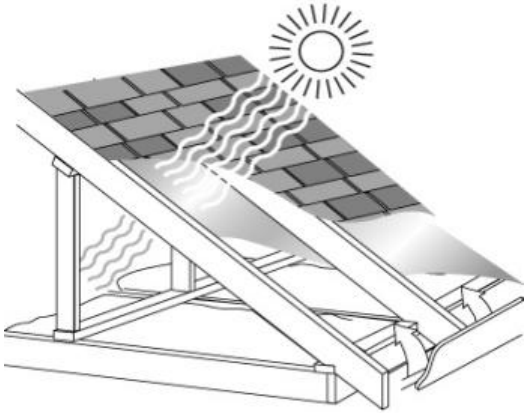
Radiant Barriers



Radiant Barriers

- All materials give off, or emit, energy by thermal radiation as a result of their temperature.
- Radiant barriers work by reducing heat transfer by thermal radiation between the roof and the rest of the attic.
- According to the Oak Ridge National Lab, radiant barriers can reduce cooling bills by 2-10 percent.

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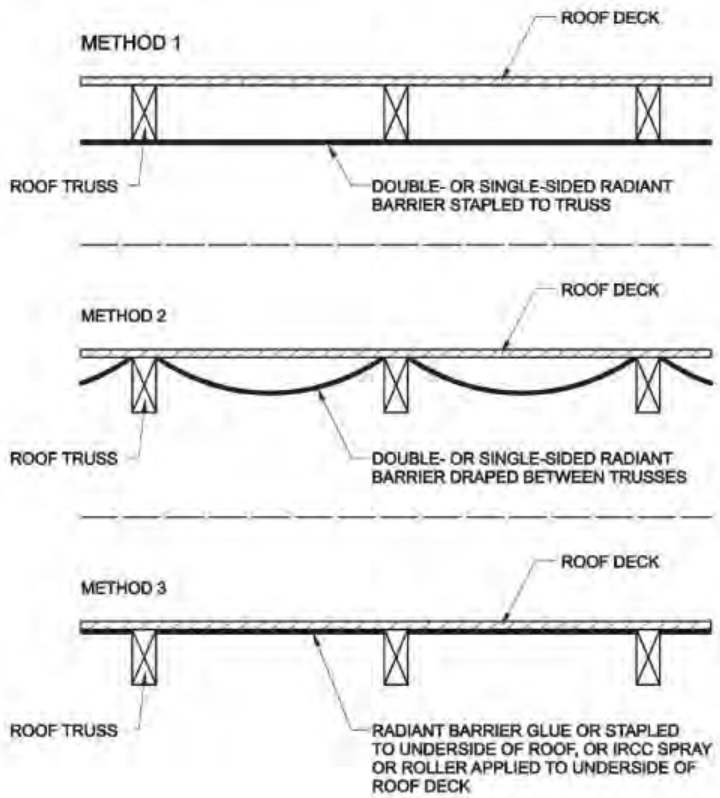
Radiant Barrier Installation

Radiant barriers can be installed four ways:

1. Along the top chord of the truss
2. Against the roof deck (with an air space)
3. As part of the roof decking assembly (TechShield® or spray on product)
4. ~~On top of ceiling insulation~~



