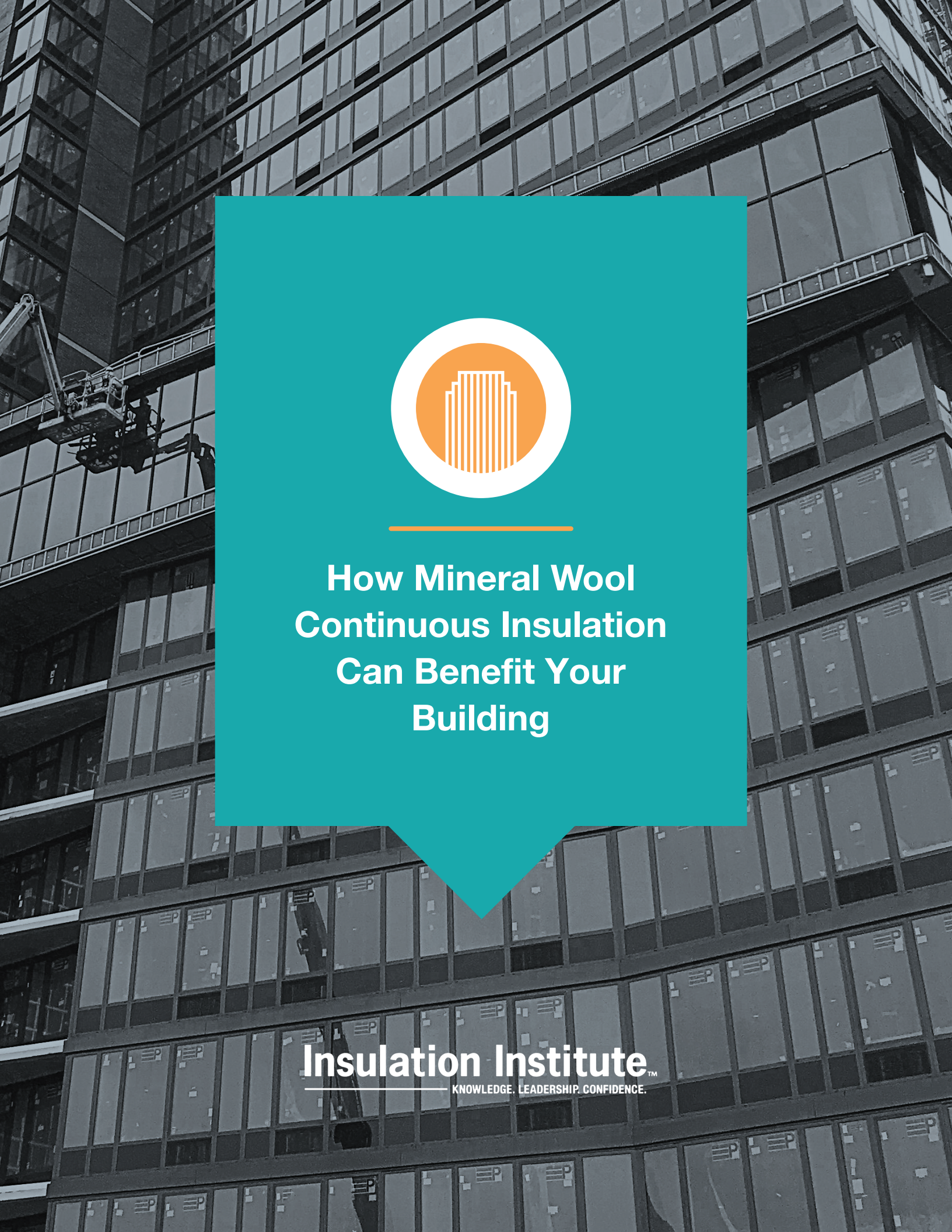

How Mineral Wool Continuous Insulation Can Benefit Your Building

Insulation Institute™

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What is Continuous Insulation (CI)?

