

# Product Information Bulletin

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## Plasti-Fab® EPS Product Solutions 2012 OBC, MMA Supplementary Standard SB-12

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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 buildings required to comply with residential occupancy per 2012 OBC, Division B, Part 9 and 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). **For additional information on Plasti-Fab EPS solutions available to meet requirements of MMA 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:** 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 entire wall or roof assembly – expressed in SI units of (m<sup>2</sup>·K)/W or IP units of (ft<sup>2</sup>·hr·°F)/BTU – or maximum U-value (overall thermal transmittance) for the entire wall or roof assembly – expressed in SI units of W/(m<sup>2</sup>·K) or IP units of BTU/(ft<sup>2</sup>·hr·°F).

Approximate limits of Climate Zones 1 and 2 are illustrated in Figure 1. Heating degree days (HDD) extracted from climatic data in 2012 OBC, Supplementary Standards SB-1 for some building locations are provided in Table 1.

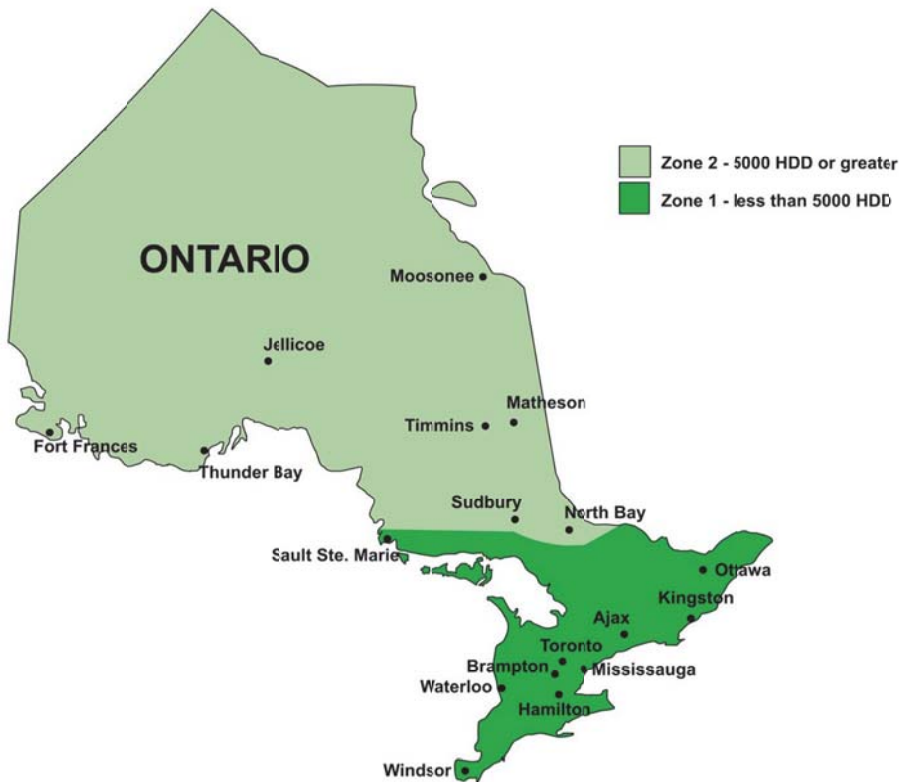


Figure 1 – Ontario Climate Zone Map

Table 1 - Climate Zone Locations: 2012 OBC, SB-1

| Zone 1 – Less than 5,000 Heating Degree Days |      |                  |      | Zone 2 – 5,000 Heating Degree Days or Greater |      |          |      |
|--|------|------------------|------|---|------|----------|------|
| Location                                     | HDD  | Location         | HDD  | Location                                      | HDD  | Location | HDD  |
| Windsor                                      | 3400 | Kingston         | 4000 | North Bay                                     | 5150 | Timmins  | 5940 |
| Hamilton                                     | 3460 | Brampton         | 4100 | Sudbury                                       | 5180 | Matheson | 6080 |
| Toronto                                      | 3520 | Waterloo         | 4200 | Fort Frances                                  | 5440 | Jellicoe | 6400 |
| Ajax   | 3820 | Ottawa           | 4440 | Thunder Bay                                   | 5650 | Nakina   | 6500 |
| Mississauga                                  | 3880 | Sault Ste. Marie | 4960 | Dryden  | 5850 | Moosonee | 6800 |

Table 2 provides examples of Plasti-Fab EPS product solutions that can be used to meet minimum *effective RSI/R value* per OBC 2012, MMA SB-12, Chapter 3 for above grade applications.

