

Product Information Bulletin

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Plasti-Fab EPS Insulation Options for Heated Slab on Ground per 2012 OBC

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Plasti-Fab® manufactures expanded polystyrene (EPS) product solutions that meet energy efficiency requirements in the 2012 Ontario Building Code. This bulletin summarizes Plasti-Fab EPS solutions to meet energy efficiency requirements for heated slab applications in buildings required to comply with 2012 OBC, Division B, Part 12, **Resource Conservation and Environmental Integrity**.

2012 OBC, Article 12.2.1.2. Energy Efficiency Design After December 31, 2016:

- 1) This Article applies to construction for which a permit has been applied for after December 31, 2016.
- 2) Except as provided in Sentences (3) and (4), the energy efficiency of all buildings shall
 - a) be designed to exceed by not less than 13% the energy efficiency levels required by Sentence 12.2.1.1.(2), or
 - b) conform to Division 1 and Division 3 or 5 of MMA Supplementary Standard SB-10, "Energy Efficiency Requirements".
- 3) Except as provided in Sentence (4), the energy efficiency of a *building* or part of a *building of residential occupancy* that is within the scope of Part 9 and is intended for occupancy on a continuing basis during the winter months shall,
 - a) be designed to exceed by not less than 15% the energy efficiency levels required by Sentence 12.2.1.1.(3), or
 - b) conform to Chapters 1 and 3 of MMA Supplementary Standard SB-12, "Energy Efficiency of Housing".
- 4) This article does not apply to,
 - a) A *farm building*,
 - b) a *building* that does not use electrical power or fossil fuel,
 - c) a manufactured *building* described in Article 9.1.1.9., or
 - d) a seasonal recreational *building* described in Section 9.36. or 9.38.

MMA Supplementary Standard SB-10, **Energy Efficiency Requirements** applies to energy efficiency design of all buildings **except** buildings with residential occupancy required to comply with 2012 OBC, Division B, Sentence 12.2.1.1.(3). Tables 5.5-5-2017 to 5.5-7-2017 in Division 3 of MMA Supplementary Standard SB-10 require insulation under the full slab on ground to provide minimum thermal resistance of RSI-1.8 (m²•K)/W or R-10 (ft²•hr•°F)/BTU. This requirement applies to both nonresidential and residential buildings addressed by MMA Supplementary Standard SB-10.

NOTE: For information on additional Plasti-Fab EPS solutions available to meet requirements of MMA Supplementary Standard SB-10, refer to Plasti-Fab Product Information Bulletin No. 290.

Buildings with residential occupancy required to comply with 2012 OBC, Division B, Part 9 must meet the requirements of 2012 OBC, Sentence 12.2.1.2.(3) using one of the three compliance options in MMA SB-12, Chapter 3 to achieve energy efficiency:

1. Conformance with one of the prescriptive compliance packages in Subsection 3.1.1.
2. Comply with the performance compliance method in Subsection 3.1.2. or
3. Compliance with Energy Star or R2000 requirements as specified in Subsection 3.1.3. of SB-12 is intended to achieve, on a systemic basis, an energy efficiency performance level that exceeds the energy efficiency requirements of Sentence 12.2.1.1.(3) of Division B of the Building Code by 15%.

Note: MMA Supplementary Standard SB-12 compliance options 2 and 3 require detailed design of all aspects of the energy efficiency design of buildings using recognized simulation software to calculate annual energy use.

2012 OBC, MMA Supplementary Standard SB-12, Chapter 3 provides prescriptive compliance packages which include requirements for the minimum thermal performance and energy efficiency of building envelope and space heating equipment, domestic hot water heating equipment and heat recovery ventilator equipment. Compliance packages are presented in table format in SB-12, Chapter 3 as follows:

- a) Zone 1 Building Locations – Tables 3.1.1.2.A (SI), 3.1.1.2.A (IP), 3.1.1.2.B (SI), and 3.1.1.2.B (IP).
- b) Zone 2 Building Locations – Tables 3.1.1.3.A (SI), 3.1.1.3.A (IP), 3.1.1.3.B (SI), and 3.1.1.3.B (IP).

NOTE: Thermal performance for wall and ceiling components listed in the tables are either **minimum nominal RSI (R)-value for the thermal insulation component only, minimum effective RSI (R) for the entire heated slab assembly** – expressed in SI units of $(m^2 \cdot K)/W$ or IP units of $(ft^2 \cdot hr \cdot ^\circ F)/BTU$ – or **maximum U-value (overall thermal transmittance) for the entire heated slab assembly** – expressed in SI units of $W/(m^2 \cdot K)$ or IP units of $BTU/(ft^2 \cdot hr \cdot ^\circ F)$.

All compliance packages in Tables 3.1.1.2.A, 3.1.1.2.B, 3.1.1.3.A and 3.1.1.3.B in Chapter 3 of MMA Supplementary Standard SB-12 require insulation under the full slab on ground to provide minimum nominal thermal resistance of RSI-1.76 $(m^2 \cdot K)/W$ or R-10 $(ft^2 \cdot hr \cdot ^\circ F)/BTU$ or a minimum effective thermal resistance of RSI-1.96 $(m^2 \cdot K)/W$ or R-11.13 $(ft^2 \cdot hr \cdot ^\circ F)/BTU$.

Table 1 provides an example of an insulation system using continuous **PlastiSpan HD** insulation installed beneath a heated slab to meet requirements of MMA Supplementary Standards SB-10 and SB-12. The **effective thermal resistance** with continuous insulation is calculated by adding up the thermal resistance values for each component.

Table 1 – RSI_{eff} (R_{eff}) Calculation for Concrete Slab with Continuous *PlastiSpan HD* Insulation

Concrete Slabs on Ground at, above, or below grade		
System Description	RSI	R
Horizontal Air Film (above floor)	0.16	0.9
102 mm (4") Basement Slab	0.04	0.2
64 mm (2.5") <i>PlastiSpan HD</i> Insulation	1.78	10.1
Polyethylene Moisture Barrier	----	----
Total Effective Thermal Resistance - RSI_{eff} (R_{eff})	1.98	11.2

Table 2 provides RSI (R-value) and required thickness for other Plasti-Fab EPS insulation options to meet requirements of MMA Supplementary Standards SB-10 and SB-12.

Table 2 – RSI (R-value) Plasti-Fab Continuous EPS Insulation Options

Plasti-Fab Continuous EPS Insulation Option	RSI (R) per 25 mm (1-inch) of Thickness	Required Thickness mm (inches)
DuroFoam[®] Plus insulation	RSI-0.70 (R-4.04)	64 mm (2.5")
EnerSpan[®] HD insulation	RSI-0.82 (R-4.7)	54 mm (2 1/8")