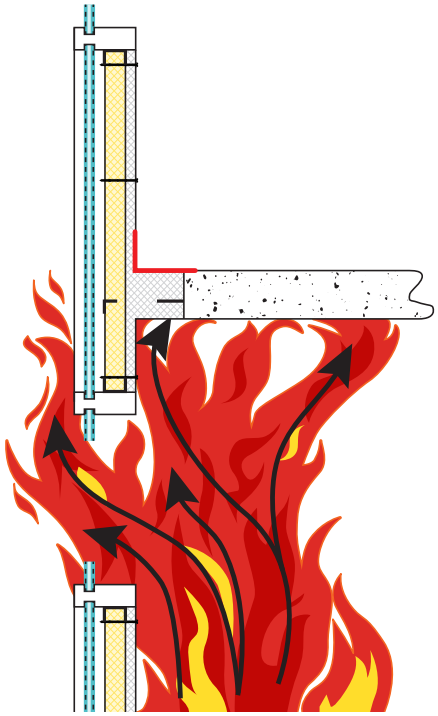
ASHRAE 90.1 defines CI as: “insulation that is continuous across all structural members without thermal bridges other than fasteners and service openings. It is installed on the interior, exterior, or is integral to any opaque surface of the building.”

Thermal bridging, or the escape of heat via conduction through a building envelope, presents significant challenges for energy-efficient building construction. That’s why newer building energy codes, such as the IECC and ASHRAE 90.1, emphasize higher-performing wall assemblies, including those using continuous insulation (CI). These codes have driven advances in design and materials, which can be key to resilient and energy-efficient construction. Whether you are an architect or a specifier, it pays to know what your options are when it comes to CI. While there are many different CI products and applications, mineral wool insulation, together with effective design practices that provide thermal breaks, is a popular solution for minimizing thermal bridging. Mineral wool CI offers a slate of other benefits such as excellent fire resistance, vapor permeability, and flexible installation. Mineral wool also contributes to sustainable construction and can contain a high degree of recycled material. Not all insulation types provide these benefits, and architects and specifiers should perform their own comparisons on other products.

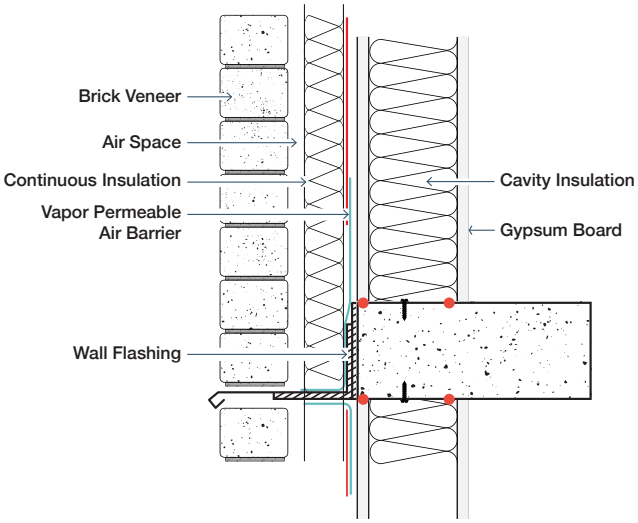
Excellent Fire Resilience

The performance of building materials in a fire is a key factor in protecting the occupants of the building and allowing them to escape safely. Mineral wool insulation is naturally noncombustible and remains so for the life of the product without the addition of potentially harmful chemical fire retardants.[1]

The insulation can resist temperatures in excess of 2,000°F.[2] Unlike hydrocarbon-based insulations, in the event of a fire, mineral wool will not burn or release appreciable amounts of smoke and gases. Because these products have a high melting temperature, they can be used in a wide variety of applications that call for these unique properties. ASTM E136 sets the standard test method for assessing the combustibility of materials. As referenced within the standard, ASTM E176 sets the definition for noncombustible materials to include being tested by ASTM E136, E2652 or ISO 1182. Mineral wool products comply with ISO 1182 and are therefore able to be as listed as noncombustible material.



