

Improving Existing Homes: Insulating & Air Sealing Tubs

**BUILDING AMERICA
ENERGY PERFORMANCE BRIEF**



This tub was installed without a proper air barrier, such as cement backer board or rigid foam, to cover the batt insulation. The batt's paper facing doesn't form a continuous air barrier so air can flow through the wall cavity.

This robs the insulation of its heat-retaining properties and makes the tub feel cold.

When to Do This

When removing your tub or shower during a bathroom remodel.

Durability & Health

Air sealing and insulating the exterior wall behind a bathroom tub will minimize cold drafts. It will also prevent warm, moist bathroom air from escaping into the walls and attic, where it can lead to mold.

When removing your old tub or shower during a bathroom remodel, you may discover that your tub was inserted directly into an open building cavity with no drywall behind it to block air movement and no insulation to prevent heat loss. This causes drafts and cold tubs, and allows moisture from the bathroom to escape into the walls and attic, inviting mold growth.

Prior to installing your new tub or shower, have your building contractor fill the exterior wall with insulation and install an air barrier of cement backer board, rigid foam insulation, or non-paper-faced drywall. Any type of insulation may be installed as long as it completely fills the void and will be in full contact with the air barrier.

While the old tub or shower is removed, inspect the building cavity for water damage or mold. If you find moldy wood or drywall, call a mold remediation specialist. Be sure to locate the cause of the problem and repair it before installing insulation.

To guard against future moisture issues, the exterior wall behind a tub or shower should be designed to dry. Except in severely cold climates, (IECC Climate Zones 6 or higher), Building America scientists do not recommend the installation of vapor retarders in the exterior bathroom wall, nor should moisture-resistant gypsum board (green board) be used in any climate as backing for tile. Use cement backer-board instead.

2009 IECC/2009 IRC

Code Requirement for New Construction and Additions

2009 IECC 402.4.2: Shower/Tub on exterior wall: Showers and tubs on exterior walls have insulation and an air barrier separating them from the exterior wall.

2009 IECC 402.4.1: The *building thermal envelope* shall be durably sealed to limit infiltration... The following shall be caulked, gasketed, weatherstripped, or otherwise sealed with an air barrier material, suitable film or solid material: 1. All joints, seams and penetrations...8. Behind tubs and showers on exterior walls...12. Other sources of infiltration.

References

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How to Insulate and Air Seal Behind a Tub or Shower:

- 1 Fill the entire wall cavity with insulation to the R-value required by local code or higher.
- 2 Install 2x4 blocking between the wall studs if needed to support the air barrier.
- 3 To form an air barrier: Apply a thick bead of caulk to the surface of exposed studs and wood blocking and caulk bottom plate to subfloor. Nail or screw cement board, paperless gypsum board, Thermo-Ply, or other thin barrier material to the studs.
- 4 Seal seams and any holes made through the air barrier material with caulk or foam.
- 5 Install the new tub.
- 6 Block holes around the tub drain with sheet goods and spray foam.
- 7 Finish the walls by installing fiberglass wall panels or tiling the surface.

