

Benefits of Fiber Glass Insulation

Batt, Roll and Blown-In Products Deliver Sustainable Performance

Since the introduction of fiber glass insulation in 1938, it has remained the preeminent insulation material for commercial and residential construction. Over the years, fiber glass insulation has proven its ability to make buildings more energy efficient, reduce utility costs and increase occupant comfort. These and other important attributes have given it a new life as the leading insulation material in many of today's green building projects.

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FIBER GLASS INSULATION AND SUSTAINABLE BUILDING

Typically manufactured in two different forms — pre-cut batts and rolls, and blown-in loose-fill — fiber glass building insulation is used primarily for thermal and acoustical purposes in wall cavities, attics and other critical open spaces in building assemblies. One of its key advantages is value. Fiber glass insulation has a lower installed price than many other types of insulating materials and, for equivalent R-Value performance (i.e., thermal resistance), it is generally the most cost-effective option when compared to cellulose or sprayed foam insulation systems.

Let's take a closer look at the thermal performance of fiber glass building insulation.

Thermal performance and energy efficiency

Fiber glass insulation helps make buildings more thermally efficient by better retaining the desired temperature of enclosed spaces, whether they are heated or cooled. Its thermal performance reduces utility costs for building owners, conserves nonrenewable fuel sources and provides greater occupant comfort (when used in conjunction with appropriately sized heating and cooling equipment).

Additionally, fiber glass insulation offers design flexibility. Greater amounts can be installed in some sections of a building to increase overall thermal performance and compensate for areas with lower thermal values, such as windows and doors. It enables a wide range of R-Values, giving the specifier more options for meeting provincial and national energy code requirements.

Fiber glass batt insulation products come in pre-made R-Values, ranging from R-8 to R-40, whereas loose-fill fiber glass can be blown-in with pneumatic devices to meet almost any R-Value requirement. Blown-in fiber glass insulation also can be installed over existing batt insulation in renovation projects to increase overall R-Value.

FEATURED PRODUCTS

Fiber glass batt, roll
and blown-in insulation

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Fiber glass batts are available in R-Values ranging from R-8 to R-40.

AUTHOR

Randy Straight

Manager of Residential
Technical Services



Randy Straight is responsible for generating and providing technical information on the performance of fiber glass and foam insulation products used in the building envelopes of residential and light commercial structures to architects, engineers, builders, consumers, trade contractors, building scientists and building code officials. In addition, he serves as the primary contact for code compliance and green building techniques for CertainTeed Insulation.



Blown-in fiber glass can be installed with pneumatic devices to meet almost any R-Value requirement.

Since it is inert and does not settle, properly installed fiber glass insulation maintains its R-Value over a long period of time.

Fiber glass insulation batts and rolls must always be installed at their full designed thickness to achieve the stated R-Value — compressed fiber glass insulation loses R-Value. For example, R-20 (RSI-3.5) fiber glass insulation with a thickness of 6-1/4 inches (159 mm) compressed to 5-1/2 inches (140 mm) will experience a reduction in R-Value to R-19 (RSI-3.34).

If the material is allowed to regain its original thickness, however, the full R-Value is restored. Installers should always ensure the insulation completely fills construction cavities without gaps or voids.

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Moisture resistance

When exposed to moisture, fiber glass insulation neither absorbs nor holds water. If fiber glass insulation does get wet during or after installation, installers should visually inspect it on all six sides for contamination. If the material appears free of visible defects, installers must dry it thoroughly to restore its full R-Value. Once the area surrounding the insulation has also been inspected, cleaned and fully dried, the fiber glass insulation can be reinstalled and will regain its original R-Value¹.

Fire resistance

Made from sand and recycled glass, fiber glass insulation is naturally noncombustible and remains so for the product's life. It requires no additional fire-retardant chemical treatments. Many building codes also recognize fiber glass insulation as an acceptable fire stop in wood- and steel-framed wall assemblies.

Acoustic control

Fiber glass insulation is a naturally sound-absorbent material that significantly reduces sound transmission in wall, ceiling, floor and HVAC assemblies. The first inch of fiber glass insulation in a building cavity can increase an assembly's sound transmission class (STC) value by three or four points in some constructions. Each additional inch can further increase the STC rating by two points².

Recycled content

Between 1992 and 2000, the fiber glass insulation manufacturing industry recycled more than 8 billion pounds (3.6 billion kg) of pre- and post-consumer glass containers, eliminating the need for millions of cubic feet of landfill space³. Fiber glass insulation has significant recycled content, with some batt, roll and loose-fill insulation products containing up to 80 percent recycled glass⁴. The other main ingredient in fiber glass insulation, silica sand, is an abundant, naturally renewing resource, limiting environmental impact in the manufacturing process.

CertainTeed has fiber glass plants strategically located across North America.

Locally manufactured

Many green building programs (e.g., LEED and Green Globe) grant additional credits for materials that are regionally manufactured and use locally sourced raw ingredients. CertainTeed has fiber glass plants strategically located across North America that allow building designers or specifiers to taken advantage of this important credit.

CONCLUSION

Fiber glass insulation packs multiple green performance features into one product and still comes at a very competitive price when compared to other insulation materials. After 70 years on the market, it's an excellent choice with a tried-and-true track record.

Notes

- 1 Refer to NAIMA's "FAQs About Fiber Glass Insulation."
- 2 See NAIMA's publication # B1405, *Sound Control for Commercial and Residential Buildings*.
- 3 Refer to NAIMA's "Insulation Facts #35: Comparing Fiber Glass and Cellulose Insulation."
- 4 See Appendix A7 of *The Environmentally Responsible Construction and Renovation Handbook*, by Public Works and Government Services of Canada (PWGSC).

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CertainTeed Corporation
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Valley Forge, PA 19482

Professional: 800-233-8990
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www.certainteed.com/insulation