PINK® FIBERGLAS™ INSULATION

GRADE 1 INSULATION INSTALLATION GUIDE

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Achieving Grade 1 Insulation installation with PINK® Fiberglas™ Batts

Advanced Energy Corporation, under contract with Owens Corning Insulating Systems, LLC has developed this document to help Builders, Contractors, and Home Energy Raters understand how fiberglass batt insulation can be installed to achieve a "Grade 1" rating. The installation quality rating system is part of the Mortgage Industry National Home Energy Ratings Standard (MINHERS), maintained by the Residential Energy Services Network (RESNET). The insulation installation grade—1, 2 or 3—is a factor in calculating a home's overall home energy rating, and a Grade 1 rating is required in many of the high performance home or above-code programs such as ENERGY STAR® Certified New Home and the DOE Challenge Home.

Home Energy Raters (HERS)
Home Energy Raters can use this document to understand how fiberglass batts are an option for builders and contractors looking for Grade 1 quality insulation. During the planning or plan review stages, the Home Energy Rater should use this document to educate the Certified New Home builders and contractors on the correct installation methods.

Builders
Builders may use this document as an internal Quality Control (QC) process for achieving Grade 1 insulation every time without additional visits from the insulation contractors and re-inspections from the Home Energy Rater. The process provides a way for the builder and contractor to identify any issues with framing and/or air barrier alignment prior to beginning their work. In addition it clearly lists the insulation requirements in the Thermal Enclosure System Rater Checklist. Instead of sifting through the numerous line items of the checklist, this document specifically addresses what the insulators will be responsible for onsite with regards to ENERGY STAR® Certified New Home requirements.

Contractors
Contractors may find this document especially useful to ensure correct installation of fiberglass batts in accordance with Grade 1 criteria. The process and critical detail sheets give a specific checklist for insulation contractors that simplifies what they are responsible for in the ENERGY STAR® process and also illustrates those specifications through pictures. These references are very useful to have in the field as the job is being completed. Also on the checklist is a list of critical details that need to be accomplished from the framer before the insulator begins work. Understanding these requirements will be valuable in the process and will help eliminate the need for re-inspection or rework for all subcontractors working on ENERGY STAR® Certified New Home new homes.

INSULATION AWARENESS

Ideal Installation of insulation

Properly installed insulation consists of insulation framed on all six sides, including top and bottom plates, rigid backing, and sheathing. Ensure that framing is correctly installed prior to the start of insulation.

Properly installed faced fiberglass insulation, resulting in a Grade 1 rating.

What is Grade 1 insulation?

(From the RESNET Mortgage Industry National HERS Standards)

General

"Grade 1" installation requires that the insulation material uniformly fills each cavity side-to-side and top-to-bottom, without substantial gaps or voids around obstructions (such as blocking or bridging), and is split, installed, and/or fitted tightly around wiring and other services in the cavity."

Walls

- Insulation shall be enclosed on all six sides, and shall be in substantial contact with the sheathing material on at least one side (interior or exterior) of the cavity. [Exception: the interior sheathing/enclosure material is optional in climate zones 1–3, provided insulation is adequately supported and meets all other requirements]
- For faced batt insulation, Grade 1 can be designated for side-stapled tabs, provided the tabs are stapled neatly (no buckling), and provided the batt is only compressed at the edges of each cavity, to the depth of the tab itself, and provided it meets the other requirements of Grade 1.
- Compression or incomplete fill amounting to 2% or less, when empty spaces are less than 30% of the thickness of the insulation, are acceptable for Grade 1.

Rim/Band Joists

Use the same inspection guidelines listed for WALLS. [Exception: the interior sheathing/enclosure material is optional in all climate zones, provided insulation is adequately supported and meets all other requirements]

Floors

- Grade 1 installation of floor insulation requires that the insulation be installed in complete contact with the subfloor surfaces it is intended to insulate.
- Floor insulation over unconditioned basements or enclosed (vented or unvented) crawl spaces need not be enclosed to attain a Grade 2 or Grade 1 assessment; floor insulation over ambient conditions does.