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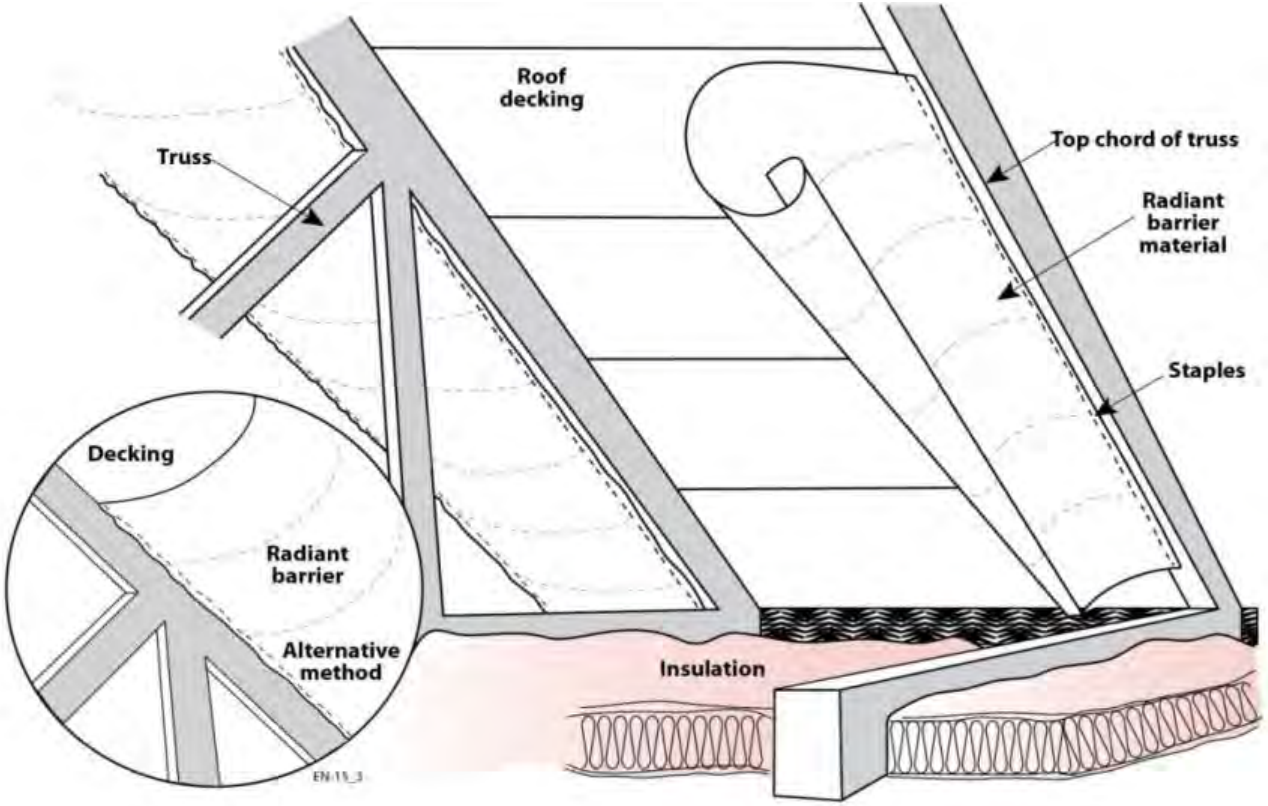
Roof decking
Truss
Top chord of truss
Radiant barrier material
Staples
Decking
Radiant barrier
Alternative method
Insulation
EN-15_3

Foil-faced radiant sheathing

- Easiest method for new construction
- Recommend products that are perforated to allow the decking to “breath,” allowing the passage of moisture

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Radiant Barriers - SWS

TITLE	SPECIFICATION(S)	OBJECTIVE(S)
4.1088.2a Stapling	An air space no less than ¾" will be maintained between the barrier and the bottom of the roof deck	Ensure performance of radiant barrier
4.1088.2b Ventilation	A minimum of 3" clearance from soffit vents and ridge vents will be maintained	Allow for air flow behind barrier
4.1088.2c Gable walls	Radiant barrier will apply to gable walls while maintaining a ¾" air space Radiant barrier will not block gable vents	Ensure performance of radiant barrier
4.1088.2d Porch and garage attic spaces	Radiant barrier will be installed to separate the attic above conditioned space from adjacent attics Radiant barrier will be installed to withstand local wind loads	Reduce radiant heat entry Ensure durability
4.1088.2e Onsite documentation	•A dated receipt signed by the installer will be provided that includes: Number and thickness of air spaces •R-value •Direction of heat flow	Document job completion to contract specifications Comply with 16 CFR 460.17

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- Attic catwalk / platform retrofit