**Table 2 – Plasti-Fab Product EPS Solutions for Above Grade Walls**

| Option Description   | MMA SB-12 Compliance Package             | MMA SB-12 Effective RSI (R) <sup>1</sup> | Cavity Insulation RSI (R) | RSI (R) Plasti-Fab Solution <sup>2</sup> |
|--|--|--|---------------------------|--|
| <b>2 x Above Grade Wall Options with Plasti-Fab Continuous EPS Insulating Sheathing</b>        |  |  |                           |  |
| <b>Zone 1 – Table 3.1.1.2.A – Space Heating Equipment with AFUE ≥ 92%</b>                      |  |  |                           |  |
| 2 x wood studs @ 406 mm (16") on center  | A2, A5                                   | 3.58 (20.3)                              | 3.34 (19)                 | 0.88 (5.0)                               |
| 2 x wood studs @ 406 mm (16") on center  | A3                                       | 3.28 (18.6)                              | 2.46 (14)                 | 1.32 (7.5)                               |
| 2 x wood studs @ 406 mm (16") on center  | A4, A6                                   | 3.77 (21.4)                              | 3.87 (22)                 | 0.88 (5.0)                               |
| <b>Zone 1 – Table 3.1.1.2.B – Space Heating Equipment with 84% ≤ AFUE &lt; 92%</b>             |  |  |                           |  |
| 2 x wood studs @ 406 mm (16") on center  | B1, B2                                   | 3.77 (21.4)                              | 3.87 (22)                 | 0.88 (5.0)                               |
| 2 x wood studs @ 406 mm (16") on center  | B3, B4                                   | 4.21 (23.9)                              | 3.87 (22)                 | 1.32 (7.5)                               |
| 2 x wood studs @ 406 mm (16") on center  | B5, B6                                   | 4.46 (25.3)                              | 3.34 (19)                 | 1.76 (10.0)                              |
| <b>Zone 2 – Table 3.1.1.3.A – Space Heating Equipment with AFUE ≥ 92%</b>                      |  |  |                           |  |
| 2 x wood studs @ 406 mm (16") on center  | A1                                       | 3.58 (20.3)                              | 3.34 (19)                 | 0.88 (5.0)                               |
| 2 x wood studs @ 406 mm (16") on center  | A2, A5                                   | 4.46 (25.3)                              | 3.34 (19)                 | 1.76 (10.0)                              |
| 2 x wood studs @ 406 mm (16") on center  | A3                                       | 3.77 (21.4)                              | 3.87 (22)                 | 0.88 (5.0)                               |
| 2 x wood studs @ 406 mm (16") on center  | A4, A6                                   | 4.21 (23.9)                              | 3.87 (22)                 | 1.32 (7.5)                               |
| <b>Zone 2 – Table 3.1.1.3.B – Space Heating Equipment with 84% ≤ AFUE &lt; 92%</b>             |  |  |                           |  |
| 2 x wood studs @ 406 mm (16") on center  | B1, B2                                   | 4.21 (23.9)                              | 3.87 (22)                 | 1.32 (7.5)                               |
| 2 x wood studs @ 406 mm (16") on center  | B3, B4, B5, B6                           | 4.65 (26.4)                              | 3.87 (22)                 | 1.76 (10.0)                              |
| <b>Above Grade Wall and Attic Without Ceiling Options with Plasti-Fab Building Systems</b>     |  |  |                           |  |
| <b>Zone 1 (Tables 3.1.1.2.A &amp; 3.1.1.2.B) and Zone 2 (Tables 3.1.1.3.A &amp; 3.1.1.3.B)</b> |  |  |                           |  |
| Advantage ICF System <sup>®</sup> – see Advantage ICF System PIB 215 for options               | Above grade wall                         | Applicable SB-12 Option                  | NA                        | Note 3                                   |
| Insulspan <sup>®</sup> SIP System – see Insulspan SIP System PIB 210 for options               | Above grade wall & ceiling without attic | Applicable SB-12 Option                  | NA                        | Note 4                                   |

**Notes to Table 2:**

1. The *effective RSI/R values* for all compliance packages include the entire exposed above grade wall assembly components, from interior air film to exterior air film.
2. Determine minimum continuous insulation thickness using RSI/R-values for Plasti-Fab EPS insulation options in Table 4.
3. Advantage ICF System Product Information Bulletin 215 provides information for a variety of above grade wall options complying with MMA SB-12.
4. Insulspan SIP System Product Information Bulletin 210 provides detailed information above grade wall and ceiling without attic options complying with MMA SB-12.