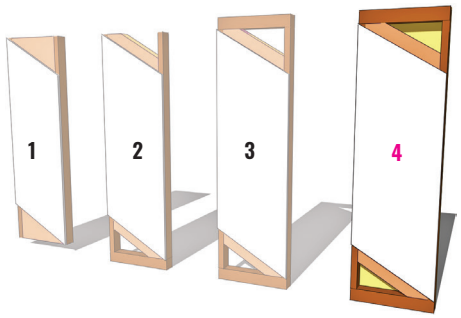
How do raters inspect insulation?

Home Energy Raters are required to inspect, probe in, around, or through the insulation and/or vapor retarder in several places to see whether these requirements are met.

During inspection, insulation and vapor retarders may be cut or pulled away so Home Energy Raters can see installation details. Home Energy Raters should replace or repair the vapor retarder and insulation as necessary. During inspection (typically before drywall is installed), if the exterior sheathing is visible from the building interior through gaps in the cavity insulation material, it is not considered a "Grade 1" installation.

For rim or band joist insulation, use the inspection guidelines under "Walls—Insulation value" to assess "Grade 1", "Grade 2", or "Grade 3" installation.*

*Exception: the interior sheathing/enclosure material is optional in all climate zones, provided insulation is adequately supported and meets all other requirements.



Progression of installments from least ideal to most successful (above):

1. No top or bottom plate and no backing
2. Bottom plate, but no top plate and no backing
3. Top and bottom plate, but no backing
4. **Top and bottom plate, includes backing (best design)**

INSULATION CHECKLIST

The insulation checklist serves as a guide for the Builder, insulation Installer and Rater, for Grade 1 requirements. The "PRE-CHECK" section covers all preparation work—proper framing details, shafts and chases capped, knee walls backed and all air blocking/sealing has been done. The Builder and Installer should review this together to identify any missing or incomplete work. The "SELF-CHECK" section covers all the insulation installation details. The Installer should be familiar with these details beforehand, and use this to review his/her work when finished.

		INSULATION: CRITICAL DETAILS	INCORRECT ✗	CORRECT ✓
PRE-CHECK	1	Top and bottom plates of all exterior walls and party/common walls (ALL floors), and vertical members at foundation step downs are sealed or gasketed		
	2	There is both a top and bottom plate installed at every knee wall (TERC 2, 3.1.3, 5.2.2)		
	3	All knee walls are backed with a rigid material or other supporting material (e.g. wall to attic, skylight shaft, wall to porch roof, staircase to attic) (TERC 2, 3.1.3)		
	4	All shafts/chases are capped (TERC 5.1.1)		
	5	All floor system cavities between conditioned areas and unconditioned areas (e.g. floor/garages, bonus rooms/attic, cantilevers, porch/floor) are separated by blocking and air sealed (TERC 3.2)		
	6	Work site is clean prior to beginning work		
	*	☐ Proceed without detail being corrected		
		☐ Stop work until detail is corrected		
		Builder's Signature _____ **Date** _____		
SELF-CHECK	1	Insulation is installed without gaps/voids or misalignments/compressions. Insulation material is in full contact with all sides of the cavity. Insulation is cut/split around blocking, plumbing, HVAC, and electrical components (TERC 2, 3, 4.3)		
	2	Framed floor cavities shall be completely filled with insulation or insulation is installed to maintain permanent contact with the sub-floor decking (e.g. bonus room floor, crawl space, cantilever) (TERC 3.2)		
	3	Insulate any overhanging floor cavities before closing them in with rigid sheathing(TERC 3.2.2)		
	4	Insulation is installed behind showers, tubs, staircases, and fireplaces on exterior, attic, and party walls and rigid sheathing or other supporting material is installed to hold insulation in place (TERC 2, 3.1)		
	5	Access panels to attic/kneewall, drop down stairs, and whole-house fans are weather stripped and insulated to the same R-value as the surrounding area when possible (min R-10) (TERC 5.3)		
	6	Work site is clean after work is complete.		

