

Product Information Bulletin

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2012 OBC, MMAH Supplementary Standard SB-12 Part 9 Residential Occupancy Requirements

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The Advantage ICF System® is an energy efficient insulating concrete forming (ICF) system consisting of a continuous layer of expanded polystyrene (EPS) insulation over the interior and exterior face of a concrete core. This bulletin summarizes energy efficiency design applicable to buildings with residential occupancy required to comply with 2012 Ontario Building Code, Division B, Part 12, **Resource Conservation and Environmental Integrity**.

2012 OBC, Article 12.2.1.1. Energy Efficiency Design Before January 1, 2017:

- 1) This article applies to construction for which a permit has been applied for before January 1, 2017.
- 2) Except as provided in Sentences (3) and (4), the energy efficiency of all buildings shall conform to MMAH 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) meet the performance level that is equal to a rating of 80 or more when evaluated in accordance with NRCan "EnerGuide for New Houses: Administrative and Technical Procedures", or
 - b) conform to Chapters 1 and 2 of MMAH 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.

Buildings with residential occupancy required to comply with 2012 OBC, Division B, Part 9 must meet the energy efficiency requirements of 2012 OBC, Sentence 12.2.1.2.(3) using one of the three compliance options below from MMAH SB-12, Chapter 2:

1. Comply with the one of the prescriptive compliance packages from Subsection 2.1.1.
2. Comply with the performance compliance method in Subsection 2.1.2., or
3. Comply with the technical requirements of NRCan "*Energy Star for New Homes: Technical Specifications*" as specified in Subsection 2.1.3.

NOTE: MMAH 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.

Tables 2.1.1.2.A, 2.1.1.2.B, 2.1.1.2.C, 2.1.1.3.A, 2.1.1.3.B and 2.1.1.3.C in 2012 OBC, MMAH Supplementary Standard SB-12, Chapter 2 provide 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 ventilators equipment.

NOTE: The minimum thermal performance for floor, wall and ceiling components listed in the MMAH SB-12 tables are minimum RSI expressed in units of (m²·K)/W [R-value expressed in units of (ft²·hr·°F)/BTU] for the thermal insulation component only except for ICF wall options as noted below.

Table 1 provides Advantage ICF System options that meet minimum RSI (R-value) per 2012 OBC, MMAH Supplementary Standard SB-12, Chapter 2.

Table 1 - Advantage ICF System Options for Insulation of Basement Walls and Above-Grade Walls

2012 OBC MMAH Supplementary Standard SB-12 Compliance Packages	Climate Zones	Minimum RSI (R-value) (see Note 1)	Advantage ICF System
			EPS Insulation Thickness
Tables 2.1.1.2.A & 2.1.1.3.A, Package L: Advantage ICF System for basement walls (see Note 2)	1 & 2	3.87 (R22)	Type 2 EPS Insulation 2 panels @ 2 5/8" = 5 1/4"
Tables 2.1.1.2.A & 2.1.1.3.A, Package K: Advantage ICF System for basement walls and above-grade walls (see note 3)	1 & 2	3.87 (R22)	Type 2 EPS Insulation 2 panels @ 2 5/8" = 5 1/4"

Table 1 Notes:

1. The thermal resistance (RSI/R-value) recognized for an ICF wall in SB-12 is the total thermal resistance of the entire wall assembly. For other types of wall systems, the values listed are minimum RSI (R-values) for the thermal insulation component only.
2. Compliance package L applies only to a building with ICF basement walls. **Alternatively, any other compliance package except compliance package K, is permitted to be used for a building with ICF basement walls.** The thermal resistance value of an ICF wall is the total thermal resistance of the entire wall assembly.
3. Compliance package K applies only to a building with both ICF basement walls and ICF above grade walls. **Alternatively, any other compliance package is permitted to be used for a building with both ICF basement walls and ICF above grade walls.** The thermal resistance value of an ICF wall is the total thermal resistance of the entire wall assembly.
4. Advantage ICF System uses EPS insulation meeting CAN/ULC-S701, type 2 with a thermal resistance value of RSI-0.70 per 25 mm (R-4.04 per inch) of thickness.

Since the Advantage ICF System does not contain any framing members, the *effective thermal resistance* for Advantage ICF wall assemblies is calculated using the isothermal planes method as the sum of the thermal resistance values for all components in the wall assembly. Typical calculations for above grade and basement wall assemblies are provided in Table 2 below.

Table 2 – Typical Effective Thermal Resistance Calculation

Component	Advantage ICF System			
	Above Grade Wall		Basement Wall	
	RSI	R-value	RSI	R-value
Outside Air Film (above grade)	0.03	0.2		
Metal Siding	0.11	0.6		
EPS Thermal Insulation	1.87	10.6	1.87	10.6
152 mm (6") Concrete Wall	0.06	0.3	0.06	0.3
EPS Thermal Insulation	1.87	10.6	1.87	10.6
Gypsum Wall Board, 13 mm (1/2")	0.08	0.4	0.08	0.4
Inside Air Film	0.12	0.7	0.12	0.7
Total RSI (R-value)	4.13	23.5	3.99	22.7