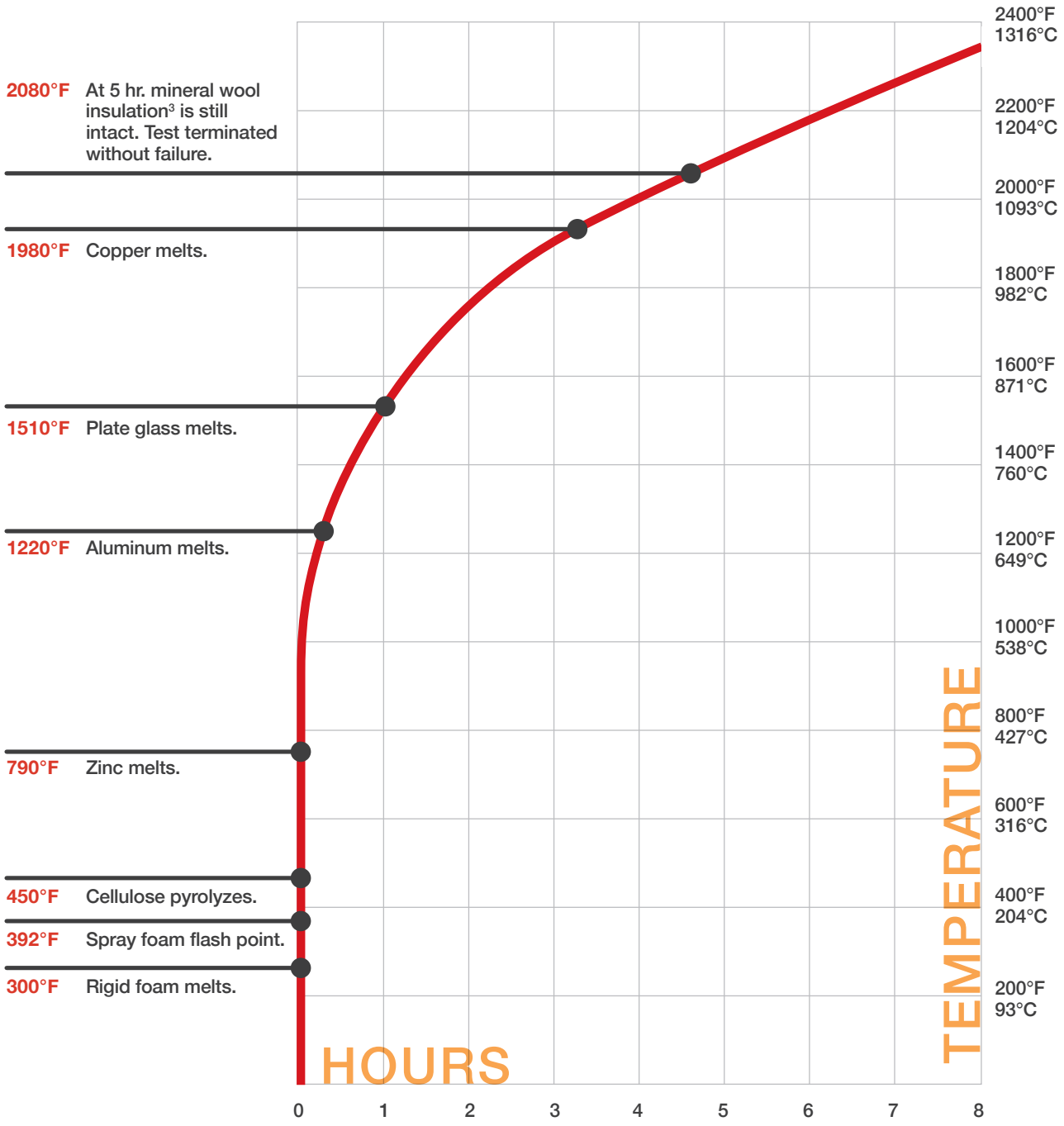
With their very low organic content and their Class A flame spread and smoke-developed ratings when tested per ASTM E84, mineral wool products are ideally suited for use in buildings required to be of noncombustible construction. These products are used as passive fire protection in many buildings and often receive a zero-flame spread and smoke-developed rating–the best possible score–on ASTM E84 tests. The excellent fire performance characteristics of mineral wool products allow them to be used for even the most stringent types of noncombustible construction required in the IBC and NFPA 101. Many assemblies complying with NFPA 285 requirements use mineral wool insulation to achieve optimal fire performance.



