

GRADE I INSULATION INSTALLATION

WHY BUILDERS SHOULD CARE

What is Grade I?

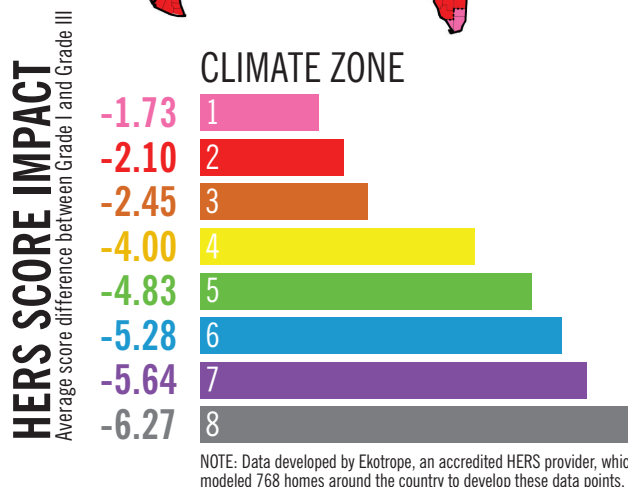
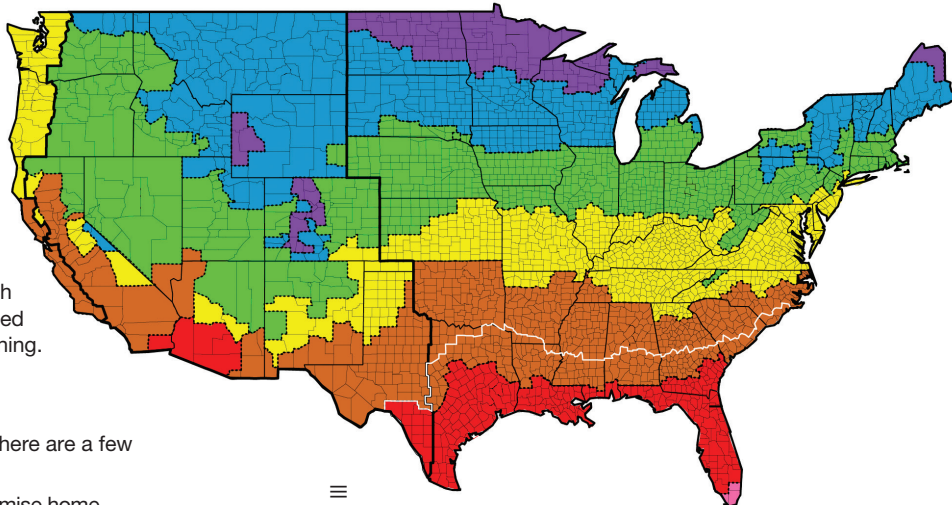
Grade I refers to an insulation installation quality rating system developed by RESNET. Using a three grade approach, HERS raters are taught to assess the quality of insulation installation. Grade I is the best, Grade III the worst. This is different than traditional code inspection of insulation which is done on a pass/fail basis. Code officials rarely fail insulation installations, however not meeting the Grade I criteria is commonplace. In fact, in a recent field survey, the US Department of Energy found only about half of all homes had Grade I quality. Bottom line, even if your contract with the insulation installer says that the product will be installed “per manufacturer specifications” this is often not happening.

Why should builders care about it?

If you are getting a HERS rating for the home you build there are a few good reasons to care:

- **Quality matters.** Poorly installed insulation can compromise home performance, resulting in higher energy bills for your customers and increased customer call backs due to comfort issues. Also, allowing poor quality for one trade sends the message to the others that cutting corners is OK. If you show you’re serious about quality, people will sit up and take notice.
- **If you aren’t getting Grade I you are losing HERS points.** Sacrificing these points can mean you need to make up for them somewhere else. Conversely, ensuring you get these points can act as a cushion against shortfalls you may encounter elsewhere, for example missing your air leakage target.
- **Many programs require Grade I.** Energy Star, DOE Zero Energy Ready Homes and many utility incentive programs require Grade I for eligibility.
- **Not getting Grade I is wasted money.** If an installation is Grade III, RESNET software models 5% of your insulated area as uninsulated. That means 5% of the insulation you paid for isn’t being counted towards your HERS score. If you assume you’d spend about \$2,600 on batt insulation (2,000 sqft. home), a whole home Grade III rating means you lost \$130. If you’re constructing multiple homes in a development, that figure adds up quickly.

