

Determining Minimum R-Values on Tapered Insulation Systems

According to the 2021 International Energy Conservation Code (IECC), under Insulation Requirements, the building thermal envelope shall meet the requirements of Tables C 402.2 based on the climate zones shown below:

CLIMATE ZONE	1	2	3	4	5	6	7	8
Insulation Entirely Above Deck	R-20 ci	R-25 ci	R-25 ci	R-30 ci	R-30 ci	R-30 ci	R-35 ci	R-35 ci

Question: How does this affect R-Values on a Tapered Insulation System?

Answer: The R-Values shown above are the minimum R-Values required to meet Code requirements. Since a Tapered Insulation system will increase thickness away from the low points, the overall system R-Value will exceed the Prescriptive R-Value requirements.

Question: Does an Average R-Value that meets the Prescriptive requirement satisfy Code standards?

Answer: No. The terminology "Average R-Value" for tapered systems is an outdated term and not recognized by the IECC.

Question: Does building code allow for a change in R-value when using sumps?

Answer: There is an exception provided that allows the minimum thickness to be up to 1" less than the prescriptive R-Value (at 1/4" per foot slope) as long as the system R-Value meets or exceeds that Prescriptive R-Value.

Example: Zone 6 requires an R=30 minimum, which is 5.2" thick. This exception will allow the minimum thickness to be 4.2" at the low point, or 5.2", 4' away from the drain on a 1/4" per foot tapered system.

IECC 2021, SEC. C402.2 ROOF ASSEMBLY

Exception 2 Allows A 1-Inch Insulation Thickness Variation

