



SIP No. 2081

Subject: IECC Insulation U-Factor Requirements

Date: September 2013

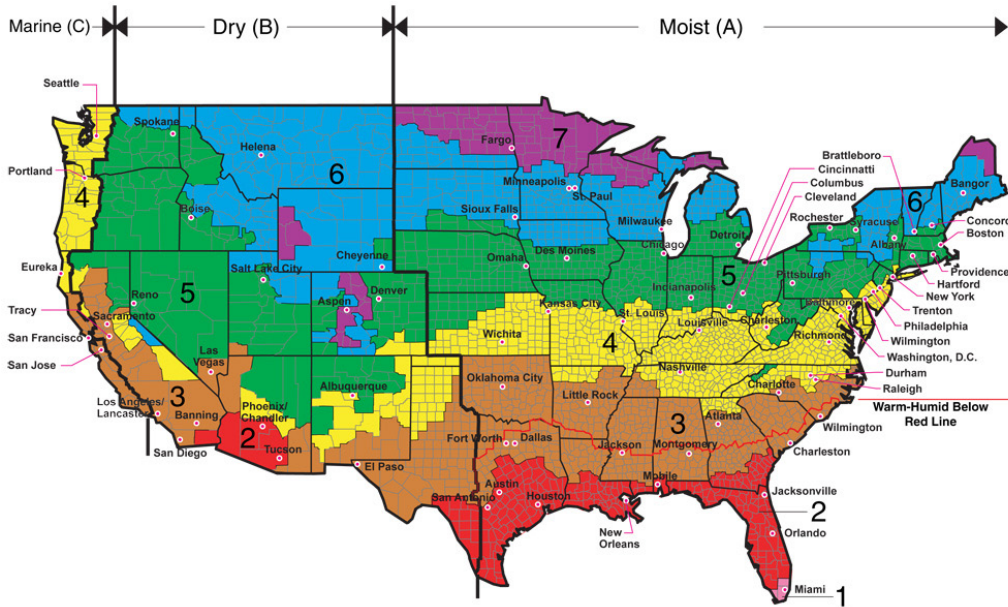
R-Control SIPs are a versatile construction material used as walls and ceilings/roofs of buildings. R-Control SIPs provide both structural capacity and insulation for building envelopes. R-Control SIPs are available in a wide range of thicknesses to ensure that building owners are able to meet the most advanced energy code requirements, such as those published by the International Code Council (ICC). This bulletin provides a summary of the prescriptive *U*-factor requirements of the 2012 edition of International Energy Conservation Code (IECC) published by ICC. Please refer to the 2012 IECC for detailed information.

The IECC is a leading energy code that is applicable to both commercial and residential buildings and is often adopted as a code requirement at the State level. State adoption of IECC may also be to the prior versions of the IECC issued in 2006 and 2009.

The tables within this bulletin provide the *U*-factor requirements of 2012 IECC Table R402.1.3 (residential) and Table C402.1.2 (commercial) and demonstrates which R-Control SIP thickness meets or exceeds the requirements. The *U*-factor is the rate of heat transfer per unit area and per unit temperature difference and the units are BTU/hr•ft²•°F. The lower the *U*-factor, the greater the resistance to heat flow. *U*-factors equal to or less than that specified in the tables are permitted as an alternative to the R-value requirements of the 2012 IECC Table R402.1.1 or Table C402.1.2.

Alternative paths for conformance through comparison to 2012 IECC “R-value Tables” and detailed analysis are also available within the standard. R-Control recommends that the *U*-factor path be followed since this accounts most appropriately for the insulation performance of SIPs in comparison to lumber framing with traditional insulations.

Climate Zones



All of Alaska in Zone 7 except for the following Boroughs in Zone 8: Bethel, Dellingham, Fairbanks, N. Star, Nome North Slope, Northwest Arctic, Southeast Fairbanks, Wade Hampton, and Yukon-Koyukuk
Zone 1 includes: Hawaii, Guam, Puerto Rico, and the Virgin Islands

| 2012 IECC Table R402.1.3 Equivalent U-Factors Residential Walls | | | | | | | |
|--|---------------------------------|----------------------------|---------|--------|---------|--------|---------|
| Zone | Wood-Framed Wall Requirement | R-Control SIP ¹ | | | | | |
| | | 4-1/2" | Comply? | 6-1/2" | Comply? | 8-1/4" | Comply? |
| 1 | 0.082 | 0.058 | Yes | 0.040 | Yes | 0.032 | Yes |
| 2 | 0.082 | 0.058 | Yes | 0.040 | Yes | 0.032 | Yes |
| 3 | 0.057 | 0.058 | No | 0.040 | Yes | 0.032 | Yes |
| 4 | 0.057 | 0.058 | No | 0.040 | Yes | 0.032 | Yes |
| 5 | 0.057 | 0.058 | No | 0.040 | Yes | 0.032 | Yes |
| 6 | 0.048 | 0.058 | No | 0.040 | Yes | 0.032 | Yes |
| 7 | 0.048 | 0.058 | No | 0.040 | Yes | 0.032 | Yes |
| 8 | 0.048 | 0.058 | No | 0.040 | Yes | 0.032 | Yes |

