

RESNET® Standards Public Comment and Proposed Change Form

Comment/Explanation*:

Include your justification for your proposed change to the draft standard below.

The table for CMU R-Values is incorrect and confusing for a number of reasons.

The table relies on “spray polyurethane foam” insulation for foam-filling the cores of the CMU which is rarely used due to a number of factors, including worker safety. Leading companies like BASF do not recommend their spray foam products for filling the cores of CMU walls as, under certain circumstances, the wall will literally explode from the force of expanding foam.

The nation’s largest insulation companies (TruTeam, Installed Building Products, etc.) all typically rely on pre-expanded foam-in-place insulation for filling the hollow, ungrouted cores of CMU walls, having an R-value of 4.6 per inch at 75 degrees. Leading companies like Walmart, Tractor Supply, etc., all use this as well, in addition to homes/residences to which this RESNET standard applies.

Further, the tables are too restrictive, being limited to only 3-web CMU and not mentioning 2-web CMU, with only a single value for web thicknesses. But even that’s confusing. For instance, subnote 2 describes the web thicknesses as 1-inch (which are most commonly used across the US), however subnote 7 describes the web thicknesses as 1 1/8”. Web thickness, concrete density and the number of webs all have a significant impact on overall CMU R-Value.

Lastly, the R-values listed in the table are not calculated with 1” web thicknesses as they are too low—understated by 15 to 20%.

So the table is confusing and incorrect.

One suggestion would be to change the foam description to “pre-expanded, injectable foamed-in-place insulation” which, by far is the most common product used across the country and is more inclusive of other types of foam (such as polystyrene foam beads) that are occasionally used for filling the cores of CMU walls. Vermiculite and Perlite loose-fill insulation are occasionally used as well. Limiting the text to “spray polyurethane foam” is simply incorrect and inconsistent with industry practices.

A second suggestion would be to correct the R-values in the table, basing them on web thicknesses of 1-inch, which are most commonly found across the country, and correcting the numeric R-values themselves. Our company, CfiFOAM, Inc., has plug-n-play values for a broad range of CMU densities, number of webs, thicknesses of webs, grouting configurations and CMU concrete density that have been substituted into the incorrect values in the table. We are eager to help, if additional assistance is required.

A third suggestion would be that, in addition to the R-values from Table C.1(2), that manufacturer’s technical data sheets for CMU R-value be permissible as long as the data are FTC Rule 460 and building code compliant and required for alternative insulation materials like loose fill vermiculite or perlite (which have lower R-values). This would allow, for instance, more inclusive values for CMU block walls with 2 webs, thinner webs and differing grout spacing than what the Appendix C tables can support.

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Proposed Change to the Draft Standard*

Use “strikethrough” and “underline” formatting to indicate all proposed changes. Changes must be shown with “hard-formatting” strikethrough and underline, not “track changes”.

For concrete masonry units (CMU) the R-value of the CMU shall be selected from Table C.1(2) or obtained from insulation manufacturer’s data sheets.

Table C.1(2) Concrete Masonry Unit R-Value

R-Values ¹ for 8" x 16" Concrete Masonry Units (CMU) ²						
CMU characteristics		Foamed-in-place cores of R-5.9 <u>R-4.6</u> /in ³			Without core insulation	
concrete Density ⁴	concrete Resistivity ⁵	core pours ⁶ at 96" o.c.	core pours at 48" o.c.	all cores poured	core pours at 96" o.c.	core pours at 48" o.c.
85	0.291	5.15 <u>5.77</u>	3.95 <u>4.69</u>	1.39	1.64	1.49
95	0.246	4.48 <u>5.03</u>	3.44 <u>4.15</u>	1.27	1.49	1.35
105	0.207	3.90 <u>4.36</u>	3.00 <u>3.65</u>	1.16	1.37	1.22
115	0.175	3.38 <u>3.76</u>	2.62 <u>3.19</u>	1.06	1.25	1.11
125	0.147	2.93 <u>3.22</u>	2.28 <u>2.77</u>	0.98	1.15	1.01
135	0.124	2.54 <u>2.74</u>	1.98 <u>2.39</u>	0.91	1.06	0.92
R-Values ¹ for 12" x 16" Concrete Masonry Units (CMU) ⁷						
CMU characteristics		Foamed-in-place cores of R-5.9 <u>R-4.6</u> /in ³			Without core insulation	
concrete Density ⁴	concrete Resistivity ⁵	core pours ⁶ at 96" o.c.	core pours at 48" o.c.	all cores poured	core pours at 96" o.c.	core pours at 48" o.c.
85	0.291	7.92 <u>9.09</u>	6.06 <u>7.03</u>	1.93	1.80	1.71

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95	0.246	6.97 <u>8.00</u>	5.39 <u>6.30</u>	1.79	1.67	1.58
105	0.207	6.12 <u>7.00</u>	4.79 <u>5.61</u>	1.67	1.55	1.47
115	0.175	5.37 <u>6.04</u>	4.26 <u>4.95</u>	1.56	1.44	1.36
125	0.147	4.70 <u>5.25</u>	3.77 <u>4.38</u>	1.46	1.35	1.27
135	0.124	4.10 <u>4.51</u>	3.34 <u>3.84</u>	1.37	1.26	1.18

Table Notes:

1. R-Values exclude indoor and outdoor air film resistances of 0.68 and 0.17 respectively.
2. CMU dimensions are nominal. Subtract 3/8" mortar joint for actual. Each CMU has 3 each 1" web thicknesses and 2 each 1-1/4" face thickness.
3. Characteristic resistivity of ~~Spray polyurethane foamed in place insulation pre-expanded injectable foam-in-place insulation.~~
4. Concrete density units are pounds per cubic foot (lb/ft³).
5. Concrete resistivity is R-value per inch of thickness (h·ft²·°F/Btu·in).
6. Concrete density for core pours is 140 lb/ft³ with a resistivity of 0.114 h·ft²·°F/Btu·in.
7. ~~CMU dimensions are nominal. Subtract 3/8" mortar joint for actual. Each CMU has 3 each 1-1/8" web thicknesses and 2 each 1-1/4" face thickness.~~