HERS Score Penalty of Grade III



How do I get Grade I?

It may be easier to meet the Grade I requirements using blown fiberglass, cellulose or spray foam than batts. That is why some recommend these products instead of batts if you want to get Grade I on the first inspection. However, easier is not the same as cheaper, let alone better. Using batts is a less expensive path to Grade I even when accounting for the incremental time, from contractors and HERS raters, required to get it done. Below is an example to make this clearer:

INSULATION APPROACH ¹	TOTAL COST PER HOME (material and labor)
Fiber glass batts	\$2,610
Fiber glass batts with quality management approach*	\$3,410
Blown fiber glass	\$4,502
ccSPF	\$15,345
ccSPF	\$17,744
ccSPF + R-13 fiber glass batts	\$12,345
Cellulose	\$4,718

*Assuming \$500 for incremental contractor labor for quality install and \$300 for additional rater time (training, coaching etc.).

Outsmart, don’t outspend

We can see here that batts are still a more cost effective choice for meeting Grade I even when adding in increased labor costs. Imagine you have a competitor using blown cellulose to get Grade I and you’re using batts (of comparable R-value) with a quality management process. That means you’re getting the same HERS points, the same thermal performance at \$1,308 less per home. This is about using smart, best practice processes to beat your competition.

Rater and contractor teamwork is the trick

If you empower your rater and contractor to employ this process, you’ll get the quality you want with the cost savings offered by using batts. The key is employing the right process to ensure that the additional money spent will deliver the Grade I outcome you need. That is where our “Batt Insulation Installation Quality Management System” comes into play. This approach is based on actions taken by leading builders, contractors and raters from around the country who consistently get Grade I with batts.

1. Homes were 2,000 sqft, 2x6 framing with R-20 walls and R-38 attics. Cost data from Ekotrope is based on aggregated costs from its database as well as market research. These figures represent an average of five metro areas around the country.

BATT INSULATION INSTALLATION QUALITY MANAGEMENT CHECKLIST

While technical training resources are required, Grade I takes more than technical know-how. Consistent Grade I outcomes are the result of a quality management process that builders, raters and insulation contractors need to collaboratively execute. Builders need to identify a “quality leader.”

BUILDER ROLE

- **Make Grade I a written goal.** Clear articulation of the goal in the initial statement of work between the builder and the contractor is a must. If the builder doesn't take ownership of the goal and make it clear to the contractor, the odds of delivery are slim.
 - ❑ The statement of work should be explicit about how delivered quality (whether it's Grades I-III, the Quality Insulation Installation procedures or “per manufacturer specification”) impacts payment. Not only does this help ensure you get the desired result, it can also screen out contractors who won't be able to deliver quality. *Note: many contracts do stipulate the install will occur “per manufacturer specifications” but this is really just boiler plate. If you are serious about quality, the contract needs to be explicit about the actual expectations and how they impact payment.*
- **Empower the rater to be a guarantor of quality.** This means you have:
 - ❑ Made clear to the rater and contractor that they must agree on what quality is. They need a shared understanding of the objective they are striving for.
 - ❑ Told your own people, for example your superintendent and your other subcontractors, that the quality leader dictates what proper insulation installation is and how to do it.
- **The superintendent is super critical.**
 - ❑ Tell your superintendent what the quality goal is.
 - ❑ Educate the superintendent in advance. Have the superintendent sit in on the training your rater gives the installers on quality expectations.
 - ❑ Have the superintendent remind the crew doing the work what the quality expectation is, even handing out the pictorial guides showing right and wrong ways to install the insulation.
 - ❑ Check the install before the rater arrives (and before the crew leaves). Superintendents need to make sure things stay on schedule, and if the rater says the installer needs to come back to fix the work, it throws the schedule off, so this action is typically the superintendent's responsibility.

