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## Why Attic Ventilation Makes Good Sense

There are good reasons to ventilate the attic to minimize heat buildup.

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If you have ever been in an attic, you know how hot such spaces can get. The primary source of heat is direct sunlight. Solar heat is transmitted through the roofing material and radiated to the ceiling insulation. As the roof and insulation warm up, the attic air also becomes heated. Eventually the temperature of the entire system — roof, air, insulation, and attic floor — rises. In a non-vented system, roof temperatures can be well above 170°F, and in the attic, 140°F.

When the sun goes down, the source of the heat is depleted and the attic starts to cool down. The heat from the attic begins to radiate to the outside air. In some cases, the heat absorbed by the materials inside the attic may not be entirely depleted during the night hours. This is particularly the case in non-vented attic systems, so heat will continually build up over a long stretch of warm weather. If the heat is not depleted and continues to build up, it can also warm the ceiling of the conditioned environment.

### Heat Buildup Effects

Continual heat buildup can cause a number of problems for the home. Major concerns include:

- premature shingle deterioration
- condensation buildup
- increased cooling costs

Let's take a closer look at each of these issues.

Shingles start to deteriorate at a faster rate when the temperature of the roof sheathing to which the shingles are attached remains high. This can cause a significant shortening of a shingle's life.

Warmer air can also hold more water vapor than cooler air, providing an environment for condensation buildup and mold and mildew growth.

And if the built-up heat is not allowed to escape, it can radiate into the controlled space of the house, increasing the occupants' use of air conditioning, leading to greater energy consumption and service needs, and eventually leading to premature replacement of the air conditioning unit.

### **Attic Ventilation Benefits**

Ventilation offers benefits for all types of roof systems: shingle, standing seam, tile, etc. By reducing the heat gain through the roof assembly, attic ventilation helps preserve the life of the roof, helps prevent moisture buildup, and provides energy savings.

To fully understand the benefits of attic ventilation we must first ask: "What is Attic Ventilation?" Rural Builder magazine gives a simple definition: "The process of supplying air to or removing air from attics, elevated ceilings or other enclosed spaces over which a roof assembly is installed."

The most common type of attic ventilation is passive ventilation. Passive ventilation allows air to enter the attic at the eaves or lowest point of the roof and exhaust at the peak or highest point of the roof.

Warm air naturally rises and cool air naturally descends. A well-balanced system takes advantage of this effect. Cool air enters the roof system at the eaves and warm air will exhaust the roof system at the ridge. However, wind also plays a role in this; when wind hits a building, high pressures force air into the attic at the eaves, and as wind travels over a building, low pressures draw air out of a building at the ridge. By allowing continuous air movement through an attic system, the temperature of the attic air is closer to the temperature of the outside air.

Improving ventilation conditions are often accomplished with a reasonable amount of cost and time. If the problems associated with inadequate ventilation are understood, there is usually a great deal of desire to improve current ventilation or design future buildings with adequate ventilation. Adequate ventilation can be obtained by using a balanced system of intake and exhaust while following building code guidelines, thus helping to fight heat buildup. (End)