

Unvented Attics

The advantages of the unvented, indirectly conditioned attic construction are increasingly being recognized within the industry to help with the following:

- Energy conservation
- Moisture management

In an unvented attic assembly, insulation is applied directly to the underside of the structural roof deck and is tied into the insulation located in the walls so that the roof system becomes part of the insulated building enclosure.

The attic space becomes indirectly conditioned as a result of the air leakage, heat transfer and vapor diffusion through the ceiling. A fundamental requirement of an unvented attic assembly is the use of air-impermeable insulation on the underside of the unvented roof to prevent air infiltration and exclude airborne moisture from the attic. Air permeable insulation is allowed in specific California climate zones. This reduces latent air-conditioning loads and provides further reductions in energy consumption. In hot climates, unvented attics are ideal where HVAC equipment and ductwork are located in the attic. In cold climates, attic ventilation is a common method to remove humid air. In some cases, a conditioned attic assembly may be desired where scissor trusses make it difficult to insulate the floor, or in cathedral ceilings where the intent is to turn the attic into living space. A vapor retarder is recommended in cold climates. With any roof system, there should always be a contingency plan to address the possibility of roof leaks, especially with wood roof decks.

California Title-24 requirements

In unvented attics, where insulation is applied directly to the underside of the roof deck, kneewalls, skylight shafts, and gable ends shall be insulated to meet or exceed the wall R-value specified on the Certificate of Compliance, and all other required compliance documentation.

In unvented attics, where SPF is applied directly to the underside of the roof deck, all kneewalls, skylight shafts, and gable ends shall be insulated to the same R-value as the exterior walls and as specified in the compliance documentation.

In unvented attics, where SIPs are the insulated roof structure, all gable ends shall be insulated to the same R-value as the exterior walls as specified in the compliance documentation.

In unvented attics, where ICFs are the insulated roof structure, all gable ends shall be insulated to the same R-value as the exterior walls as specified in the compliance documentation.

Ceiling and Rafter Roof Insulation. The opaque portions of ceilings and roofs separating conditioned spaces from unconditioned spaces or ambient air shall meet the requirements of Items 1 through 3 below:

1. Shall be insulated to achieve a weighted average U-factor not exceeding U-0.043 or shall be insulated between wood-framing members with insulation resulting in an installed thermal resistance of R-22 or greater for the insulation alone. For vented attics, the mandatory insulation shall be installed at the ceiling

level; for **unvented attics**, the mandatory insulation shall be placed at either ceiling or roof level; and **EXCEPTION to Section 150.0(a)1**: Ceilings and rafter roofs in an alteration shall be insulated to achieve a weighted average U-factor not exceeding 0.054 or shall be insulated between wood-framing members with

insulation resulting in an installed thermal resistance of R-19 or greater.

2. Attic access doors shall have permanently attached insulation using adhesive or mechanical fasteners. The

attic access shall be gasketed to prevent air leakage; and

3. Insulation shall be installed in direct contact with a continuous roof or ceiling which is sealed to limit infiltration and exfiltration as specified in Section 110.7, including but not limited to placing insulation either above or below the roof deck or on top of a drywall ceiling.