- Attic radiant barrier retrofit

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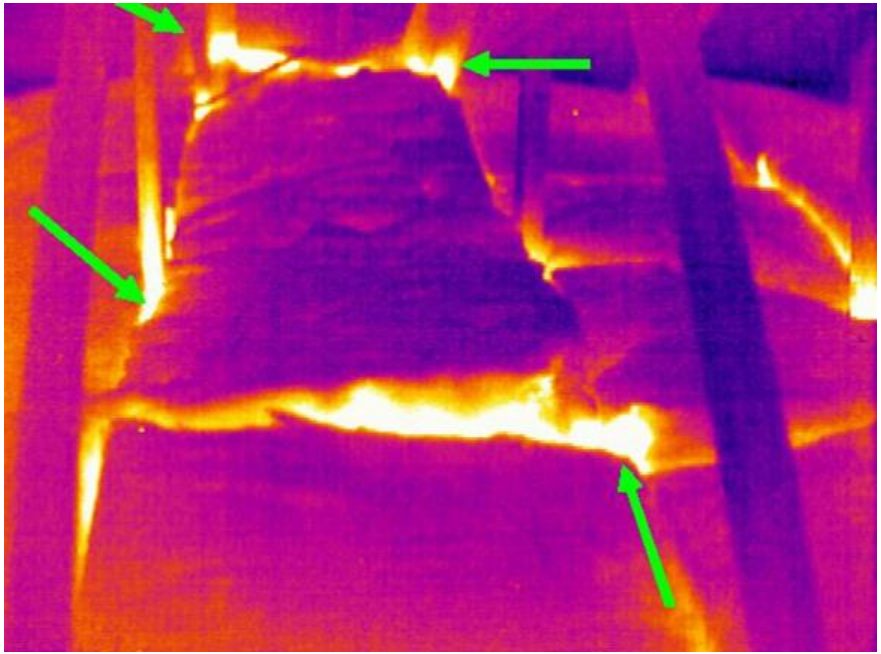
Installing Insulation

- Voids / Gaps
- Compression / Incomplete Fill

Continuous Insulation & Air Barrier

- Building Thermal Envelope
  (air barrier and insulation must be in contact)



What's Wrong with This Picture?

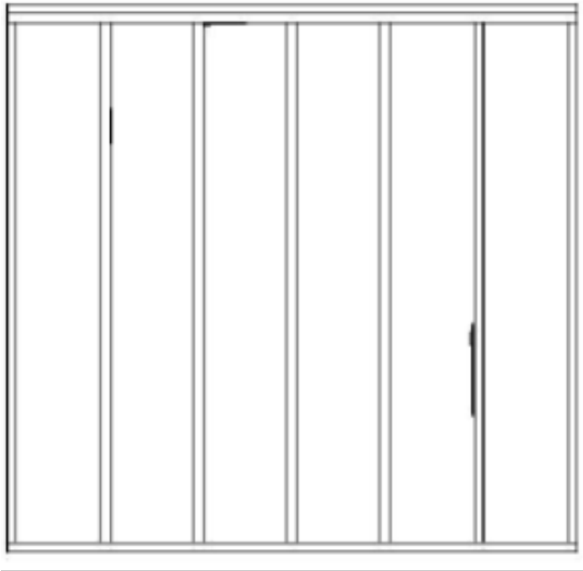
Insulation Installation: Grade I, II, or III

Unless verified, assume Grade III (worst) – see RESNET Appendix A-11-16

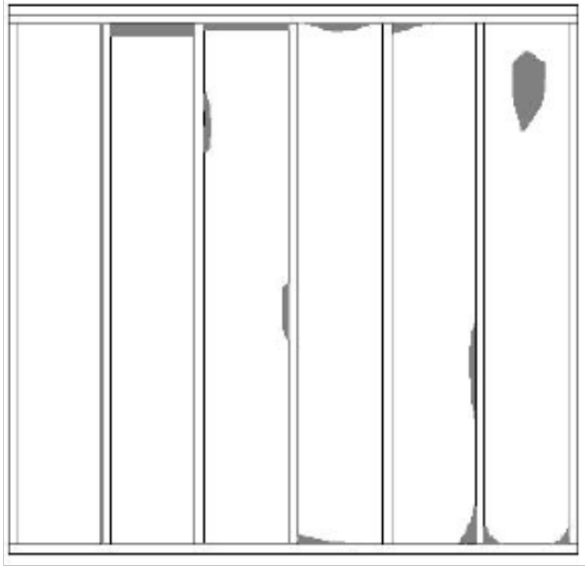
Grade I

RESNET Appendix A-11 - A-13

- occasional very small **gaps/voids**
- less than 2% **compression/incomplete fill** (which may not be more than 30% compressed)



