



# Wall insulation

Insulation keeps your home cool in the summer and warm in the winter. Properly insulated exterior walls mean a more comfortable and energy efficient home. Add wall insulation if you have an older home without any exterior wall insulation, or if you plan to finish an unfinished space like a basement or bonus room. You can also add additional wall insulation if you're replacing exterior siding. TVA EnergyRight® your and local power company make it easy to hire with confidence for insulation upgrades when you choose a TVA-approved contractor—trained, licensed and insured to upgrade your insulation the right way—through our Quality Contractor Network (QCN).

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## Why is exterior wall insulation important?

Heat naturally flows from warmer to cooler spaces. In the winter, heat moves through exterior walls to the outdoors. In the summer, heat moves from the outdoors through the exterior walls and into your home. By installing insulation in your exterior walls, your HVAC system won't have to work as hard and your home will be more comfortable. If your home has no existing wall insulation, installing wall insulation will help maximize your potential energy savings.

## How much exterior wall insulation should I add?

Insulation levels are specified by R-values that measure insulation's ability to resist heat flow. The higher the R-value, the better the thermal performance of the insulation. The amount of wall insulation you should add depends on the size of your walls (e.g., 2 inches by 4 inches) and the type of insulation that you and your contractor decide to install. Generally, exterior walls should be insulated to at least R-13.

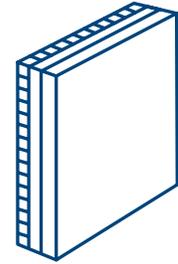
## Why is air sealing important in exterior walls?

Insulation works best when air is not moving through or around it. Exterior walls typically have penetrations for electrical wiring and outlets, as well as gaps in the top, bottom and sides of the walls that can leak warm air into or out of your home. Besides increasing your heating and cooling costs, these air leaks can introduce water vapor into your walls, potentially resulting in condensation and damage. Typical blown-in and batt insulation don't stop air leakage. Air leaks need to be sealed with caulk or foam before installing insulation. But if penetrations and gaps are not accessible for air sealing, like with existing walls, installation of dense pack insulation (cellulose or fiberglass) or blown-in foam insulation will provide an adequate level of air sealing.

# TVA installation requirements for wall insulation\*

## General installation standards

- Live knob and tube wiring to be replaced with new wiring by a licensed electrician.
- QCN member to advise customer to install a working carbon monoxide (CO) monitor if the home has any gas appliances or an attached garage.



## Installation standards for exterior walls

- Moisture conditions to be corrected prior to installing wall insulation.
- Walls with masonry exteriors to contain a barrier that prevents blown insulation from contacting the masonry.
- Wall cavities to be free of hazards prior to installation.
- Insulation dams to be installed around openings to crawlspace or basement, heat sources and electrical hazards.
- Sealants to be installed in a manner that continues the function of the drainage plane and does not hold water in the wall assembly.
- Insulation to be installed without gaps, voids, compressions, misalignments or wind intrusions.

## Installation standards for basement walls

- If home has experienced groundwater leakage through the wall, then a continuous drainage plane that is pumped or drains to outside to be installed at interior surface of walls.
- On rough finish walls, drainage plane to be replaced with a waterproof membrane.
- A nonabsorbent insulation, such as closed-cell spray foam or expanded polystyrene, to be used.
- Insulation to be attached with a durable connection with a minimum expected life of 20 years.
- Batt insulation not to be used unless it is in addition to a nonabsorbent insulation material separating the batt insulation from the concrete foundation.
- Material to be fire rated if exposed, or covered with a fire barrier, such as ½ inch wallboard.
- A continuous air barrier to be installed on the warm side of the insulation. Wall assembly shall remain vapor permeable to the interior.

## RECOMMENDED BEST PRACTICES

- Area to be insulated should be air sealed before installing insulation.
- All structural, mechanical and other penetrations should be air sealed.
- Whenever exterior siding is removed, add R-5 thermal insulating sheathing beneath the new siding.
- Air seal and insulate band joist if accessible from basement or crawlspace.
- If your home is old, have an electrician check to make sure insulation on wiring is not degraded and wiring is not overloaded.
- Inspect installations with an infrared camera to identify any voids that need to be filled.
- If sub-slab drainage is installed in connection with basement wall insulation, termite treatment should be performed before reinstalling the slab.
- An ENERGY STAR® dehumidifier should be installed to maintain basement relative humidity of less than 45%; condensate should be drained or pumped to daylight.

Go to [EnergyRight.com](https://www.energyright.com) to register your home and connect to the Quality Contractor Network.

*\*This sheet is not a substitute for the TVA Standards.*