High-rise and mid-rise buildings populate the landscape of many US cities. Many exterior façade systems complying with NFPA 285 requirements use mineral wool insulation to achieve optimal fire performance while achieving the desired energy performance. A building's exterior wall cladding system consists of more than the brick, stone, or panel products visible from the exterior side. It includes the products exposed to the rain directly, insulation, and weather resistant barriers. Installing noncombustible mineral wool CI in façade systems can help designers reduce the risk of fire in buildings while providing improved energy performance and safety for occupants. This is even more important as the inventory of mid-rise and high-rise buildings transition to include taller wood buildings.

1) Fire Protection Handbook, 20th ed., Arthur Cote, Ed. (Quincy, MA: National Fire Protection Association, 2008) pp. 4-208.

2) Independent testing conducted per ASTM E119 (Standard Methods of Fire Test of Building Construction and Materials), United States Gypsum Research Facility, March 29, 1974. See also www.builtgreen.org/checklist/guide.aspx?ChecklistID=150.



3) Not for service operation at this temperature. Refer to the appropriate manufacturer's recommended maximum temperature limits of individual products. Time-temperature curve from "Standard of Methods of Fire Tests of Building Constructions and Materials" (ASTM E119-19).

Example: Rainscreen and Cavity Wall Assemblies

One of the prime uses of mineral wool insulation is in rainscreen and cavity wall designs. These assemblies create an air/drainage cavity which limits water from entering the wall, drains moisture that does reach the cavity, and allows for the equalization of pressure.

Rainscreen and cavity wall systems vary greatly from attachment fasteners to installation methods. Generally, mineral wool insulation is installed with abutted joints and mechanically secured and attached to the building structure through the substrate. Note that the joints do not need to be taped.

Vapor Permeability

Since these products are air/vapor permeable, when installed in appropriate system designs, mineral wool helps to control humidity, condensation, and air quality. Mineral wool's flexibility also helps installers position the insulation in contact with the vapor barrier more easily and effectively on the interior or exterior of the wall as needed.

Flexible Installation

Mineral wool is a semi-rigid product that can be cut and installed in a wide variety of spaces. Its flexibility allows it to conform to building shapes and construction irregularities. It comes in standard-sized sheets and can be cut with a serrated knife.

Sustainability and CI

One of the primary considerations in design and construction is sustainability — building for longevity while conserving the environment. Today's architects, specifiers, and builders are choosing building products more diligently than ever before. They want products that are energy-efficient, reduce pollution, and conserve resources. Mineral wool insulation provides all of these features and more.

