Bressler Insulation has been keeping Western Wyoming warm since 1978

Insulation is a very important, and often times overlooked, part of a home. One which not only keeps the occupants comfortable, but can save money year after year and is an integral part of reducing liabilities such as mold, ice dams, and indoor air quality concerns. Every house, and each owner, has different needs when it comes to insulation and no one product provides a complete solution. Insulation needs to be tailored for each project and for each homeowner's expectations.

Bressler Insulation has been in business since 1978. We are known throughout the Rockies as one of the most reputable insulation companies in business. Our management team has over 55 years of collective experience in knowing what works and what does not work in our extreme climate. We offer advice based on our extensive experience with professional and prompt service. We specialize in custom homes with the homeowner in mind, but also work on commercial and spec home projects.

Our product lines include Closed Cell Spray Urethane Foam, Open Cell Spray Urethane Foam, Specialty "Green" Urethane Foams (Water Blown & Biobased Formulas), Standard and High-Density Fiberglass Batts, Blown-In Fiberglass Batt Systems, Attic Fiberglass Blow-ins, Vapor Barriers, Sound Insulations, Polycel Foam Sealants, as well as Ignition and Thermal Barriers. We carry the products to customize your project the way you want, and we have an experienced team that installs it the right way. We also install Green Guard Certified products in addition to our standard insulations. Our on-staff USGBC LEED (Leadership in Energy and Environmental Design) Accredited Professional is available to help you with green product specifications and programs, and can also help with the insulation requirements on LEED certified projects. We are a member of the Better Business Bureau, Indoor Air Quality Association, and US Green Building Council.

Our services include consultation…..

Your home should be safe. The house should be built to address exterior physical stresses that it may be subjected to, such as strong winds, torrential rains, snow loads, or earthquakes. Only approved building products should be used. These are addressed in building codes. Your home should be healthy. It should be built with concerns for indoor air quality, moisture control, mold control, and indoor air pollution. A home should be comfortable. It should have proper lighting, be warm and cozy, and humidity and sound levels should be controlled. A home should be energy efficient. Energy efficient appliances and insulation will lower the home's operating cost as well as producing less air pollution from reduced power production. Air leakage should not be confused with controlled ventilation. Uncontrolled air leakage will result in cold and drafty rooms, high energy bills, and possible condensation problems which can lead to mold and structural damage.

A home is the largest investment most people make. Meeting the minimum building code will address these items to a certain degree, but it is of little satisfaction to the homeowner if their new home is not comfortable or healthy. There is no monetary value on comfort or health. It has been traditional to view these items with a payback period for the cost of upgrading the home. It is interesting that since energy saving measures are the only measurable items in a building that offer a long term cash savings, that they are viewed in that traditional manner instead of as of a comfort and health issue. An airtight home when combined with an air exchanger should be viewed as part of the building expense just as purchasing appliances, windows, countertops, or other items are included. While unseen, your insulation, air infiltration, and controlled ventilation provide dividends for the life of your home.

ENVIRONMENTAL & RECYCLE -
All insulations help protect Mother Earth. The less energy consumption a building requires, the less pollution that will be produced to heat that building. Electric generation is responsible for 70% of the sulfur dioxide and 33% of the nitrogen oxide emissions released into the air.
In the U.S., the release of more than 1.5 trillion pounds of carbon dioxide are avoided annually due to the current use of insulation. The amount of trees required to reduce the savings from the in-place insulation would require the planting of 300 million acres of trees.
The terms "green" and "recycled" have been accepted as synonymous with beneficial. This is not always the case with insulation. Recycled products in insulation go beyond what is advertised on the products. Additives, product sources and transportation, and shipping and packaging materials should be carefully reviewed. The energy savings properties of different insulations are the biggest long-term environmental factor, as this is what will reduce the amount of greenhouse gases produced from power generation. A less efficient insulation will require more power generation, which takes more natural resources to produce while creating more pollution or power waste by-products.

Cellulose, while using a base product of newspaper, also contains about 20% by weight boric acid, which is used as a fire suppressant. While the newspaper is recycled, the paper could also be used for other applications that would also reduce the number of trees cut down. Cellulose is bulky and requires higher transportation costs, in addition to more packaging material.

