

COMcheck™ Frequently Asked Questions for Metal Building Systems



U-Factors

Q: Why didn't anything change for the U-factor when I increased the R-value?

A: For pre-approved assemblies, COMcheck™ doesn't give additional credit for R-values above certain limits. You should have seen a "pop-up" alert that notified you of this situation. The message might have been something like, "For Metal Building, Standing Seam: Liner System with Thermal Blocks assemblies, ASHRAE Standard 90.1-2019 does not give additional credit for cavity R-values above R-47." U-factors for metal building roof and wall assemblies can be found in ASHRAE Standard 90.1-2019 Tables A2.3.3 (roofs) and A3.2.3 (walls).

Q: Where can I get U-factors for pre-approved assemblies?

A: Normative Appendix A in ASHRAE Standard 90.1-2019 has tables and other information regarding R-values and equivalent assembly U-factors for a wide variety of metal building roof and wall assemblies. Metal building assemblies are found in Tables A2.3.3 and A3.2.3. Other

construction types' roof and wall assemblies, found in other Normative Appendix A tables, can also be used. A proprietary system that is tested in accordance with ASTM C1363 (Hot Box Test) or thermally modeled can be used. Refer to ASHRAE Standard 90.1-2019 Normative Appendix A9 for requirements for all "alternative U-factors." When using such a system, use the "Other U-Factor Option" tab in COMcheck™ and insert the U-factor. A pop-up will advise you to supply the data of the U-factor used.

Q: If I enter the U-factors from Normative Appendix A from ASHRAE Standard 90.1, do I need anything more for the building official?

A: Normative Appendix A is part of the standard and therefore does not require a request for alternative means and methods to use the contents to demonstrate compliance. It will be helpful for the code official to reference the particular table or section and the specific year edition of ASHRAE Standard 90.1 as the source of the U-factors. Another option is to select an applicable system type from the drop-down menu and enter the nominal R-value for the assembly, then the building official knows that it came from

the pre-published tables (and limits possible errors), e.g., enter Liner System with R-47 in the Insulation R-value column for R-25 + R-11 + R-11 Liner System.

Continuous Insulation, Thermal Spacer Blocks, Thermal Break Strips

Q: Do I have to use continuous insulation (c.i.) to comply with the International Energy Conservation Code (IECC)?

A: It depends. If you are seeking to comply with the specific prescriptive R-value requirements in the 2021 IECC and c.i. is present in the prescriptive requirements, then “Yes.” If you are seeking to comply with the specific U-factor requirements in the 2021 IECC, then you only have to use continuous insulation if the selected metal building assembly requires continuous insulation for the applicable U-factor.

Q: Do Insulated Metal Panels (IMPs) satisfy the prescriptive continuous insulation (c.i.) requirement?

A: IMPs do not qualify as c.i. because the metal return side-joinery, located at the IMP joints that returns into the insulation, creates a “break” in the continuity of the insulation and a partial thermal bridge. IMPs are not recognized as cladding prior to the ASHRAE Standard 90.1-2022 edition.

However, IMPs can be associated with roof or wall categories to demonstrate compliance by using “Other, U-Factor Option” selections and supplying the U-factor information provided by the IMP manufacturer.

Q: Do thermal spacer blocks satisfy the prescriptive continuous insulation (c.i.) requirement?

A: No, because the thermal spacer blocks are not continuous across the entire assembly; installation of continuous rigid board insulation is typically the best method for satisfying the c.i. requirement.

Q: Do I have to use thermal spacer blocks or thermal break strip to comply with the IECC?

A: If you are seeking to comply with the specific prescriptive R-value requirements in the 2021 IECC, then “Yes.” If you are seeking to comply with the specific U-factor requirements in the 2021 IECC, then you only have to use thermal spacer blocks or thermal break strip if the selected assembly requires them for the applicable U-factor.

Doors, Windows and Other Openings

Q: Do I have to enter doors and windows individually or is there a more efficient method to input doors and windows?

Common door types and common window types can be “grouped” together and entered by total square feet for each individual wall surface.

Q: How do I input “louvers”?