Installer Signature _____ Date _____
print name signature

Company Name _____ Builder's Job # _____

The sub-contractor who signs and completes this form is doing so to the best of his/her knowledge and should not be held legally responsible for work completed by other organizations. The intent of this form is to ensure job sites are ready prior to beginning work.

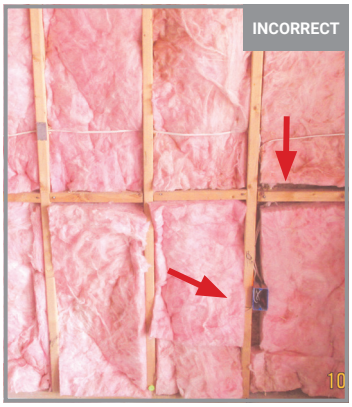
CRITICAL DETAILS

Critical details serve as a visual reference for each of the line items of the insulation checklist. They are great tools for carrying in the field when clarification is needed. Together, the insulation checklist and the Critical details serve as a process for all aspects of the Energy Star® requirements.

1. **NO GAPS/VOIDS**—Insulation is installed without gaps/voids. Insulation material is in full contact with all sides of the cavity. Insulation is cut/split around blocking, plumbing, HVAC and electrical components (TERC 2, 3, 4.3)

2. **NO COMPRESSIONS/MISALIGNMENTS**—Insulation is installed without misalignments/compressions. Insulation material is in full contact with all sides of the cavity. Insulation is cut/split around blocking, plumbing, HVAC and electrical components (TERC 2, 3, 4.3)

3. **NO COMPRESSIONS/MISALIGNMENTS**—Insulation is installed without misalignments/compressions. Insulation material is in full contact with all sides of the cavity. Insulation is cut/split around blocking, plumbing, HVAC and electrical components (TERC 2, 3, 4.3)



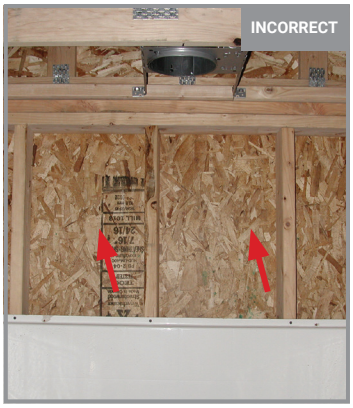
4. **NO COMPRESSIONS/MISALIGNMENTS**—Insulation is installed without misalignments/compressions. Insulation material is in full contact with all sides of the cavity. Insulation is cut/split around blocking, plumbing, HVAC and electrical components (TERC 2, 3, 4.3)

5. **NO COMPRESSIONS/MISALIGNMENTS**—Insulation is installed without misalignments/compressions. Insulation material is in full contact with all sides of the cavity. Insulation is cut/split around blocking, plumbing, HVAC and electrical components (TERC 2, 3, 4.3)

6. **FLOOR SYSTEMS**—Framed floor cavities shall be completely filled with insulation or insulation is installed to maintain permanent contact with the sub-floor decking (e.g. bonus room floor, crawl space, cantilever) (TERC 3.2)

CRITICAL DETAILS

7. **CANTILEVERS**—Insulate any overhanging floor cavities before closing them in with rigid sheathing (TERC 3.2.2)



8. **TUBS/SHOWERS/FIREPLACES**—Insulation is installed behind showers, tubs, and fireplaces on exterior, attic, and party walls and rigid sheathing or other supporting material is installed to hold insulation in place (TERC 2, 3.1)

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10. **ATTIC ACCESS**—Access panels to attic/kneewall, drop-down stairs, and whole-house fans are weather stripped and insulated to the same R-value as the surrounding area when possible (min. R-10) (TERC 5.3)

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