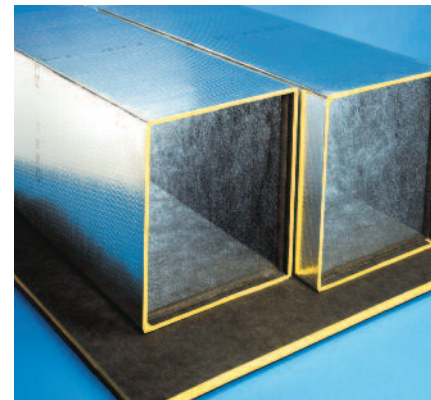




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FASCINATING FACTS
Fiber Glass, Rock Wool, and Slag Wool Insulation Products
Reduce energy consumption and improve our environment





The focus of today's architects, specifiers, builders, homeowners and policymakers is on high performance and sustainable building construction utilizing energy and environmentally efficient technologies such as insulation.

Fiber glass, rock wool, and slag wool insulations are the most versatile insulating products in the world. They are selected for superior thermal performance, acoustical comfort, energy and environmental efficiency, fire protection, condensation, and process control. Their fibrous composition provides unique insulating properties that make them the insulation products of choice for a wide range of applications.

So how much do these insulation products contribute to our environment?

An insulation production Life Cycle Analysis (LCA) and an insulation application energy analysis were conducted by ICF International on behalf of the North American Insulation Manufacturers Association (NAIMA) to better understand the role of insulation in energy consumption and environmental impact. The LCA gave a "cradle to gate" assessment of the environmental impact associated with the production of insulation products in North America. The energy analysis brought perspective to the LCA data through the energy savings and pollution reduction realized by using insulation products. The results of these two studies, and the savings and comparisons calculated by ICF, help explain the benefits of fiber glass, rock wool, and slag wool insulation products to consumers in residential, commercial, and industrial markets.

Savings and comparisons calculated by ICF International on behalf of NAIMA. See "Key Messages and Relevant Facts in Support of NAIMA's Communication Initiatives," June 2013.

Did You Know?



Significant annual energy savings are achieved with fiber glass, rock wool, and slag wool insulation products in residential, commercial, and industrial applications.

Independent, third-party life cycle research and analysis confirmed the energy-saving benefits of fiber glass, rock wool, and slag wool insulation.

Energy savings achieved with fiber glass and mineral wool insulation help homeowners and businesses **save money** through lower heating and cooling costs.

INSULATION SAVES ENERGY IN A VARIETY OF APPLICATIONS.

Homes with insulation use significantly less energy for heating and cooling compared to the same homes without insulation.

Analysis confirms that insulation on outer walls, ceiling, and floors combined with duct and pipe insulation can produce up to **50% energy savings** in single-family homes, compared to homes without insulation.



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

Did You Know?



Improving a home's insulation in outer walls, the ceiling, and floors to current building code requirements produces up to **35% energy savings** for a single-family home.

A typical North American home insulated to current building code requirements can expect to use one half of the electricity and natural gas used by a home with no insulation.



INSULATION DELIVERS ENERGY SAVINGS INSIDE AND OUT.

Insulation is one of the easiest to apply and most effective energy-efficient technologies available to help homeowners improve personal comfort, sound control, condensation control, and fire protection.

Properly insulating a building with fiber glass or mineral wool reduces the amount of pollutants released into the atmosphere, contributing to overall environmental air quality.

Insulation is a unique material: the more it is used, the greater the **energy benefits** it produces.

By reducing the need for natural gas, propane, fuel oil, and electricity to heat and cool buildings, insulation benefits the environment by reducing emissions.



INSULATED HOMES USE LESS ENERGY.

The energy-efficiency benefits of effectively using fiber glass, rock wool, and slag wool insulation can reduce greenhouse gas emissions and reduce the impact of global climate change.

Fiber glass, rock wool, and slag wool insulation represent **smart choices** for the life of a building and for preserving the environment.



SAVING ENERGY MEANS SAVING MONEY.

The energy required to produce insulation is far less than the **energy saved** by insulation.

Improved manufacturing processes decrease energy use, lower waste water effluent discharges, and limit the volume of pollutants emitted.

Duct insulation produces energy and cost savings by slowing heat loss from ducts in attics and unconditioned spaces.

