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Home Energy Efficiency

Interpretation: Grading Installation and Modeling Compressed R-Values

Designation: IR 301-2019-011

Approved: June 2, 2020 by RESNET SDC 300

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Reference:

Standard ANSI/RESNET/ICC 301-2019

Page Number(s): 34, 35 and A-1
Sections(s): 4.2.2.2.2, 4.2.2.2.2 (b), and A-1.1 PART 3
Table(s):
Relating to: Installation Grading and R-Value modeling of compressed batt insulation

Request from:

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Background Statement: *Provided by person requesting the interpretation.*

A-1.1 PART 3 states "Insulation shall be installed to the required density and thickness necessary to achieve the labeled R-Value." If this minimum general installation requirement is not met, then the insulation is to be given a Grade III. However, 4.2.2.2.2 allows for the inclusion of adjustments in Grade I and Grade II evaluations, such as compression adjustments, when determining the R-Value to model. An example would be the compression of an R-19 6.25" Batt into a 5.5" cavity. If all other Grade I or Grade II requirements are met, this portion of the standards seem to allow for the insulation to be graded as Grade I or Grade II and modeled with an R-Value of R-18, even though that is not the labeled R-Value. It could be argued that "labeled R-Value" could also refer to manufacturer's documentation, which commonly provides compressed R-Values. However, if the manufacturer does not provide this, 4.2.2.2.2(b) allows for an "R-Value Correction Factor (CF) for Compressed Batt or Blanket from Manual J, 8$_{th}$ edition Table

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A5-1, Section 7-d" to be used instead. Since that would not be a labeled R-Value, would the insulation be modeled as Grade III in that instance? Also, it seems that the referenced table and section do not exist in Manual J, 8th edition and the reference either needs to be updated or deleted. R-Value Compression Adjustments are addressed in Appendix 4, A410 R-Values, and there is a Figure A4-1 that provides some anecdotal information, but there is no CF given and the figure does not cover even the most common batt labeled RValues. The insulation institute provides a step-by-step formula to determine compressed R-Value (https://insulationinstitute.org/im-a-building-or-facilityprofessional/residential/for-hers-raters/) Is this an acceptable alternative?

Proposed Interpretation: *Provided by person requesting the interpretation.*

Batt insulation that meets all requirements for Grade I or Grade II installation with the exception of being able to fully expand due to finished cavity depth should be assessed as a Grade I or Grade II installation. For all Grades, such compressed insulation should be modeled at the compressed R-Value determined either according to the manufacturer's documentation or, in the absence of such documentation, the formula from the Insulation Institute website.

SDC Response:

Is the proposed interpretation correct? __X___ Yes (Part 1) ___X__ No (Part 2)

SDC Comments:
Part 1:
The Committee does agree with the interpretation with respect to the modeled R-Value being inclusive of compressed R-Values as determined according to the manufacturer's documentation.

Part 2:
This interpretation references the Insulation Institute website which is not currently recognized by ANSI/RESNET/ICC 301-2019, therefore this formula cannot be used as an alternative to the insulation manufacturer's documentation.

Note: This interpretation request has also drawn our attention to the compression table presented in Manual J. The intended table is not located at the specified reference and is also narrow in scope. Since this interpretation request highlights the need for additional information in the standard, its content will be further evaluated for inclusion in a future addendum.

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