Fiberglass uses a certain amount of recycled glass. Its base ingredient is sand, which is abundant. The freight and packaging costs per R-value are less than that of cellulose. A 2,500 square foot house would use about 1,000 pounds of fiberglass insulation, while the same house insulated with cellulose would use about 2,700 pounds of cellulose, of which about 550 pounds would be boric acid.

Spray urethane foams use some smaller amounts of recycled plastic, and many feature rapidly renewable ingredients. It is a fossil fuel-based product, such as plastic. The freight and packaging costs per R-value are less than cellulose or fiberglass. Due to its air sealing properties, the energy savings are much higher than cellulose or fiberglass, reducing long-term air pollution.

Most often, insulation is installed according to building code. The basic principle of the building code is for the "establishment of minimum standards to protect the health, safety and welfare of the public." This is good for the owner or future owner of a building, but environmental concerns need to exceed just meeting the minimum building code and should focus on energy efficient buildings.

AIR INFILTRATION -
Air infiltration is the rate of uncontrolled air flowing through building openings and fibrous insulations. Infiltration rates are quoted in units of air changes per hour (ACH). It is a value representing the number of times each hour that an enclosure's total volume of air is exchanged with fresh or filtered air. Reducing air infiltration not only lowers energy bills, but also increases the comfort and warmth of a home. Caulking, sealing, and providing a proper air barrier is the key to controlling air infiltration. Air infiltration accounts for well over one third of total energy usage. Air infiltration is caused by pressure differences from the inside of the home compared to exterior pressures. During the heating season, these temperature differences cause leaky buildings to act like a chimney and this stack effect alone causes significant air leakage to occur. Negative pressure in the house is produced by the use of bathroom and kitchen fans. Cold air is heavier than warm air and seeks to push itself into the building envelope. Wind can also affect the pressures within a house.
Convection looping is caused by air movement within the insulation. Within the wall cavity, warm air will rise within the insulation and cold air will settle. Once this process has begun, the problem is

multiplied by the reduced effective R-value of the fibrous insulation, creating even more convective looping. Tests have shown that in extreme temperatures such as when the outside air drops to -30 ºF, that air convection in fibrous insulation can reduce the effective R-value up to 34%. Recessed light fixtures are a major source of air infiltration and create a stack effect at each fixture. Air infiltration, either through voids or cracks, or through the insulation itself, creates drafts within the house which allows for the movement of moisture into the building cavity, and can encourage the entering of radon into the house from the ground. Air flow retarders should be impermeable to air flow, durable during the lifetime of the building, and continuous.

VAPOR BARRIERS AND AIR BARRIERS -

Moisture, or water vapor, is created in a house by cooking, showering, and cleaning. A typical family of four will produce about three to six gallons of water as vapor a day. This water vapor is pushed by vapor drive through the building assembly as it tries to escape. The purpose of a vapor barrier is to stop the transmission of this water vapor from entering or diffusing into the insulation or building structure. Once the water vapor has entered the insulation or permeable building components, it is capable of reaching a dew point temperature where the vapor will condensate into water. Should the water vapor penetrate into the building assembly, several things can happen. When enough water condensates in a cavity, there can be water drips or water stains. Insulation, mainly cellulose type materials, will absorb larger amounts of water, reducing their effective insulating value, which will change the dew point within the cavity and compound the problem. Paints can peel. Mold, while not that common in colder climates, can grow, with some types of mold potentially very harmful. Structural rot can also occur. Covering exterior walls and ceilings with a polyethylene plastic is generally all that is required to control moisture from vapor diffusion. The amount of water vapor that diffuses into a structure is a function of the area where the vapor barrier has been installed. If 80% of the area has a vapor barrier, then vapor diffusion into the area is 80% controlled. The vapor barrier must also be located at an area warmer than the dew point to prevent condensation from occurring on the vapor barrier. This only requires that there is adequate insulation behind the vapor barrier to insure that the dew point is not at the vapor barrier temperature. If using rigid insulations, a vapor barrier often is not used due to the low perm rating and air leakage control it provides.

