

Improving Existing Homes: Air Sealing and Insulating Fireplace Enclosures

**BUILDING AMERICA
ENERGY PERFORMANCE BRIEF**

When to Do This

When replacing or adding a fireplace.

Durability & Health

An open wall behind an unsealed fireplace encourages drafts and pressure imbalances and could provide access for pests. If you are installing a new fireplace insert, Building America recommends a sealed insert with its own combustion air intake. Install carbon monoxide detectors in all homes that use gas or wood fireplaces.

2009 IECC/2009 IRC

Code Requirement for New Construction and Additions

Insulate walls in accordance with the requirements of the 2009 IECC Table 402.1.1. Air seal in accordance with the requirements of the 2009 IECC Section 402.4.

Air that you've paid to heat or cool escapes from your home through gaps and holes, increasing your energy bills. Fireplace enclosures are common sources of air leakage that, unfortunately, are hidden from view and difficult to access for air sealing. The logical time to access and seal this area is when you remove the fireplace and replace it with a more efficient heating system.

When your fireplace is removed, you may see an open building cavity with no insulation, sheathing, or evidence of air sealing. The following instructions provide simple guidance for correcting this problem. Doing it properly will save energy, increase your comfort, and reduce the load on your heating and air conditioning systems.



Fireplaces are often installed against open framing without a proper air barrier or insulation. The arrow points to the framed exterior wall where insulation and an air barrier should be installed (Source: EnergyLogic).

References

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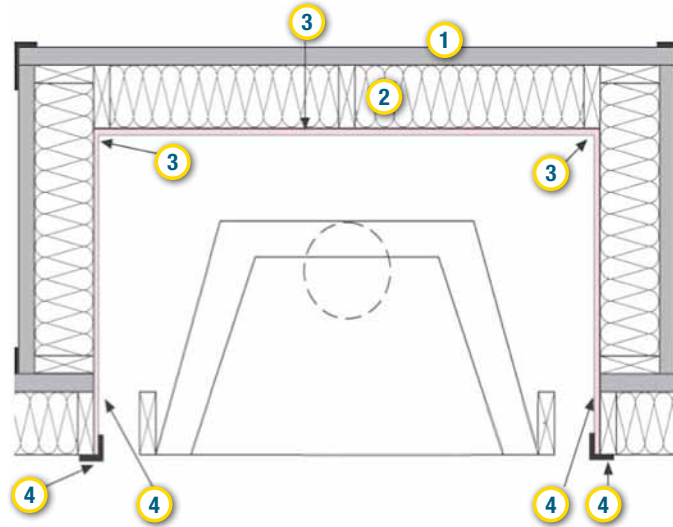
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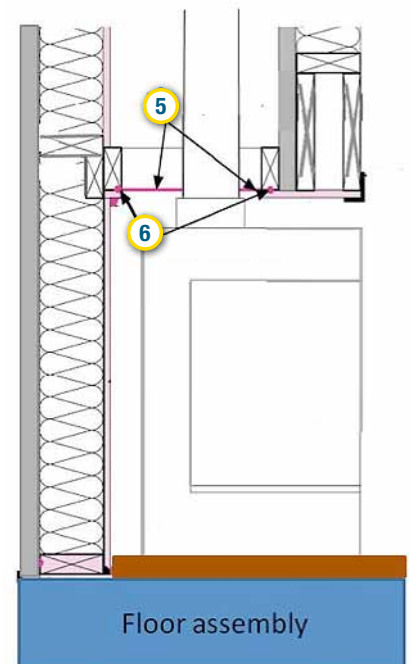
How to Insulate and Air Seal the Wall Behind your Fireplace

The diagrams shown here represent a common design for fireplace enclosures within the framed space of an exterior wall. If the design of your fireplace enclosure differs, you should be able to adapt these basic instructions to your setting.



Overhead view of fireplace enclosure (Source: Adapted from Building Science Corporation 2011)

- 1 Remove the old fireplace box.
- 2 Apply insulation (batt or spray foam) within the framing of the wall up to the ceiling/roof line.
- 3 Install a thin structural sheathing material (e.g., drywall, plywood, rigid insulation, lightweight steel or aluminum sheathing) over the new insulation. Use heat-resistant tape to seal all the seams and joints.
- 4 Tape the sheathing to the enclosure opening on both the sides and the top of the fireplace enclosure.
- 5 When the new fireplace insert and chimney are installed, seal the enclosure by placing a sheet metal firestop around the chimney pipe where it enters the chimney shaft.
- 6 Seal the joints and seams of the firestop with an approved high-temperature sealant.



Side view of fireplace enclosure (Source: Adapted from Building Science Corporation 2011)

For More Information

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