

## **Consumer Ventilation Summary**

### **Roof Assembly Ventilation Coalition**

Recently, residential attic ventilation has become a focus of differing positions for many within the building and construction industry. Roof ventilation designs first originated in the 1970's as a result of the energy crisis and the search for energy savings through the reduction of residential heating and cooling loads. Lately, however a limited number of product manufacturers, building researchers and designers have begun to promote unvented roofs as an alternative means to prevent excess heat and moisture. In simple terms, unvented attic constructions (also referred to as "sealed" or "cathedralized" attics) call for excluding all venting to the exterior. To date the research for this type of building practice is too fragmented or incomplete, and the potential downside risks of unvented roofs have not been adequately investigated.

Because of this incomplete and fragmented research, a diverse group of roofing material, insulation, and ventilation manufacturers, as well as contractors and home builders are calling for caution before substituting an alternative approach versus common proven practices of ventilation based on sound science. This group is calling on the building research community to conduct additional research, environmental analysis and field demonstrations to learn if unvented attic configurations are a suitable and safe design option to traditional ventilation.

Until the time that unvented attic configurations are backed by scientific data, there are many things to consider when contemplating an unvented attic for your home:

#### **Indoor Air Quality**

Because indoor moisture, microbes and airborne pollutants cannot be vented to the exterior with a sealed attic construction, the potential exists for trapping moisture that can promote fungal growth and microbial contaminants in the attic and home interior. This presents a potential occupant health concern which requires in-depth health analysis and investigation to ensure homeowner safety and well being.

#### **Moisture Control**

Traditional ventilation practices provide an exhaust route for excess heat and moisture rising from the living space within the building structure. Because sealed attic constructions eliminate the moisture-reducing effects of ventilation, moisture control must be accomplished by halting the infiltration and leakage of interior air into the attic cavity or roof assembly. This highly complex and difficult-to-achieve design requirement has not been significantly addressed in full-scale modeling, analysis, or field demonstrations of successful installations for varying climates and structure types. In addition, suggestions for mitigating moisture build-up where a vapor retarder does not perform as required by adding mechanical ventilation or other system alternatives have not been proven to be effective when compared with traditional ventilation

#### **Heat Build-Up**

Most research on unvented construction has shown both higher peak temperature readings for the sheathing and the back side of roof shingles, as well as higher heat levels for longer periods of time than with vented constructions. Lack of data and

analysis on the impact of this sustained heat build-up on shingle life span and overall degradation of roofing materials remains a significant shortcoming in determining the suitability of unvented attics in hot climates.

### **Ice Damming**

Several studies have indicated the need for additional design elements or safeguards to ensure the effectiveness of unvented roof cavities in preventing winter icing and ice damming in cold climates. Because effective ventilation design has been shown repeatedly to be effective as well as a cost-efficient means of minimizing ice damming, roofing professionals argue that consideration of unvented attics must address the need for ice dam prevention in applicable climate regions.

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This summary has been developed by the Roof Assembly Ventilation Coalition, representing those whose interests may be served and benefit from the goal to study, monitor, and promote the interests of steep slope assembly ventilation through sound theory backed by scientific data. For additional information, contact the Roof Assembly Coalition headquarters at 202-207-0971.