Gaps

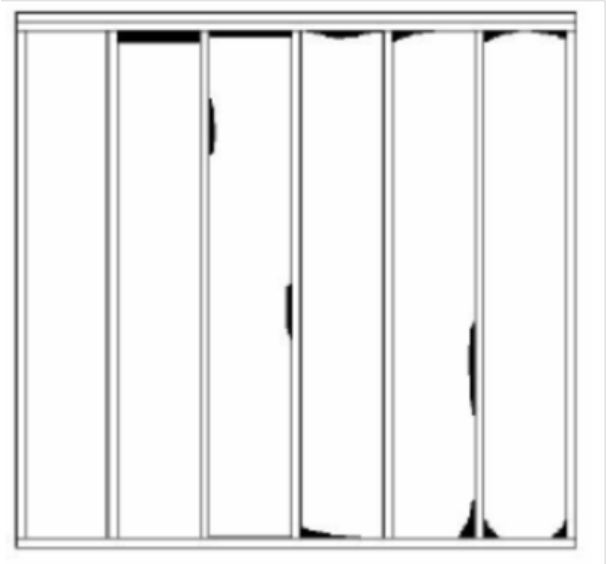


Compression

Grade II

RESNET Appendix A-11 - A-13

- <2% **gaps/voids**
- <10% **compression/incomplete fill**
  (which may not be more than 30% compressed)

