

HOME ENERGY GUIDE

BASEMENT INSULATION

Head for the basement

Most Minnesota homes have basements with either concrete block or poured-concrete walls. While these make sturdy foundations, they're poor insulators and have a very low R-value. Therefore, an uninsulated basement can account for a significant amount of a home's energy loss.

Check the top of the basement foundation

The wooden rim (or band) joist area—where the house's wooden structure rests on the concrete foundation—is the best place to begin. It's the simplest and least expensive basement area to insulate, and it will bring you the highest return on your investment. And, because it is usually above ground, there is little risk of moisture migration from the exterior.

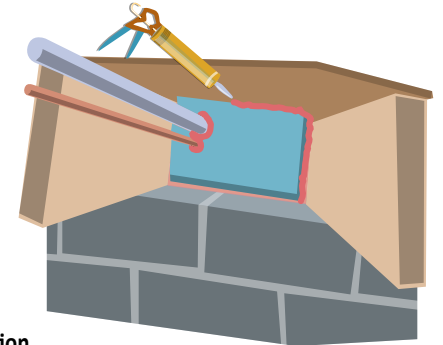
Insulate with cut-to-fit pieces of rigid, extruded polystyrene or polyisocyanurate foam, caulked or foamed into place, to avoid air leaks. *Fiberglass is not recommended* because it does not provide an air-tight seal. Moisture from the basement can migrate through the fiberglass where it condenses on the cooler rim joist, leading to potential problems with mold or wood rot.

Insulating the foundation walls

Concrete (whether block or poured) is extremely porous, and unless sealed from the outside it is a likely source of moisture into a basement. Because migrating and condensing moisture can be trapped behind wall insulation—leading to mold and mildew growth—insulating basement walls is challenging. Even historically dry basements can be subjected to water migration or seepage during severe storms or flooding. (Don't be misled by claims that products that are painted or applied to interior basement surfaces will prevent moisture from seeping through walls or floors—they can't.)

Attaching wooden studs to the foundation wall and installing fiberglass insulation (a method

used in previous years) is ***no longer recommended***. The wood and insulation can become a good medium for growing mold and mildew when moisture finds its way between the foundation wall and the insulated wall.



Rim joist insulation

Install rigid foam pieces, carefully sealing edges and around pipes, wires, and vents to prevent moisture from damaging wood framing. Alternatively, the application of a spray foam (usually done by a contractor) can provide good insulation and air-sealing.

Basement Insulation Options

The best way: exterior

Although usually more costly (in an existing building), the insulation of foundation walls from the outside is the best way to provide thermal efficiency and protection from moisture problems, mold, and mildew. Proper sealing and drainage are important in any exterior foundation insulation project.

From the inside—usually not a good idea

Because of the risk of mold and other moisture problems, the insulation of interior basement walls is very challenging to do properly. Unless basements have a very low risk of moisture potential, it is better to leave the walls uninsulated on the interior to allow drying and reduce mold and mildew issues.

Another exterior option

An alternative to insulating and sealing all the way to the footing on the exterior foundation wall is to do it part way (sometimes called the apron method). Dig a trench about two feet wide and about 18 inches deep and insulate the wall with a vertical piece of rigid foam. Then place a horizontal piece of rigid foam slanted away from the wall at the foot of the vertical piece. This approach will provide some insulation for the basement wall and (if done properly) can aid in reducing the intrusion of water through the basement wall. Attention to detail regarding flashing, surface preparation, and joint sealing will reduce the likelihood of basement water problems.