A: Louvers are generally considered to be uninsulated areas. However, there is an allowance for up to 1% of wall area in “recessed equipment” in walls in ASHRAE Standard 90.1-2019.



Q: I don't know what kinds of windows or doors are going to be used for my building yet. What do I do?

A: You can either use the unlabeled (code default) values in the 2021 IECC or ASHRAE Standard 90.1-2019 Normative Appendix Sections A7 and A8, or you can make conservative assumptions as to the types of windows and doors that will be installed. Code defaults assume very low performing windows and doors and can cause the design to fail compliance. It is best to get actual data from the manufacturers.

Roof Type

Q: Do I have to use a Standing Seam Roof (SSR) to comply with the IECC?

A: If you are seeking to comply with the specific prescriptive R-value requirements in the 2021 IECC, then "Yes". However, any assembly that has a satisfactory U-factor complies. Alternatively, some assemblies with U-factors less than the maximum may work if using trade-offs.

Q: Is there any way for a through-fastened roof system to comply with the energy code?

A: A screwed down roof in ASHRAE is defined as a through-fastened roof. Depending on the climate zone, and whether the building is conditioned or semi-heated, there are insulation systems, such as continuous insulation and liner system assemblies, that can meet the code based on published U-factors in ASHRAE Standard 90.1-2019 Table A2.3.3. In some cases, COMcheck™ will allow a through-fastened roof to pass by installing additional insulation in the walls. Other proprietary systems are available, which have U-factors determined by testing that equal or exceed the code requirements.



COMcheck™ Qualifications

Q: What are the requirements for submitting a COMcheck™ Compliance Certificate?

A: COMcheck™ can be performed by any qualified person, but the report may need to be signed by a registered design professional according to the jurisdiction. See Section C103.3, Examination of Documents, of the 2021 IECC.

Code Requirements, Building Classification, Other

Q: My building is located in a region not listed in the COMcheck™ drop-down menu. What do I do?

A: You should follow the adopted code in effect for that area or region. According to COMcheck™, choose a city, town or region that is the closest within the same Climate Zone. Call the authority having jurisdiction to verify the requirements.

Q: I'm adding onto an existing building that met an older edition of the energy code. What code do I use for the addition?

A: The adopted code in effect will have provisions as to how to handle the addition to, or alteration of, an existing building envelope. Both the



2021 IECC and ASHRAE Standard 90.1-2019 have specific provisions to address additions, alterations and even repairs.

Q: Does my warehouse/shop area need to meet the same requirements as my office area?

A: No, not necessarily. Each use space is considered a different conditioned space that must comply with the requirements of the particular space. For example, while the office area may be defined as a conditioned space, the warehouse might qualify as a semi-heated space if there is no air conditioning and the heating system is less than the lower limit for a conditioned space but more than the limit for an unconditioned space. See ASHRAE Standard 90.1-2019 Table 3.2 Heated Space Criteria.

Q: Is a “Barndominium” a residence or a commercial building?

A: A barndominium is a term that combines the terms “barn” and “condominium” and describes barn construction being used for any occupancy other than agriculture. It is a marketing term not found in most energy, building or residential codes. One should refer to the adopted codes in effect, or contact the authority having jurisdiction, to verify the occupancy type for that building or the space within.

Q: Can a building that has some air conditioning in it also be classified as a semi-heated building?

A: No, the presence of air conditioning would deem the building to be a conditioned space even if the heating system qualifies as a semi-heated space.

Q: My COMcheck™ run keeps saying my design “Fails.” What is the best place to focus my attention to achieve compliance?

A: We suggest looking on the right-hand side of the “Envelope Assemblies” table of the COMcheck™ report for those items where the “Proposed U-Factor” is significantly higher than the “Budget U-Factor”. The items with the largest difference are the best places to focus on changes in the building envelope energy conservation system. Another possibility is to consider insulating the slab-on-grade floor.

Answers are based on the 2021 IECC and ASHRAE Standard 90.1-2019, unless otherwise noted. Since the language of the codes and standards varies between editions, check the referenced sections in the applicable edition for your project.



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