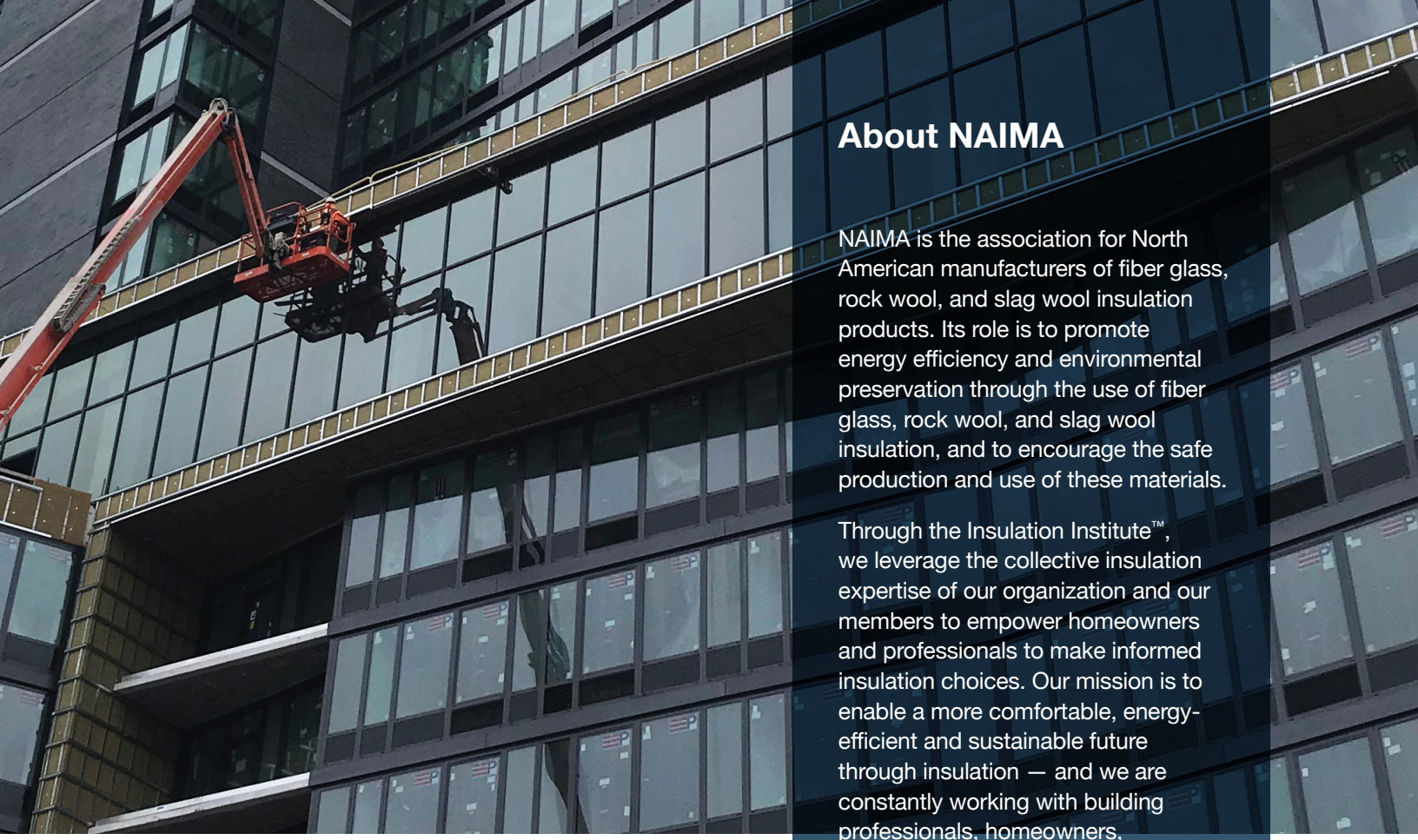
A well-insulated building reduces the amount of energy required to maintain a comfortable living/working environment. Reduced energy consumption translates into a reduction of air pollutants emitted by certain energy generation processes. The Harvard School of Public Health and Boston University have sponsored studies demonstrating that an increased use of insulation reduces greenhouse gas emissions, and the reduction of these emissions deliver improved public health, including a reduction in illnesses associated with respiratory disease.[4] Moreover, mineral wool insulation fibers have been thoroughly researched and have been found safe to manufacture, install, and use when recommended work practices are followed.

Also, using recycled materials in the manufacture of insulation prevents the depletion of natural resources. Some mineral wool contains post-industrial recycled content.[5]

To learn more about mineral wool, visit: insulationinstitute.org

4) Jonathan I Levy, Yurika Nishioka and John D Spengler, "The Public Health Benefits of Insulation Retrofits in Existing Housing in the United States," Environmental Health: A Global Access Science Source, 2003, 2:4. See also https://www.worldgbc.org/sites/default/files/20181204_WGBC_Homes-Research-Note_FINAL_spreads.pdf

5) https://insulationinstitute.org/wp-content/uploads/2019/05/Fiberglass-Rock-and-Slag-Materials-for-a-Sustainable-Planet.pdf



About NAIMA

NAIMA is the association for North American manufacturers of fiber glass, rock wool, and slag wool insulation products. Its role is to promote energy efficiency and environmental preservation through the use of fiber glass, rock wool, and slag wool insulation, and to encourage the safe production and use of these materials.

Through the Insulation Institute™, we leverage the collective insulation expertise of our organization and our members to empower homeowners and professionals to make informed insulation choices. Our mission is to enable a more comfortable, energy-efficient and sustainable future through insulation — and we are constantly working with building professionals, homeowners, government agencies, and public interest, energy and environmental groups to realize that vision.

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This summary is offered for informational purposes only. It does not purport to be an exhaustive analysis of code changes or provide advice that will ensure guaranteed compliance with any energy code provision. Please consult with local authorities before finalizing your installation plans.

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