2018 IECC Insulation Installation Requirements

Requirement:

- IECC Table R402.4.1.1 Air Barrier and Insulation Installation
  - Air-permeable insulation shall not be used as a sealing material.
  - See specific component insulation installation requirements.
- **IECC Section R402.2.1-R402.2.13** includes additional requirements for ceilings, eave bafflers, attic hatches, mass walls, steel framed walls, basements, crawls spaces, Slabs on grade, sunrooms, and masonry veneer.
- **IECC R303.1.1 Building thermal envelope insulation.**
  - An *R*-value identification mark shall be applied by the manufacturer to each piece of *building thermal envelope* insulation…. (Section R303.1.2 and shall be readily observable at inspection)
  - Alternatively, the insulation installers shall provide a certification that indicates the type, manufacturer and *R*-value of insulation installed in each element of the *building thermal envelope*….
  - For blown-in or sprayed fiberglass and cellulose insulation, the initial installed thickness, settled thickness, settled *R*-value, installed density, coverage area and number of bags installed shall be indicated on the certification.
  - For sprayed polyurethane foam (SPF) insulation, the installed thickness of the areas covered, and the *R*-value of the installed thickness shall be indicated on the certification.
- **R303.1.1.1 Blown-in or sprayed roof and ceiling insulation.**
- The thickness of blown-in or sprayed fiberglass and cellulose roof and ceiling insulation shall be written in inches (mm) on markers that are installed at not less than one for every 300 square feet (28 m_2) throughout the attic space.
- ….. affixed (the marker) to the trusses or joists and marked with the minimum initial installed thickness with numbers not less than 1 inch … in height.
- Each marker shall face the attic access opening.
- **R303.2 Installation.**
  - Materials, systems, and equipment shall be installed in accordance with the manufacturer's instructions and the *International Building Code* or the *International Residential Code*, as applicable.
  - Additional installation instructions in the IECC are located in sections R402.2.1-R402.2.13 and Table R402.4.1.1 Air Barrier and Insulation Installation.

Translated:

- Air permeable insulation needs to be installed within an air barrier system (six side enclosures) except for ventilated attics insulation and rim joist insulation (Best practice would be to have six sides at the rim joist)
- In **IECC Section R402.2.1-R402.2.13** of code anything that addresses insulation installation is mandatory and anything that addresses R-value or U-factor can be traded in the performance compliance options.
- The industry is seeing a move toward blown insulation products because they are simply easier to install to achieve the rated R-value of the insulation material than batt style insulation products. Batts are difficult to install well and need to be inspected more thoroughly.
- An R-value mark must be on every piece of insulation installed in the home or on a representative sample of insulation in a specific assembly such at walls, rim joist, basements, attics, etc.
- When the R-value mark is not available on a piece of insulation, such as blown insulation products, the installer must **CERTIFY** the R-value of the installation and leave a certificate identifying the installed R-value installed in each building assembly, immediately after the installation.

Example Execution of Requirement:

- Fully filled cavities. (Front to back, side to side, and top to bottom)
- Enclose insulation in cavities on six sides (six-sided air barrier)
  - Exception - insulation in a ventilated attic and at rim joist
  - Attic insulation must cover the top plate which may require a raised heel truss. The R-value can be reduced from that required in the R-value table per section R402.2.1 or a performance compliance option.
  - Rim joist insulation must be in permanent contact with the rim board
- Adjacent to the building thermal envelope and fully aligned with the air barrier system
- No Gaps, Voids, or Compressions
- Installation equivalent to RESNET Grade 1 is equivalent to installs that are compliant with manufacture instructions and the IECC.
- Five Key attributes of and air barrier:
  - **Continuity**
  - **Strength**
  - **Durability**
  - **Stiffness**
  - **Impermeability**