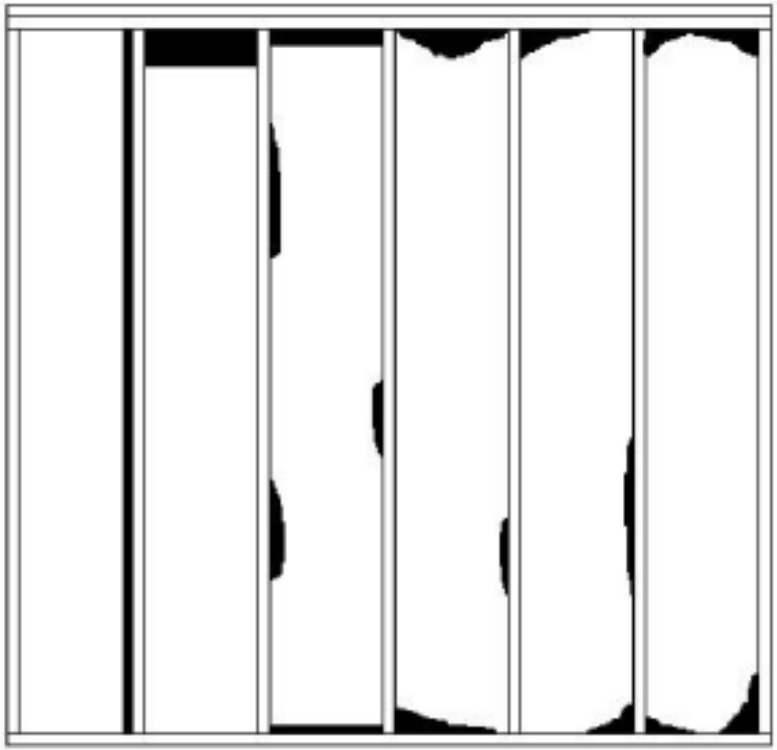


Gaps

Compression

Grade III

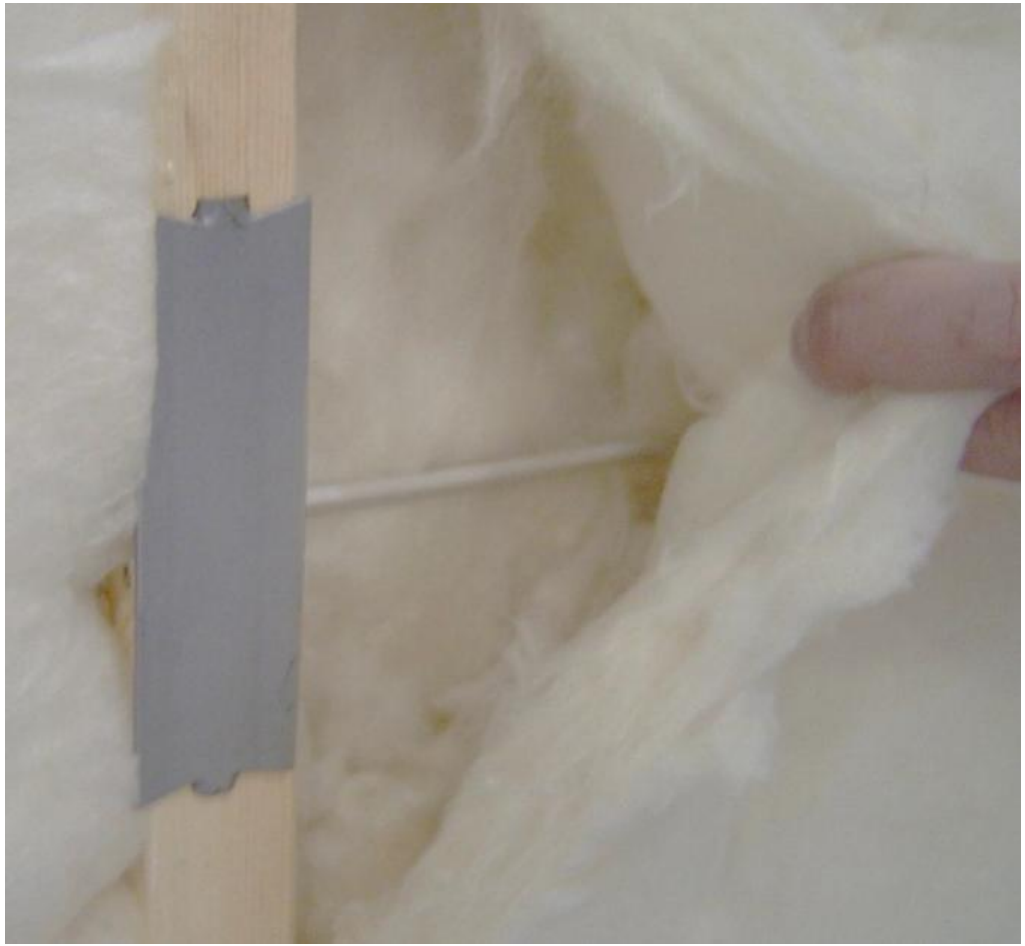
RESNET Appendix A-15 - A-16



Gaps

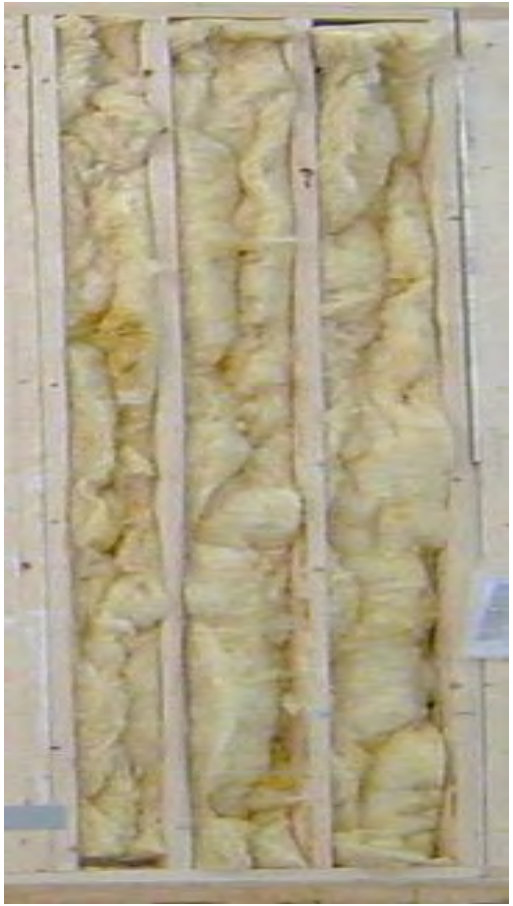
- > 2% and < 5% **gaps/voids**
- (greater than 5% = downgraded R-value)
- 10% or worse **compression/incomplete fill**

What Grade?



What Grade?

What Grade?



What Grade?

What Grade?

What Grade?

What Grade?

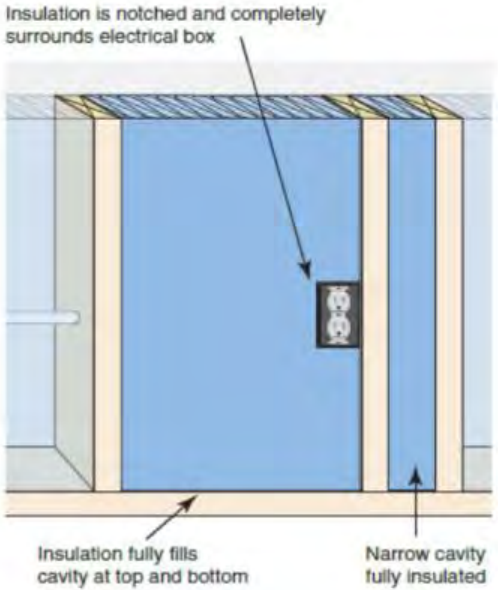
What Grade?