This can be either the rater with the contractor in support or the other way around. This is a team effort no matter what, but there needs to be a defined quality leader. The checklist of recommended practices below represents how leaders deliver repeatable Grade I installations with batts:

HERS RATER ROLE

- **Quality control processes.** This means the rater must:
 - ❑ Take the time to run through quality installation expectations with the quality leader (if the rater is not acting as one), the installation crew, the superintendent and others before work begins. This can be aided by physically pointing out possible problem areas in the home in advance, noting how to handle them properly. Visual learning, and better still hands on learning, is really the best approach for effective instruction.
 - ❑ Coordinate with the quality leader to ensure expectations are clear well in advance of the installation.
 - ❑ Send the contractor instructional materials, pictorial guides, videos etc., on proper installation and encourage him to have his crew review the materials carefully before they arrive to do the work. Make sure you send versions in English and Spanish.
 - ❑ Find out if the winning bidder is doing the work or subbing it out. If it's the latter, you may want to double check the actual installation crew is trained and able to deliver Grade I and get them the instructional materials.
- **Quality assurance processes.** For this step the rater should:
 - ❑ Review the completed work, or as it is being completed, to ensure it can get Grade I when grading occurs.
 - ❑ Require immediate remediation for any work that is not Grade I. This can save the builder money by not sending the crew back to the job, not to mention preventing interruptions or delays for the other trades.
 - ❑ Work with the quality leader to share results of the install process with the builder and contractor to see what went well, what didn't and what could be improved for the next job.
- **Show the builder the benefits.** After the work is complete, take the time to show what the builder got by employing this process. This could include HERS point benefits, qualification for incentives or certifications, cost savings by using batts instead of other products or all of the above. This will reinforce not just the value the builder got from the quality installation but also the value you delivered.

CONTRACTOR ROLE

- ❑ **Ensure the crew knows the requirement.** The contractor must ensure that the crew assigned to the job knows what the expectation is and can deliver on it.
 - This can be tricky if the contractor that won the bid and signs the contract is subbing out some or all of the actual installation work. In these cases, it's especially important to double check that the party doing the install knows the expectation, not just the party that signed the contract.
- ❑ **Motivate the crew for delivery of Grade I.** Ask the contractor how he will get the crew to deliver Grade I. How a contractor motivates is up to him, it can be carrots, sticks or both, but make sure there is some direct motivation for the crew to deliver Grade I for the job.
- ❑ **Ensure there is a responsible party for onsite Quality Assurance.** A contractor should ensure there is a responsible party in his organization to confirm Grade I is delivered. This means a designated person who confirms Grade I was delivered before considering the job complete. If it was not, this party should be sure remediation occurs before the installing crew leaves the job. This should likely be the crew supervisor.
- ❑ **Make sure the crew has the technical competency to deliver Grade I.** It can be hard to keep every worker trained appropriately, but be sure the team for the job is prepared to do it right. If the rater is doing his job, he should have provided helpful instructional materials to the contractor. It's then up to the contractor to make sure the appropriate people in his organization get them and actually review them.

BUILDER, RATER AND CONTRACTOR ROLE

- **“One and done” is “one and dumb.”** Doing something right once and assuming you'll get it right again is how processes break down. It is about implementing this process every time. For larger production builds where the installs are staged, that means repeating some parts of this even for the same project, as crews can change and significant

time can elapse between installations. This is about putting in place a repeatable system that results in quality. Committing to it will make it easier for everyone involved. Doing it sporadically will mean more missteps, more failures and more headaches.