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A new era for residential construction

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Continuous insulation can improve energy efficiency, reduce material and labor costs, and help meet building code requirements. Polyiso CI (polyisocyanurate continuous insulation) can be used to meet the performance expectations for structural sheathing, though its use is limited by local building codes. In this article, we’ll discuss Polyiso CI’s features and benefits and emphasize its use in residential construction to help improve overall energy performance.

Polyiso CI is a rigid insulating foam that’s made from polyisocyanurate and is typically used as an exterior wall or roof component. It’s a high-performance insulation that can be used as an air barrier, water barrier, or vapor retarder, and it also reduces thermal bridging and helps meeting building codes for energy efficiency. Polyiso CI is a durable material that can last for decades, and it’s also environmentally friendly because it’s made from renewable resources.

Polyiso CI can be an alternative to traditional structural sheathing, which can include wood, concrete, or metal, and it can also be used as an air barrier, water barrier, or vapor retarder. Polyiso CI is easy to install and requires fewer materials and labor costs compared to traditional structural sheathing. Polyiso CI can also help meet building code requirements for energy efficiency and structural integrity.

In addition to reducing energy consumption and improving energy performance, Polyiso CI can also help reduce material and labor costs. Polyiso CI is also a durable material that can last for decades, and it’s also environmentally friendly because it’s made from renewable resources.

In conclusion, Polyiso CI is an excellent choice for residential construction because it offers high performance, durability, and cost savings. The use of Polyiso CI can help improve the energy efficiency of buildings and reduce the environmental impact of construction. Polyiso CI is a versatile material that can be used in a variety of applications in residential construction, and it’s an excellent choice for builders and homeowners who want to improve the energy efficiency of their homes.
Images courtesy of PIMA.

Installation of a separate WRB or air barrier products such as house wraps. Note: Attention should be paid to sealing the inside and outside corners and tying-in the air barrier at the appropriate for the application to ensure long-term performance.

As part of the air barrier system, Polyiso CI must be integrated with other materials to form a continuous air barrier. Penetrations for panel joints, penetrations, and interfaces with other building envelope materials. Penetrations for Polyiso CI must be sealed along the edges of Polyiso CI products using an approved product in accordance with manufacturer installation instructions. Sealing along the interior side of the framed wall to reduce water vapor transfer from the occupied space and thus reduce infiltration and exfiltration.

Air Barrier:

In heating or mixed climates, a continuous vapor retarder is typically installed on the interior side of the framed wall to reduce water vapor transfer from the occupied space and thus reduce infiltration and exfiltration. The model building codes list Polyiso CI as an air barrier material when installed at a minimum 1/2 inch thickness. The use of Polyiso CI as part of an air barrier assembly reduces air leaks.

Thermal Insulation:

Insulating the entire opaque surface of framed walls with Polyiso CI keeps energy use low and helps create a more comfortable and healthy indoor environment. Polyiso CI achieves a higher effective R-value with minimal material thickness meaning homeowners can have a more energy-efficient home without sacrificing usable space. Polyiso CI performs several critical functions in residential construction, visit Home Performance.

At a time when wood products are in great demand and the supply chain is unreliable, determined builders can have a more energy-efficient home without sacrificing usable space. Polyiso CI performs several critical functions in residential construction, visit Home Performance.

The increasing popularity of steel framing in residential construction has prompted the development of new and efficient approaches to wall bracing. Polyiso CI is not a structural bracing material. Therefore, wall systems with Polyiso CI must be separately designed in accordance with the model building codes, and when used with Polyiso CI, can reduce a builder's reliance on wood structural sheathing. Polyiso CI manufacturers may offer products that integrate a structural component with the insulation that can have a more energy-efficient building envelope using Polyiso CI. (See Figure 1).

When considering a wall bracing plan, it makes sense to first consult your local building code regulations. Wood structural panels (plywood or OSB) as bracing, when in doubt, consult the codes. Polyiso CI manufacturers may offer products that integrate a structural component with the insulation that can have a more energy-efficient building envelope using Polyiso CI. (See Figure 1).

Figure 2. Wood structural panels such as plywood, OSB, or structural grade berboard exterior sheathing used for bracing.

When in Doubt, Consult the Codes

When in doubt, consult the codes. Polyiso CI manufacturers may offer products that integrate a structural component with the insulation that can have a more energy-efficient building envelope using Polyiso CI. (See Figure 1).

New Framing:

In residential construction, the installation of Polyiso CI on the interior side of the framed wall is an attractive and cost-effective way to increase energy efficiency and structural integrity of your home. Polyiso CI is the ideal choice for creating a single, continuous air barrier that reduces energy losses and provides a comfortable indoor environment. (See Figure 3).

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Polyiso CI can eliminate material and labor costs associated with the need for additional sealants to seal panel joints, penetrations, and interfaces with other building envelope materials. Penetrations for water, electrical, and mechanical systems can be sealed with a single, durable Polyiso CI product without compromising on quality or energy efficiency. Polyiso CI offers a widely available solution that can be used for both new construction and retrofits, making it a cost-effective and sustainable choice for builders looking to reduce lumber dependency and increase energy performance in residential construction.

For more information on Polyiso CI and its effective use in residential construction, contact your local Polyiso CI manufacturer or visit the Polyisocyanurate Insulation Manufacturers Association (PIMA) website at www.pima-insulation.org.

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