Voids & Gaps

Wall Insulation key points

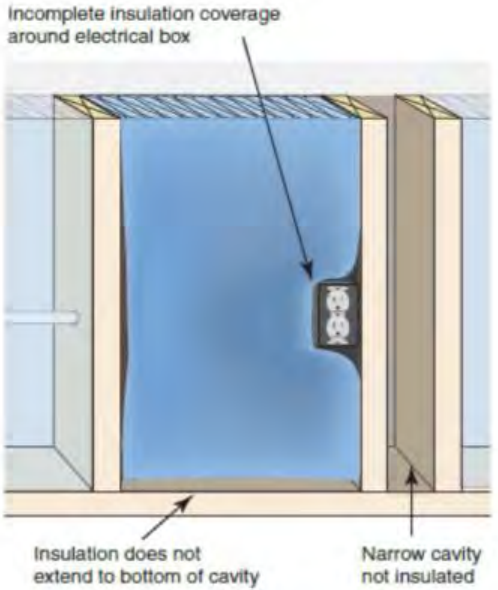
Voids / Gaps

Passing Grade



Good!!!

Unacceptable Installation



Bad!!!

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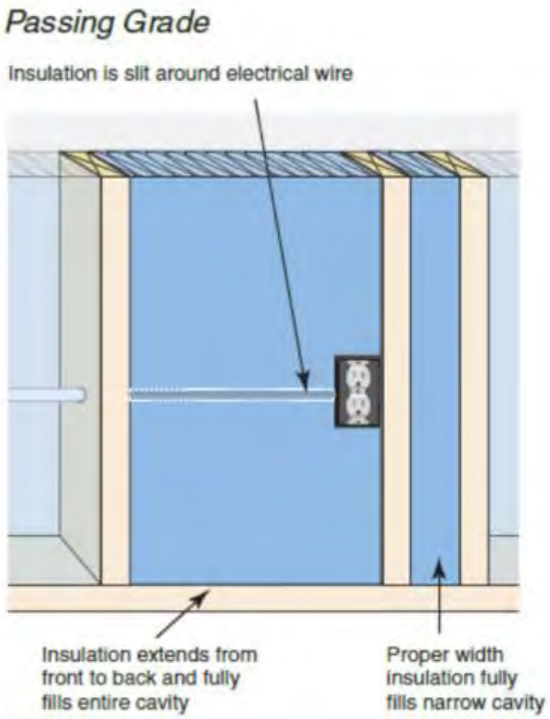
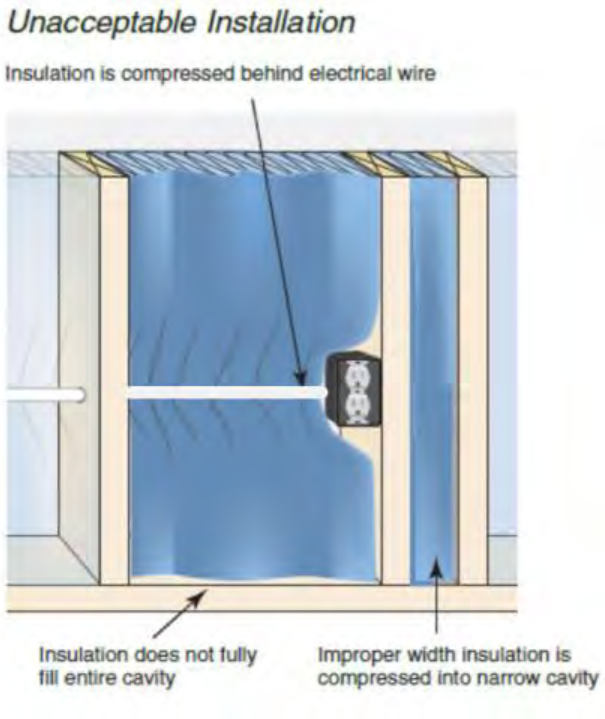
Compression & Incomplete Fill



Good!!!