Air infiltration in the building envelope is generally the major source of moisture problems. Since water vapor is in the air, any air leakage through voids in the building envelope carries the water vapor with it. This compounds the amount of moisture that will come in contact with colder air as the warmer, and moisture laden air moves out of the building, creating a condensation problem at the air leakage location. An air infiltration barrier needs to be much more effective than a vapor barrier, as any air leakage will transport a much higher ratio of water vapor into the cavity than from vapor diffusion. While a typical sheet of drywall may allow about ½ quart of water to diffuse through it during a heating season, a one inch hole in the same sheet of drywall would allow about 25 quarts of water to pass through due to the air leakage. Air infiltration is often the most overlooked aspect of the building envelope. Fiberglass and cellulose insulations are not air barriers. Rigid foam insulations are combined air barriers and vapor barriers. A properly caulked, gasketed and sealed drywall system is an affective air barrier.

Crawlspace vapor is different. Warm temperatures in the house want to draw the moisture out of the ground and up into the house. Plastic should be installed to the ground to keep the moisture from being drawn into the house. The plastic should not be installed to the floor joists as this can trap moisture in the joists. Quite often the moisture seen as condensation on windows is a result of crawlspace water vapor being drawn into the house. Foundation waterproofing and drainage should also be examined to prevent water transfer through the foundation.

INDOOR AIR QUALITY -

Indoor air pollution exists in all homes to varying degrees. Sources of indoor air pollutants are gasses from wood burning stoves, smoking, cleaning products, vacuuming, construction materials, and other volatile organic compounds. Pollutants from the outside also can contribute to poor air quality. Radon from the soil can migrate into the home. Gases from gas and diesel engines and outdoor smoke can also migrate to the inside. People generally do not relate the quality of their indoor air as much as they relate it to outdoors air. Indoor air is five to ten times more polluted than outdoor air. Most people spend more than 90% of their lives living indoors. About 15% of the population is hypersensitive to various indoor air pollutants. The EPA cites poor indoor air quality as the fourth largest environmental threat with indoor air quality twice to 100 times worse than outdoor air. Indoor air pollution, which includes everything from molds and the release of construction material residues, can cause asthma, allergies, chemical sensitivity and illness. There is no single test for indoor air pollution. The problem generally arises as a result when someone has an allergy problem, a reaction, or becomes ill. As buildings become more energy efficient, indoor air quality becomes more important. The old saying was that a house has to "breathe," meaning that it leaked air that caused it to be cold and uncomfortable, in addition to having high energy consumption. The new saying is "insulate and ventilate". The goal is to keep a house draft free, warm, and energy efficient while providing a controlled source of fresh air into the building. Energy efficient homes are more resistant to pollutants entering the home, and when they do enter, they can be more easily remove by controlled ventilation verus a leaky house where there are no effective air controls.

Ventilation can be as simple as installing timers on bathroom fans and providing a source of fresh air intake, or as worthwhile as installing an air exchange system. When considering the amount of time that a person spends in a house and the health problems of poor indoor air quality, providing air exchange is well worth the money. Two items affect a home - how it was built, and how it is used. There are two types of homeowners who are interested in healthy homes - there are those who have been made ill by their house, and those who are healthy and wish to remain so. The average homebuilder is buying on aesthetics and first time costs. Quite often they are not aware or informed of indoor air quality issues.

Indoor Environment -

Most people when buying a car turn on the heater or air conditioner to test how the air will be while they are in the environment of that vehicle. Yet many people when building a home simply assume that the air in their new house will be good. According to the American Lung Association, most Americans spend an average of 90% of their time indoors.

As with a car, Air leakage should not be confused with controlled ventilation. Uncontrolled air leakage will result in cold and drafty rooms, high energy bills and possible condensation problems which can lead to mold and structural damage.

HEATING DUCTS AND HYDRONIC HEAT -

Forced air heating systems uses heat ducts to distribute the warm air throughout the house. The furnace, depending on its type and temperate of the intake air, generally produces air as hot as 140 degrees that is blown through the heat ducts. This air is under pressure as it moves through the system. If the heating ducts are not properly sealed, they can cause, in severe cases, up to seven complete house volume air exchanges per hour in air leakage alone. There are different points of view as to the air leakage and heat loss effects in the ducts. One point of view is that any heat loss will remain in the house, generally in the crawlspace, and therefore is not lost heat. The other point of view, which sometimes comes up as a problem, is that there is not enough warm heat coming through the duct registers to heat the living space of the house and that the furnace needs to run all the time to make up for the problem. While the initial temperature within the heat ducts is generally about twice of that of the room of they are heating, the typical duct insulation is generally about one fourth of the room wall insulation and about one eight of the rooms ceiling insulation.

