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Insulating side walls

Unless they are insulated, the exterior walls of your home provide an ideal escape route for precious heat in the winter and absorb the sun's energy during the summer. Heat naturally diffuses to areas with lower temperatures, so without insulation during the winter, heat travels through your walls toward the cold outside. Insulation slows this migration of heat, which saves you money on your utility bill. For Missouri's cold winters and hot summers, you should insulate existing exterior walls to an R-value of at least 19. R-value is the measure of an insulation material's ability to resist heat flow. It is measured per inch of the material's thickness, and a higher R-value denotes a better insulating ability. These are four common insulation types used for walls:

- **Fiberglass batt or blanket insulation** — about 3.2 per inch
- **Loose-fill cellulose** — about 3.7 per inch
- **Rigid polystyrene board** — 4.5 to 5.5 per inch
- **Icynene spray foam** — about 3.7 per inch

Which type works best depends on what kind of walls your home has at the current time.

Wall insulation strategies

There are three ways to insulate the exterior walls of an existing home:

- Fill existing above-ground wall cavities with insulation.
- Apply insulation to the exterior of the walls before re-siding.
- Add insulation to the interior surface of the walls and refinish with drywall. This option is generally used for unfinished basement walls.

When it comes to insulating walls, above-ground walls should be your first priority. The most economical, least disruptive method for doing so is to blow insulation into the wall cavities. However, it can only work if your home's walls have cavities; some brick or cement walls do not.

To find out what kind of walls your home has and if insulation can be added, first shut off the power to a light switch or electrical outlet, then remove the cover plate to peek inside your wall. If the outlet provides no clues, check in the attic, if it is accessible. The tops of exterior walls are sometimes left exposed in this space. Wooden stud walls are



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Existing above-ground sidewalls are most commonly insulated by removing siding or drilling holes into the sidewall and blowing loose-fill insulation into cavities.

usually covered with a wood 2-by-4, whereas brick or stone walls are often left exposed.

Wooden stud walls are the most common. If the cavities between studs already have insulation, it might be too difficult or not be cost effective to add more. If they are empty, however, your house is a good candidate for wall insulation.

If you are on a limited income, you might qualify for a free wall insulation job and other weatherization assistance. Contact your local utility and your local Community Action Agency for details. This service is particularly valuable for wall insulation projects because they should be done by experienced contractors.

What to expect

Before insulating your above-ground, wood-stud walls, the contractor or weatherization crew will first inspect them to make sure the interior walls will support the pressure of adding insulation and have no moisture damage. Once your walls are approved for insulation, weatherization crews can start preparations for adding insulation to the wall cavities using special blowing equipment. The work typically takes place outside, so it doesn't disrupt your living space and interior walls. To get insulation into the walls, crews might remove part of the exterior siding and then drill 2-inch holes through the wall sheathing. Depending on the insulation used, one or two holes per cavity will be drilled. The blowing nozzle, which is fitted to a long hose and insulation-blowing machine, is then inserted into the holes and fills the cavities with cellulose, fiberglass or mineral wool loose-fill insulation. Crews make sure the insulation is blown to just the right density inside the walls and that the entire wall cavity is filled so the insulation will not settle.

Once the insulation is installed, crews plug the holes and remount the siding. Your walls look just like they did before. If the siding is too difficult to remove, holes will be drilled directly into the siding and later plugged. This operation is best for siding that needs a new paint job anyway.

Wall variations

Other types of walls require different insulating techniques. There are several variations you might encounter.

Brick or stone walls

Some of these wall types also have an open wood-frame cavity within the wall. If yours does, it may be possible for a contractor to add loose-fill insulation into the cavities from the attic or other opening. Cellulose or fiberglass insulation works well in these cases. Again, it's important to make sure the cavities are fully filled.

Solid walls

Brick or stone walls, as well as walls made of poured concrete or concrete block, contain no cavities. In these cases, a layer of insulation must be added to either the interior or exterior of the walls. On the inside, options include putting up wooden studs and filling the cavities with fiberglass batts or spray foam or installing rigid-board insulation such as extruded or expanded polystyrene. Rigid-board insulation can also be adhered to existing wall surfaces.

Regardless of the route you choose, make sure the insulation is placed on the outside (the cold side, during winter) of pipes to keep them from freezing. A vapor barrier, such as polyethylene plastic, is generally *not* recommended on a wall located below ground level. Rigid-board insulation must be covered with a fire-resistant material such as half-inch drywall board. If you want to put the insulation on the outdoor side of a concrete wall, rigid-board insulation works well because it can be installed directly over the concrete or existing siding, then covered with new siding or stucco-like finish. Rigid-board insulation should not be added to poorly insulated wood-cavity walls because it will not readily allow water vapor to pass through it, thereby creating a major moisture problem in the wall. Adding insulation to solid walls is a difficult job no matter where the insulation is placed. It often involves readjusting door and window frames and extending electrical outlets and switches to accommodate the added insulation. It also requires careful attention to air-sealing and moisture control. These projects require the skills of a professional as well, and they may not be cost-effective unless you need new exterior siding or you are considering an interior remodeling project that involves some wall modifications.

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