Bad!!!

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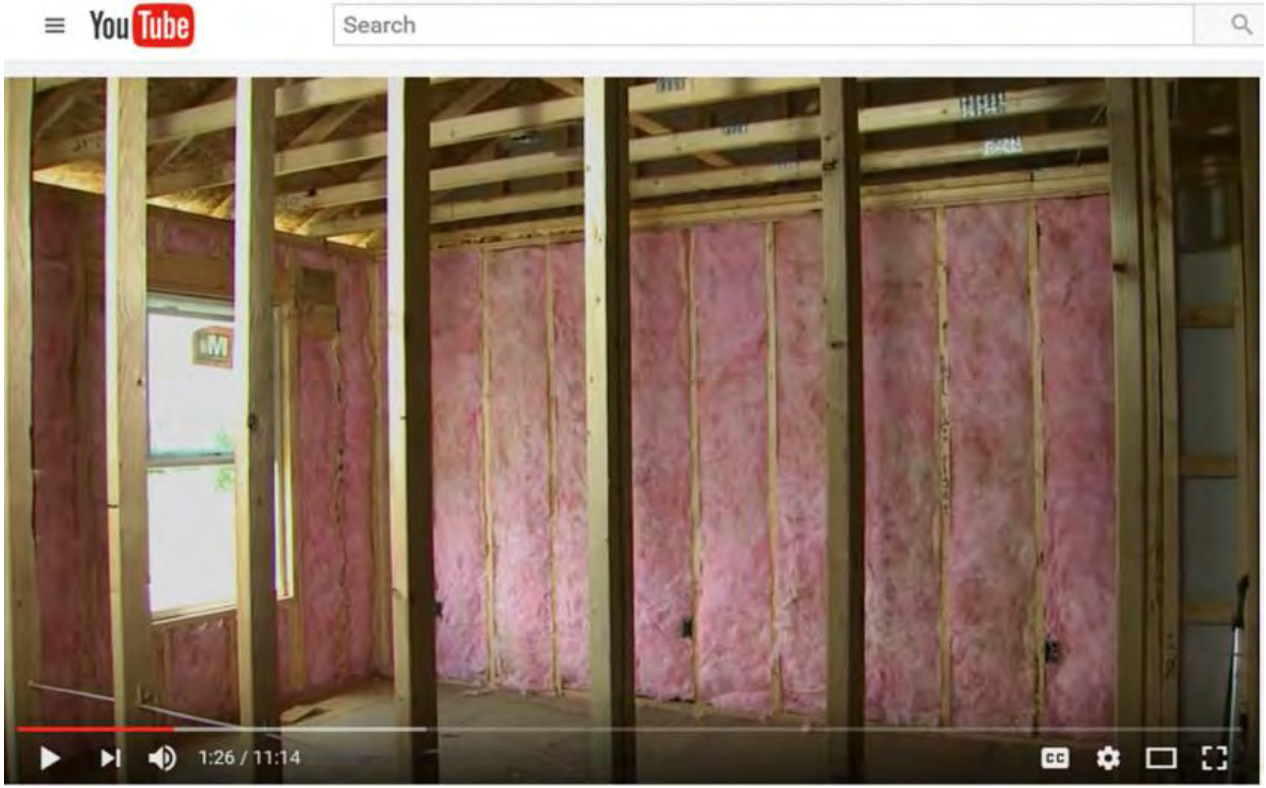
Installation Videos

