

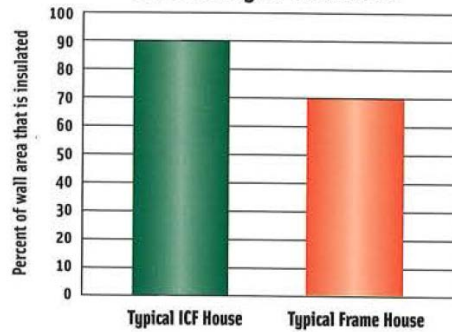
# Concrete Homes Technology Brief No. 6: *Comfort and Quiet with Concrete Homes*

## Where does the greater comfort come from?

Homes built with insulated concrete walls effectively buffer a house's interior from the outdoors. The combination of a massive material (concrete) with a light one (foam) sharply cuts fluctuations in temperature, air filtration, and noise. Insulated concrete walls keep the inside of a house more comfortable and quiet than ordinary frame walls. Concrete walls include masonry, insulating concrete forms (ICFs), poured concrete/removable forms, precast, and autoclaved aerated concrete (AAC).

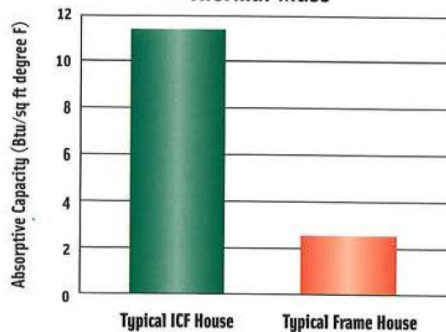
ICF walls increase comfort in three ways:

### Consistency of Insulation



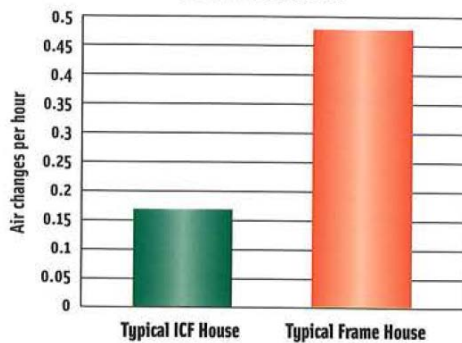
A continuous layer of foam insulation along a concrete wall helps keep the temperature the same everywhere along the wall. It virtually eliminates the "cold spots" that can occur in frame walls along the studs, in corners, or at gaps in the insulation.

### Thermal Mass



The heavy concrete gives it the temperature-moderating property of "thermal mass." This evens out swings in temperature over time. Because of thermal mass, the house does not tend to overheat or get suddenly chilly as the outdoor temperatures change or the furnace or air conditioner cycles on and off.

### Air Infiltration



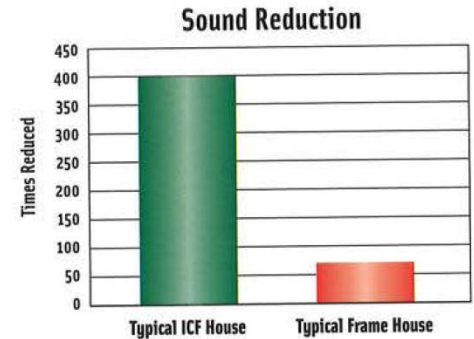
The continuous layer of concrete within the walls makes them exceptionally airtight. Air flow through solid concrete is negligible, so drafts are cut sharply. In tests, houses built with concrete walls had up to one-third to one-half as much air infiltration as the typical wood frame house.

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## What about noise?

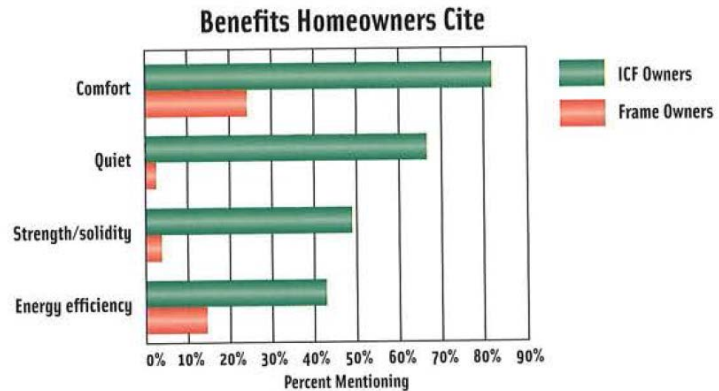
Massive materials like concrete tend to reflect noise:

Compared to a typical wood frame wall, only about one-quarter to one-eighth as much sound penetrates a concrete wall. Acoustics experts would describe loud speech on the opposite side of a frame wall as “audible, but not intelligible.” On the opposite side of a concrete wall, a listener would “strain to hear” loud speech. Through some concrete walls loud speech would be “inaudible.”



## But will I really notice the difference?

Homeowners with insulated concrete walls appreciate these benefits more than they ever imagined.



In a 1997 survey, interviewers asked owners of 74 new ICF houses and 73 new frame houses what they liked about them. Over 80% of ICF owners mentioned the great comfort, compared with 22% of frame owners. Typical comments were:

*“It’s the most comfortable house I’ve ever lived in.”*

*“I didn’t know what I was missing until we were in it for a while.”*

Over 60% of ICF homeowners mentioned the quietness of their houses, versus only 2% of the frame homeowners. The ICF owners told two common stories over and over again:

*“I looked out the window and saw the traffic on the road, but I couldn’t hear it.”*

*“While talking with my neighbor one morning, he asked if the thunderstorm the night before woke me up, too. But until that moment I never even realized we’d had one.”*

## What’s the bottom line?

When planning a new home, consider the greater well-being that can come from living with more even temperatures, sharply reduced drafts, and noticeably greater quiet—all benefits of insulated concrete walls. Effectively sheltering the interior environment from the harshness of the outdoors, insulated concrete walls provide a quiet, comfortable home year round.