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Fascinating Facts



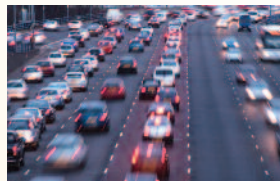
If every home in North America had code-level insulation, this could save enough energy each year to power a rock concert for more than 500 years.



The energy saved by putting code-level insulation in just 1% of all homes in North America is equivalent to energy saved by not producing 36 billion plastic bottles each year.

INSULATION FOSTERS ENERGY SECURITY.

If all single-family homes in North America had code-level insulation, the emissions reductions from insulation would be equal to removing nearly 70,000 cars from the road.



The annual energy savings gained in one week by putting insulation in just 300 homes is about the same as the energy it takes to produce all the popcorn popped in U.S. movie theaters on one Saturday evening.

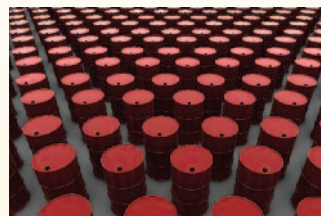
INSULATION IS A COST-EFFECTIVE WAY TO REDUCE ENERGY CONSUMPTION.

Putting code-level insulation in about 1 million homes saves approximately the amount of electricity equal to 150 times the electricity consumed in Las Vegas in a single year.



Installing insulation in 4 million homes (just 4% of all North American housing stock) is equivalent to the carbon dioxide removed from the atmosphere by planting 667 million acres of trees—10 times the area of Colorado.

INSULATION ENHANCES INDOOR ENVIRONMENTS.



Putting code-level insulation in all North American single-family homes would reduce annual energy use by the equivalent energy in more than 13 million barrels of oil.

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

Fascinating Facts

The annual electricity and natural gas savings from code-level insulation in all single-family homes in North America would equal the energy in more than 15,000 gasoline tanker trucks.



Carbon emissions offset through code-level insulation in just one single-family home are equivalent to the carbon emissions captured by 6.7 acres of trees.

MORE INSULATION IS BETTER.

Fiber glass, rock wool, and slag wool insulation products in single-family homes save more energy in just three months after being installed than the energy that was used to manufacture the insulation.



INSULATION'S VALUE IN HOMES



If every home in North America had code-level insulation, this could avoid 2 trillion pounds of carbon dioxide emissions every year. Five million times the number of trees in Central Park in New York City would have to be planted to remove that much carbon dioxide from the atmosphere.

INSULATION HAS BENEFITS FOR THE ENVIRONMENT.

The energy saved in one year from insulation in outer walls, ceiling, and floors in all North American single-family homes would equal the energy in more than 11,000 gasoline tanker trucks.

Carbon emissions saved in one year from code-level duct insulation in only one home are equal to the amount of carbon captured by nearly two acres of trees.



Fiber glass, rock wool, and slag wool insulation products installed to code levels in single-family homes save more than 100 times the amount of energy used to manufacture those products over a 20-year period.

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

Did You Know?



In commercial buildings, insulation in outer walls, ceilings, and floors produces energy savings from 13% to 35%, depending on the size of the building, compared to the same building without insulation.

Pipes in commercial buildings of all sizes carry hot and cold liquids that are typically significantly different temperatures from surrounding spaces. Pipe insulation **reduces heat transfer** and keeps the liquids hot and cold in the pipes to minimize energy use.

INSULATION BENEFITS BUSINESSES OF ALL SIZES.

Due to number of occupants, lighting, and equipment in use during the day, cooling is a large component of a commercial building's energy use, compared to homes. Insulation helps maintain consistent temperatures, increasing comfort and reducing cooling costs.

Installing or upgrading insulation reduces energy use and lowers utility bills.



INSULATION'S VALUE IN COMMERCIAL BUILDINGS & INDUSTRIAL MANUFACTURING



Process temperature is the primary driver of energy savings in many industrial applications. As the process temperature differs from ambient temperature, heat transfer increases significantly. Increasing insulation causes a significant decrease in heat transfer.

Installing cost-effective levels of insulation **saves as much as 98%** of the energy that would have been lost from pipes or equipment if they were not insulated.

Highlighting the energy- and money-saving benefits of insulation will generate sales for new building construction and retrofit projects.

INSULATION IMPROVES COMFORT WHILE REDUCING COSTS.

Architects, specifiers, designers, and other professionals in the building and construction industry can meet the needs of environmentally minded clients by informing them on their decisions about using fiber glass, rock wool, and slag wool insulation products.