Installation Video



Installation Video

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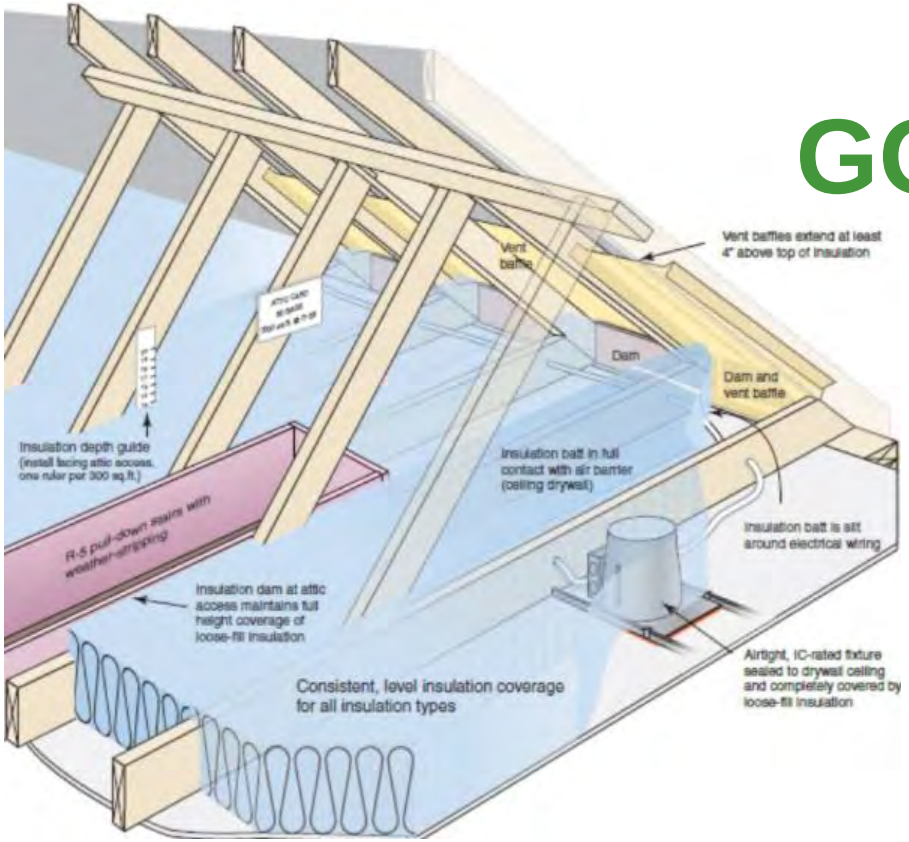
Ceiling Insulation



GOOD!

See IECC R303.1

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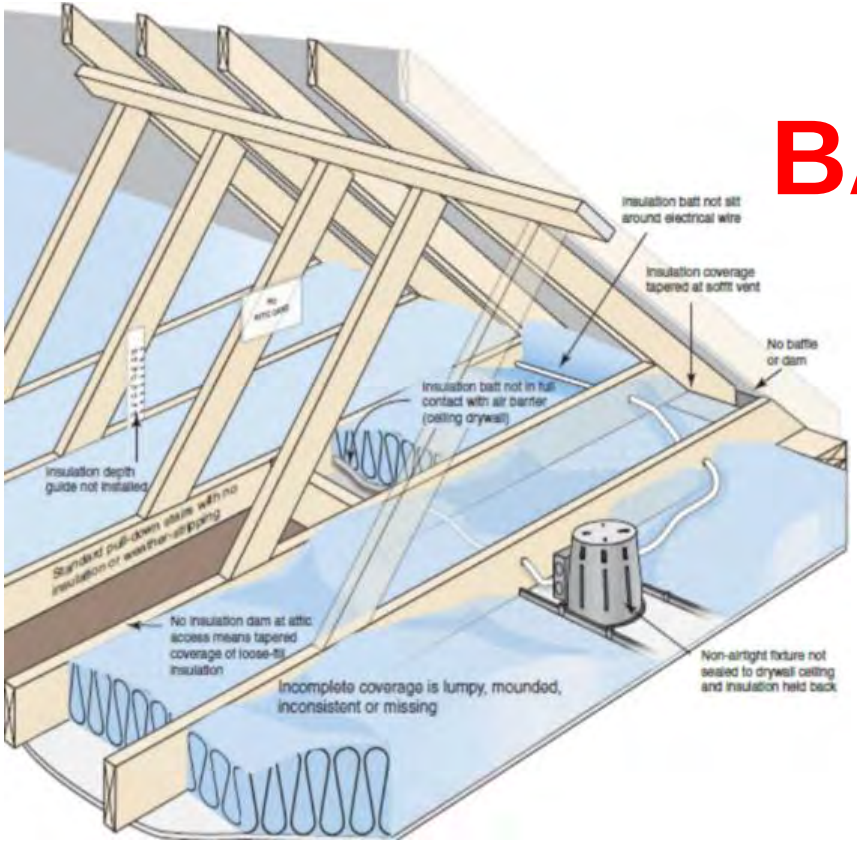
Ceiling Insulation



BAD!

Ugly Ceiling Insulation

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