¹ R-Control SIP U-Factors include inside air film, 1/2" gypsum wallboard, R-Control SIP, wood siding, and outside air film.

| 2012 IECC Table R402.1.3 Equivalent U-Factors Residential Roof/Ceilings | | | | | | | |
|--|-----------------------------|----------------------------|---------|---------|---------|---------|---------|
| Zone | Roof/Ceiling Requirement | R-Control SIP ¹ | | | | | |
| | | 8-1/4" | Comply? | 10-1/4" | Comply? | 12-1/4" | Comply? |
| 1 | 0.035 | 0.032 | Yes | 0.026 | Yes | 0.022 | Yes |
| 2 | 0.030 | 0.032 | No | 0.026 | Yes | 0.022 | Yes |
| 3 | 0.030 | 0.032 | No | 0.026 | Yes | 0.022 | Yes |
| 4 | 0.026 | 0.032 | No | 0.026 | Yes | 0.022 | Yes |
| 5 | 0.026 | 0.032 | No | 0.026 | Yes | 0.022 | Yes |
| 6 | 0.026 | 0.032 | No | 0.026 | Yes | 0.022 | Yes |
| 7 | 0.026 | 0.032 | No | 0.026 | Yes | 0.022 | Yes |
| 8 | 0.026 | 0.032 | No | 0.026 | Yes | 0.022 | Yes |

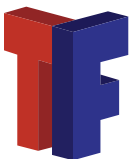
¹ R-Control SIP U-Factors include inside air film, 1/2" gypsum wallboard, R-Control SIP, asphalt shingles, and outside air film.

| 2012 IECC Table C402.1.2 Equivalent U-Factors Commercial Walls | | | | | | | |
|---|---------------------------------|----------------------------|---------|--------|---------|--------|---------|
| Zone | Wood-Framed Wall Requirement | R-Control SIP ¹ | | | | | |
| | | 4-1/2" | Comply? | 6-1/2" | Comply? | 8-1/4" | Comply? |
| 1 | 0.064 | 0.058 | Yes | 0.040 | Yes | 0.032 | Yes |
| 2 | 0.064 | 0.058 | Yes | 0.040 | Yes | 0.032 | Yes |
| 3 | 0.064 | 0.058 | Yes | 0.040 | Yes | 0.032 | Yes |
| 4 | 0.064 | 0.058 | Yes | 0.040 | Yes | 0.032 | Yes |
| 5 | 0.064 | 0.058 | Yes | 0.040 | Yes | 0.032 | Yes |
| 6 | 0.051 | 0.058 | No | 0.040 | Yes | 0.032 | Yes |
| 7 | 0.051 | 0.058 | No | 0.040 | Yes | 0.032 | Yes |
| 8 | 0.036 | 0.058 | No | 0.040 | No | 0.032 | Yes |

¹ R-Control SIP U-Factors include inside air film, 1/2" gypsum wallboard, R-Control SIP, wood siding, and outside air film.

| 2012 IECC Table C402.1.2 Equivalent U-Factors Commercial Roof/Ceilings | | | | | | | |
|---|-----------------------------|----------------------------|---------|---------|---------|---------|---------|
| Zone | Roof/Ceiling Requirement | R-Control SIP ¹ | | | | | |
| | | 8-1/4" | Comply? | 10-1/4" | Comply? | 12-1/4" | Comply? |
| 1 | 0.048 | 0.032 | Yes | 0.026 | Yes | 0.022 | Yes |
| 2 | 0.048 | 0.032 | Yes | 0.026 | Yes | 0.022 | Yes |
| 3 | 0.048 | 0.032 | Yes | 0.026 | Yes | 0.022 | Yes |
| 4 | 0.039 | 0.032 | Yes | 0.026 | Yes | 0.022 | Yes |
| 5 | 0.039 | 0.032 | Yes | 0.026 | Yes | 0.022 | Yes |
| 6 | 0.032 | 0.032 | Yes | 0.026 | Yes | 0.022 | Yes |
| 7 | 0.028 | 0.032 | No | 0.026 | Yes | 0.022 | Yes |
| 8 | 0.028 | 0.032 | No | 0.026 | Yes | 0.022 | Yes |

¹ R-Control SIP U-Factors include inside air film, 1/2" gypsum wallboard, R-Control SIP, asphalt shingles, and outside air film.



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