

# Humidity

It's All Relative (Get it?)

*Proper humidity levels keep you healthier and more comfortable.*

Your heating, ventilation, and air conditioning (HVAC) system can do more than heat and cool your home. It can also keep the humidity at a comfortable level in winter and summer. It's a delicate balance: if it's too low, you'll feel the effects of colds, respiratory infections, and asthma more, and some of the furnishings in your home will literally dry out. If it's too high, you'll be uncomfortable but mold and mildew will flourish. They love moisture!

Residential HVAC systems balance temperature and humidity. The best person to design a system appropriate for your climate and your comfort needs is a professional ACCA member contractor. He or she understands the science of your home and applies the principles contained in the ACCA design and technical manuals to the design, selection, and installation of an HVAC system that's right for you.

ACCA manuals are the industry standard, often incorporated into local building codes and endorsed or recommended by the Department of Energy, the Environmental Protection Agency, and equipment manufacturers.

Relatively Speaking...

Relative humidity (RH) is the percent of moisture actually in the air compared to the maximum amount of moisture the air can hold at that temperature. Cold air can hold less moisture than warm air. At 70°F, air can hold as much as 12 times the amount of moisture as 10°F air. That's why it's usually more humid in the hot summer months.

Winter Humidification

Most heating systems just heat the air, changing the temperature, not the humidity. Cold air is dry, and forced-air systems and heat pumps pull outside air for heating. When 10°F outside air is heated to 70°F, the humidity level in your home will be the same as the outside air's, around 7%. That's one reason your skin feels dryer, perhaps even chapped, in the winter. So in dry cold climates, you will probably want to add a humidifier to your heating system.

The effects of bacteria, viruses, fungi, respiratory infections, allergic rhinitis and asthma, and ozone production during the winter can be minimized by higher humidity levels. Studies have shown that wintertime levels of 68°F/60% RH are just as comfortable as 72°F/30% RH; so by increasing the RH and lowering the temperature, you will minimize negative effects while lowering your utility bills.

Because the outside air temperature and RH can change in a short time, even a few hours, a computer-controlled humidifier is probably your best choice. It will automatically adjust for

these fluctuations to provide enough moisture for a healthy, comfortable home and minimize or prevent window and cold surface condensation.

### Summer Dehumidification

Air conditioners pull moisture from the air (HVAC professionals call that “latent heat,” as opposed to “sensible heat,” the temperature) as they cool it, which is one reason you feel better in an air conditioned home. If they didn't, you'd feel cold and clammy instead of cool and comfortable. In particularly hot and humid climates, however, you may need to augment the dehumidifying capacity of your system.

Very high moisture levels give you that “sticky” feeling and may lead to health problems resulting from the growth of bacteria, viruses, fungi, dust mites, and mold. Air at 78°F/30% RH provides the same level of comfort as does 74°F/70% RH air. In the summer, turning the thermostat *up* lowers your utility bills, so dehumidifying can save you money as well as add to your comfort.

Although your air conditioning system or stand-alone dehumidifier is designed to remove moisture and decrease the RH levels in your home, in very humid areas of the country, it may not be capable of lowering the levels below 60% RH. In such cases, your ACCA quality contractor may suggest alternative or additional equipment and control strategies.

### It's Your Choice!

The choice is yours: a comfort and health indoor air *system*, or a furnace/boiler and an air conditioner. Since more than a third of your time is spent in your home, it is important to make the right choice.

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