



## TECH TIP

### What Role Does Humidity Play?

Humidity is an element of A/C service that often gets overlooked. First, let's look at the word "humidity". Humidity can be described in two ways: humidity and relative humidity. Humidity is water vapor held in the air. Relative humidity, as defined by Webster, is "the ratio of the amount of water vapor actually present in the air to the greatest amount possible at the same temperature". As air temperature rises, its ability to hold moisture increases, which means hotter temperatures, can retain more moisture.

Second, let's look at how humidity affects our comfort zone. The average person feels comfortable within a relative humidity of 40% to 50%. When relative humidity is higher than 50%, people feel hotter and muggier. The term "Heat Index" refers to how hot it "feels" when temperature and humidity are taken into consideration. An 80°F day with 90% humidity will feel hotter than a 90°F day with 20% humidity.

As the A/C system cools, the evaporator core absorbs heat from the air inside the vehicle and transfers that heat to the air outside through the condenser. As the air cools, excess moisture condenses into water. The water coats the evaporator core, which affects its ability to absorb heat from the air. In a sense, the water acts like an insulator. However, as the humidity level drops inside the car, the air temperature will feel colder.

How will this affect temperature and pressure readings? As relative humidity increases, the difference between the duct and ambient temperatures will decrease. For example, an ambient temperature of 85°F with low humidity could result in a duct temperature of 40°F, but with high humidity may only produce a duct temperature of 55°F. Also, high and low pressure readings will rise slightly as relative humidity increases. The rise in pressure is due to the fact that water contains more heat than air.