0.76	----	----
Cavity Insulation	----	2.29	----
Vapour Barrier	----	----	----
13 mm (1/2") Gypsum Wall Board	----	----	0.08
Inside Air Film	----	----	0.12
Total	0.76	2.29	2.26
% Area of Each Component	13%	87%	100%
Total $RSI_{eff} (R_{eff})$	$RSI-4.07 (R23.1)$		