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

Fascinating Facts

In only one year, code-level insulation in outer walls, roofs, and floors in all North American hotels would save the equivalent energy contained in more than 1,750 tanker trucks of gasoline.



Pipe insulation in a single hotel reduces carbon emissions at the same amount as more than 125 acres of trees are able to capture.

INSULATION IS A SMART BUSINESS INVESTMENT.

Code-level insulation in just 3% of all North American hotels saves enough energy to heat and cool 1 million homes.



Installing code-level insulation in an average size hotel leads to energy savings—in the first year alone—at least eight times the amount of energy used to manufacture the insulation.

INSULATION'S VALUE IN COMMERCIAL BUILDINGS & INDUSTRIAL MANUFACTURING



By putting insulation in 100% of North American small commercial office buildings, enough energy could be saved each year to light all 32 NFL football stadiums for 50,000 games.



Code-level insulation in every small office building in North America would save enough energy each year to light Times Square at night for 10 years.

INSULATION HELPS MINIMIZE ENERGY TRANSFER AND LOSS.

The reduction in carbon emissions one year after installing code-level insulation in a single hotel is equivalent to the amount of carbon that 600 acres of trees can capture in one year.

North American hotels with code-level insulation reduce their annual natural gas use by the equivalent of the energy contained in about two super tankers bringing oil from the Middle East.



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

Fascinating Facts

The annual energy saved by installing insulation in just 3% of all hotels is equivalent to taking 1 million cars off the road each year.

The annual energy savings gained by putting insulation in all of the small commercial buildings in the North America would be the equivalent of powering 300,000 homes in North America for a year.

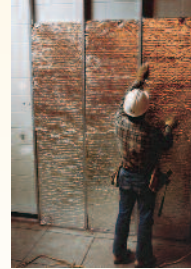


Code-level insulation in just 2% of all small office buildings in North America could save enough energy to cook every hot dog consumed in North America on the Fourth of July.

INSULATION IS GOOD FOR BUSINESS.

Annual energy savings from code-level insulation in all hotels and small offices in North America are equivalent to taking more than 200 million cars off the road each year.

INSULATION'S VALUE IN COMMERCIAL BUILDINGS & INDUSTRIAL MANUFACTURING



Putting code-level insulation in all the small office buildings in North America would reduce energy use by the equivalent of more than 100,000 barrels of oil every year.

FIBER GLASS, ROCK WOOL, AND SLAG WOOL ARE PRODUCED WITH SIGNIFICANT AMOUNTS OF RENEWABLE AND RECYCLED MATERIALS.

Pipe insulation in a single hotel reduces carbon emissions by the same amount as would be captured by more than 125 acres of trees.



The annual energy savings gained by putting insulation in just 200 hotels is about the same as the energy it would take to light Yankee Stadium at night for 100 years.

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Fascinating Facts



Cost-effective levels of insulation on chilled water piping saves more than 15 times the energy—in the first year alone—used to create the insulation.

SINCE 1992, NAIMA MEMBERS' PLANTS HAVE DIVERTED MORE THAN 41.5 BILLION POUNDS OF RECYCLED MATERIALS FROM THE WASTE STREAM.

Cost-effective levels of insulation on petroleum processing tanks saves more than 2,400 times the energy used to create the insulation over 20 years of operation.



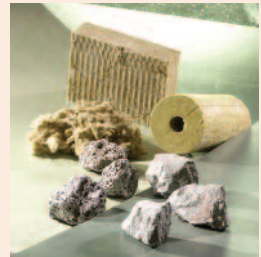
Building for Sustainability

Fiber glass, rock wool, and slag wool insulation provides excellent environmental benefits making them the leading choice for sustainable construction. Insulating with fiber glass, rock wool and slag wool not only saves energy, but conserves virgin resources, minimizes waste and reduces pollution. Their fibrous composition provides superior insulating performance, design flexibility and product versatility not found in any other type of insulation on the market today — making them the products of choice for a wide variety of residential, commercial and industrial applications.



Fiber glass is made from silica sand, one of the most abundant and renewable minerals on Earth, and an average of 50% (up to 70%) post-consumer recycled glass product.

Rock and slag wool insulation is made of natural rock and recycled blast furnace slag. In some cases, manufacturers of slag wool insulation recover blast furnace slag from landfills to reuse as insulation.



Savings and comparisons calculated by ICF International on behalf of NAIMA. See "Key Messages and Relevant Facts in Support of NAIMA's Communication Initiatives," June 2013.

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