

Wall Bracing with Polyiso CI

About Polyiso Insulation

Polyiso is a rigid foam insulation used in more than 70% of commercial roof construction and offers a continuous insulation solution for commercial and residential wall assemblies. As one of North America's most widely used and readily available building products, Polyiso is a cost-effective insulation option for reducing building energy use and improving the overall service-life of roofs and walls.

The benefits of using Polyiso include:

- High R-value per inch of thickness
- Excellent fire test performance
- Extensive building code approvals
- Cost-effective continuous insulation (ci) solution
- Compatible with most roof and wall systems
- Dimensional stability
- Compressive strength
- Moisture resistance
- Thinner walls and roofs with shorter fasteners
- Long service life
- Preferred insurance ratings
- Virtually no global warming potential
- Zero ozone depletion potential
- Recyclable through reuse
- Recycled content (amount varies by product)
- Regional materials (nationwide production network)
- QualityMark^{CM} certified LTRR-values

The Superior Insulation System – Polyiso CI

The use of polyisocyanurate continuous insulation (Polyiso CI) is a time-tested, yet advanced building concept. Utilizing Polyiso CI (with foil or coated glass facer) to provide a continuous layer of insulation on the exterior of a home is extremely beneficial when used with wood or steel framed construction to minimize thermal bridges. Providing insulation over the entire opaque wall surface significantly increases the overall thermal performance and energy efficiency of a home.¹

The Importance of Bracing

Polyiso CI is not a structural bracing material. Wall systems with Polyiso CI must be separately braced to resist lateral loads resulting from wind and seismic loads on the home. Bracing is required by the model building codes. Therefore, be sure to consult the local building code for specific bracing requirements since each home design presents different loading conditions. Polyiso CI manufacturers may offer products that integrate a structural component with the insulation that can be used to meet bracing requirements in the model building codes.

The Importance of Corner Bracing

Polyiso insulation sheathing is not a structural material. As such, wall systems with polyiso are required by building codes to have corner bracing to resist lateral loads resulting from wind forces on the home.

Be sure to consult the local building code for specific wind load requirements, since each home design presents different conditions. Homes in seismic regions may require special construction techniques designated by the local building code.

Wood Framing

The wall bracing requirements are described in the following sections of the model building codes:

- 2018 International Residential Code for One- and Two-Family Dwellings, Chapter 6, Section R602.10 Wall Bracing.
- 2015 National Building Code of Canada, Chapter 9, Sub-section 9.23.13, Bracing to Resist Lateral Loads Due to Wind and Earthquake.



Surround yourself with the best.

¹ Savings vary. Find out why in the seller's fact sheet on R-values. Higher R-values mean greater insulating power.

As shown in **Figure 1**, 1-inch by 4-inch let-in diagonal wood bracing may be used to provide resistance against lateral loads. Where used, let-in bracing is installed at the building corners and at specified intervals along the length of walls as required by the local building code.

Certain bracing options may allow for the elimination of traditional sheathing products such as OSB, plywood, or structural grade fiberglass board exterior sheathing. For example, surface-nailed steel strapping or other proprietary bracing products are often used allowing the entire exterior of the building to be covered with Polyiso CI. In this application, Polyiso CI is attached directly to the wood framing members, which can result in labor and material cost savings.

Some builders choose to brace walls with plywood, OSB, structural grade fiberboard exterior sheathing, or other proprietary sheathing products (**Figure 2**). Required nailing schedules are found in the model building codes and in manufacturer installation instructions. When using wood structural panels (plywood or OSB) as bracing, place thinner Polyiso CI boards over the structural sheathing and thicker Polyiso CI boards on the remaining opaque wall sections to achieve a consistent total thickness along the length of the wall. This technique will allow the installation of a highly energy-efficient building envelope using Polyiso CI.

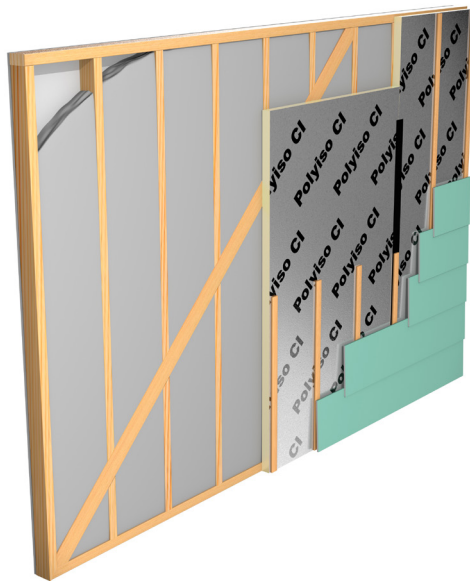


Figure 1. A residential wood-frame wall constructed with let-in diagonal wood bracing and Polyiso CI.



Figure 2. A residential wood-frame wall constructed with wood sheathing bracing and Polyiso CI.

Many Polyiso CI manufacturers offer structural foam sheathing products that can be used for bracing walls. Utilizing these proprietary Polyiso CI products provides a consistent layer of insulating material across the exterior building envelope. This combination provides structural integrity and appropriate thermal resistance in the wall system, and can decrease labor costs associated with installing multiple products.

Steel Framing

The increasing popularity of steel framing in residential construction has prompted the development of new construction techniques. The proper method for bracing steel framing is discussed in detail in [AISI 230: Standard for Cold-Formed Steel Framing- Prescriptive Method for One- and Two-Family Dwellings](#).

KEY FACTS:

- Bracing is key to the structural performance of the wall because Polyiso CI is not a structural material.
- Options for bracing that allow for 100% full thickness Polyiso CI coverage include:
 - Structural insulated sheathing products,
 - 1-inch by 4-inch let-in diagonal wood bracing, or
 - Surface-nailed steel strapping.
- Reduced depth of continuous insulation is required at areas braced with wood structural panels to maintain consistent total sheathing thickness across the wall.

PIMA

For more than 30 years, PIMA (Polyisocyanurate Insulation Manufacturers Association) has served as the unified voice of the rigid polyiso industry proactively advocating for safe, cost-effective, sustainable and energy-efficient construction. PIMA's membership includes manufacturers of polyiso insulation and suppliers to the industry. The products of PIMA's members comprise the majority of the polyiso produced in North America.

PIMA produces technical bulletins to address frequently asked questions about polyiso insulation. These publications update and inform architects, specifiers, and contractors about and build consensus on the performance characteristics of polyiso insulation. Individual companies can provide specific information about their respective polyiso products.

For more information on polyisocyanurate insulation, visit www.polyiso.org

