

### What Makes a Home Comfortable?

Everyone has their own idea of what makes a home comfortable. For some, it's a place furnished to their liking with plush chairs and wall-to-wall carpeting while for others, a comfortable home might be a quiet home—one that shuts out traffic and city sounds and keeps indoor noise at a gentle hum. Although preferences vary for how a home should look and feel to be comfortable, we all agree on thermal comfort—nobody wants a home that's excessively hot or cold. Thermal comfort is achieved when the indoor conditions of a home are just the right temperature for all occupants.

To create a comfortable environment for homeowners, builders need to focus their attention on the Heating, Ventilating and Air Conditioning (HVAC) system, insulation, and air-sealing. The HVAC systems condition and circulate the air, while insulation that air-seals, reduces heat transfer and minimizes air movement through the building envelope.

#### HVAC

One crucial aspect of creating a comfortable home is to properly size the HVAC system, particularly the cooling equipment. A properly-sized air conditioner will run for longer intervals, helping to mix the air and maintain a more uniform temperature; it will also remove moisture from the air, making occupants feel cooler. Alternatively, an oversized air conditioner will run for short, vigorous cycles, creating spikes in temperature. Also, it won't run long enough to remove moisture from the humid air, making the homeowners feel uncomfortable. An oversized system wastes energy instead of providing more cooling.

Duct design also contributes to thermal comfort. If a home has well-designed ductwork and registers, the right amount of conditioned air will circulate in the home without creating drafts or temperature swings. Also, sealing ducts with mastic helps keep the air inside the ducts at a consistent temperature.

Leaky ductwork and equipment in crawlspaces or unconditioned attics can draw in unhealthy air. Keeping the ducts in conditioned space eliminates this problem and can reduce heating and cooling costs by 20 to 35 percent. Insulating and sealing the attic roofline with Icynene® soft foam insulation and air barrier system is a straightforward way of placing the system in conditioned space. For more information [click here](#).

#### Insulation and air-sealing

Heat always moves from warmer to cooler areas. In winters, heat will escape outside; in summers when the air conditioning is running, heat will move indoors. Insulation helps to slow heat transfer between the home and the outdoors in order to maintain a comfortable indoor temperature. But slowing the transfer of heat through the building shell is only half the battle. Air-sealing is also a critical component to achieving optimal thermal comfort.

Icynene® insulates and air-seals in one step helping to minimize air leakage through cracks, gaps, and porous materials in the home. If a home doesn't have adequate insulation and air-sealing, the HVAC system is forced to work harder to replace the heat that leaks through the building envelope. Selecting insulation that air-seals also reduces the amount of air each room needs, allowing HVAC contractors to run fewer, smaller ducts to each room.

When you build a home with efficient HVAC sizing and properly installed insulation that creates a tight air-seal, you create a thermally comfortable home. To reap the full benefits of thermal comfort, as well as energy efficiency, it's important to verify that HVAC equipment and insulation are installed properly and that air-sealing is adequate. Insulation should fill all gaps or cavities completely. An airtight home minimizes temperature fluctuations and keeps homeowners from having to constantly adjust their thermostats to find their comfort zone.

*Source: [www.hgtvpro.com](http://www.hgtvpro.com).*