

## Prescriptive U-Factor Minimum Requirements by United States Climate Zone for Framed Construction Walls

**TABLE 1 – METAL (STEEL) FRAME**

Climate Zone	1	2	2	3,4*,5,6	7	7	8	8
Occupancy Classification	ALL	ALL except R	R	ALL	ALL except R	R	ALL except R	R
Maximum U-Factor	0.077	0.077	0.064	0.064	0.064	0.052	0.064	0.045
Insulation Example	R-13+ R-5	R-13+ R-5	R-13+ R-7.5	R-13+ R-7.5	R-13+ R-7.5	R-13+ R-15.6	R-13+ R-7.5	R-13+ R-17.5

\*Climate Zone 4 includes Marine areas

**TABLE 2 – WOOD FRAME**

Climate Zone	1,2,3	4 other than 4 Marine	4 Marine, 5	4 Marine, 5	6,7	8
Occupancy Classification	ALL	ALL	ALL except R	R	ALL	ALL
Maximum U-Factor	.064	.064	.064	.064	.051	.036
Insulation Example	R-13 + R-3.8 or R-20	R-13 + R-3.8 or R-20	R-13 + R-3.8 or R-20	R-13 + R-7.5 or R-20+R-3.8	R-13 + R-7.5 or R-20+R-3.8	R-13 + R-15.6 or R-20+R-10

Information for buildings located in the State of California is contained in *WCC Document 1.002, Prescriptive U-Factor Minimum Requirements by Climate Zone for Framed Construction in California*.<sup>i</sup>

The U-Factor values in Tables 1 and 2 are from Table C402.1.4 of the *2018 International Energy Conservation Code (IECC)*. Climate Zones are identified in Section C301 of the IECC.<sup>ii</sup>

Group R occupancy classifications as used in the IECC are established by the *International Building Code (IBC)*, as modified by the local authority having jurisdiction, and defined in the IECC as follows:

“Group R – Buildings or portions of buildings that contain any of the following occupancies as established in the International Building Code:

1. Group R-1
2. Group R-2 where located more than three stories in height above grade plane.
3. Group R-4 where located more than three stories in height above grade plane.”<sup>iii</sup>

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Steel and wood frame information is applicable to above-grade walls in commercial construction only. Metal (steel) framing is based on nominal 6-in., 18-gauge studs spaced 16 in. on center.

The insulation examples are suggested combinations of cavity insulation (first figure) and continuous insulation (second figure). Both figures shown are R-values; for example, R13+5 is a combination of R13 cavity insulation and R5 continuous insulation.

Other combinations of cavity and continuous insulation can be used to achieve compliance with IECC requirements. Insulation combinations should be verified for code compliance prior to installation.

Note that in 2015, language was added to the IECC permitting the U-factor for steel frame walls to be calculated. The calculation formula can be found in Section C402.1.4.1. of the 2018 IECC.

General information on Energy Code adoptions can be obtained from maps published by the International Code Council at: <https://www.iccsafe.org/about/overview/international-code-adoptions/>

<sup>i</sup> Document 1.002, *Prescriptive U-Factor Minimum Requirements by Climate Zone for Framed Construction in California*, Wall and Ceiling Conference, 2019, [www.wccinfo.org](http://www.wccinfo.org)

<sup>ii</sup> *2018 International Energy Conservation Code*, International Code Council, Country Club Hills, IL, 2017, [www.iccsafe.org](http://www.iccsafe.org)

<sup>iii</sup> *2018 International Building Code*, International Code Council, Country Club Hills, IL, 2017, [www.iccsafe.org](http://www.iccsafe.org). The definition of Group R in the 2018 IECC is contained in Chapter 2 of the document.