Table 3 provides examples of Plasti-Fab EPS product solutions that can be used to meet minimum effective RSI/R value per OBC 2012, MMA SB-12, Chapter 3 for basement wall (below grade foundation) applications.

**Table 3 – Plasti-Fab Product EPS Solutions for Below Grade Walls**

| Basement Wall Option Description   | MMA SB-12 Compliance Package | MMA SB-12 Effective RSI (R) <sup>1</sup> | Cavity Insulation RSI (R) | RSI (R) Plasti-Fab Solution <sup>2</sup> |
|--|------------------------------|--|---------------------------|--|
| <b>Basement Wall Options with Plasti-Fab Continuous Interior or Exterior Insulation</b>        |                              |  |                           |  |
| <b>Zone 1 – Table 3.1.1.2.A – Space Heating Equipment with AFUE ≥ 92%</b>                      |                              |  |                           |  |
| 2 x wood studs @ 610 mm (24") on center  | A1, A3, A4, A6               | 3.72 (21.1)                              | NA                        | 3.52 (20.0)                              |
| 2 x wood studs @ 610 mm (24") on center  | A2                           | 3.67 (20.8)                              | 2.11 (12)                 | 1.76 (10.0)                              |
| 2 x wood studs @ 610 mm (24") on center  | A5                           | 2.81 (16.0)                              | 2.11 (12)                 | 0.88 (5.0)                               |
| <b>Zone 1 – Table 3.1.1.2.B – Space Heating Equipment with 84% ≤ AFUE &lt; 92%</b>             |                              |  |                           |  |
| 2 x wood studs @ 610 mm (24") on center  | B1, B3, B5, B6               | 3.72 (21.1)                              | NA                        | 3.52 (20.0)                              |
| 2 x wood studs @ 610 mm (24") on center  | B2, B4                       | 3.67 (20.8)                              | 2.11 (12)                 | 1.76 (10.0)                              |
| <b>Zone 2 – Table 3.1.1.3.A – Space Heating Equipment with AFUE ≥ 92%</b>                      |                              |  |                           |  |
| 2 x wood studs @ 610 mm (24") on center  | A1 to A6                     | 3.72 (21.1)                              | NA                        | 3.52 (20.0)                              |
| <b>Zone 2 – Table 3.1.1.3.B – Space Heating Equipment with 84% ≤ AFUE &lt; 92%</b>             |                              |  |                           |  |
| 2 x wood studs @ 610 mm (24") on center  | B1                           | 3.72 (21.1)                              | NA                        | 3.52 (20.0)                              |
| 2 x wood studs @ 610 mm (24") on center  | B2                           | 3.67 (20.8)                              | 2.11 (12)                 | 1.76 (10.0)                              |
| 2 x wood studs @ 610 mm (24") on center  | B3, B4                       | 4.43 (25.2)                              | 3.52 (20)                 | 1.76 (10.0)                              |
| 2 x wood studs @ 610 mm (24") on center  | B5, B6                       | 4.70 (26.7)                              | 3.52 (20)                 | 2.11 (12.0)                              |
| <b>Basement Wall Options with Plasti-Fab Building Systems</b>                                  |                              |  |                           |  |
| <b>Zone 1 (Tables 3.1.1.2.A &amp; 3.1.1.2.B) and Zone 2 (Tables 3.1.1.3.A &amp; 3.1.1.3.B)</b> |                              |  |                           |  |
| Advantage ICF System <sup>®</sup> – see Advantage ICF System PIB 215 for options               | Basement wall                | Applicable SB-12 Option                  | NA                        | Note 3                                   |

**Notes to Table 3:**

1. The effective RSI/R values for all compliance packages include the entire basement wall components and interior air film.
2. Determine minimum continuous insulation thickness using RSI/R-values for Plasti-Fab EPS insulation options in Table 4.
3. Advantage ICF System Product Information Bulletin 215 provides information for a variety of basement wall options complying with MMA SB-12.

**Table 4 – RSI (R-value) Plasti-Fab Continuous EPS Insulation Options**

| Plasti-Fab Continuous EPS Insulation Option                 | RSI (R) per 25 mm (1-inch) of Thickness |
|---|---|
| PlastiSpan <sup>®</sup> or DuroFoam <sup>®</sup> insulation | RSI-0.65 per 25 mm (R-3.75 per inch)    |
| PlastiSpan HD or DuroFoam Plus insulation                   | RSI-0.70 per 25 mm (R-4.04 per inch)    |
| EnerSpan <sup>®</sup> insulation                            | RSI-0.82 per 25 mm (R-4.7 per inch)     |