Furnace and heat duct systems should not be installed in the ceiling trusses in a cold climate that has deep snow. The heat loss from the system will, in about 90% of the time, cause ice dam problems from heat loss generated by the system. Should the heating system and ducts systems be required to be located in the ceiling, considerable thought should be given as to how to contain the approximately 140-degree warm air from the furnace and ducts from getting into the attic space, and how to provide adequate ventilation for the excess warm air that is produced and lost into the attic space.
Radiant floor heat also requires a means of controlling heat flow. Radiant heat is designed to heat the room above it and not below it. The better the insulating values below the floor radiant system, the more heat that will be directed into the room above. A non-insulated or under-insulated radiant floor system rarely works as designed.

ICE DAMS AND VENTILATION -
Some issues are easy to prevent when building, but expensive to correct later. Ice dams are responsible for exorbitant maintenance costs caused from shoveling, roof and siding damage, roof leakage and use of heating cables. Two conditions cause ice dams. One is from the natural melting and freezing of snow on the roof. Generally, ice dams from this cause are not severe. The second cause is from heat loss escaping into the roof and melting snow. The water then runs down to the eve where it freezes. This can generally be prevented during construction by providing sufficient insulation and proper ventilation. Building code requires a certain minimum amount of insulation to be installed in the ceiling. The amount of insulation required is determined by the Model Energy Code that recognizes the least acceptable amount of thermal insulation required for a building. It does not address heat loss control for ice damming problems. Building code also stipulates ventilation requirements. These requirements are based on moisture control issues and not on the concerns of ice damming. When using a fibrous insulation in a ceiling, air leakage through the insulation should also be taken into account. There is no magic number for what is required to prevent ice dams. The more complex the roof design and the longer the venting runs determine what design and preventive measures should be taken. There are roofs which are not vented, are insulated with a much higher R value than minimum building code and have no ice dam problems. There are roofs which are vented, but have restricted air flow, contain higher than building code insulation levels, and have ice dam problems.
When roofs have ice dams, it is generally narrowed down to:

* The ventilation space between the insulation and roof sheathing is inadequate.
* Ventilation air is restricted by small holes drilled in blocking or beams for air flow instead of allowing unrestricted air flow through those areas.
* Insulation levels are too low.
* Ridge or soffit vents screens plugged by snow or debris.
* Air leakage within the insulation.
* Mechanical equipment or recessed lighting providing heat loss into the ceiling.

SOUND CONTROL -
Sound is controlled either by absorbing the sound or by reflecting the sound back. In residences, sound is generally controlled by absorption. The level of sound control is measured by STC (Sound Transmission Class) ratings. These numbers rate tested wall and floor assemblies on their ability to resist sound transfer that passes through that assembly. In general, a higher STC rating blocks more noise from transmitting through a partition. Simple sound control is usually gained by installing insulation batts between the framing studs. This helps eliminate noise transmission from between the studs. Sound is a vibration and is also transmitted through studs which is known as bridging. Breaking that vibration path is as important as controlling sound transmission through the insulation bays. One side of the barrier should not have a solid mechanical connection to the surface of the other side. Better

sound control is then gained by the use of RC channel, double studs, or multiple layers of drywall. Noise problems are a common complaint of homeowners. Controlling sound requires more than just adding the above listed items. Sound is like water, it will go through wherever there is an opening. A one-inch hole in a sound wall would greatly reduce the sound rating of that wall. Openings, voids and seams should be caulked when drywalling. Electrical outlets in common walls should be offset. These are practices which can easily be done during construction, but are expensive to correct later on.

MOLD –

Mold health issues and legal litigation is a real concern nation wide. In all most every construction trade magazine there are articles on mold. Some insurance companies are now excluding mold from their policies. Molds grow when there are moisture and a food source for them. Moisture can enter a building from leaking roofs, improper flashing, or from water vapor transmission through walls, ceilings, or floors. In a building, the food source for mold is generally a cellulose-based material such as wood, drywall paper or some insulations. As mold growth is usually hidden behind walls or ceilings, it may take years to cause enough damage to be noticed, or it may only take a short time period to cause health problems.

Each house constructed is unique in its design, location, and use. For each person asked on if or how to prevent mold growth there will be a different opinion given. There may not be an exact way to treat each building the same, but any attention in design or construction methods for preventing mold growth would be cheap insurance in contrast with receiving a phone call from a client saying their house has mold.