Energy Codes: R30 Insulation in the Roof

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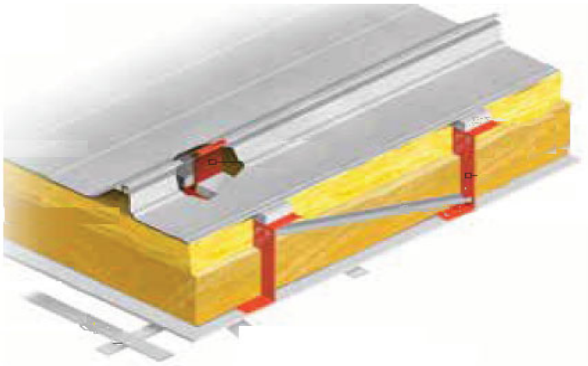
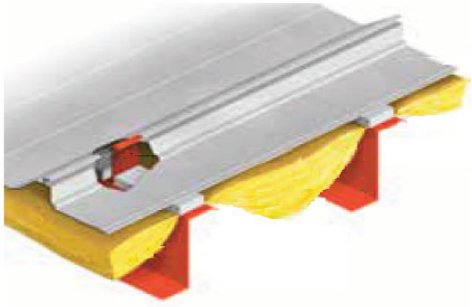
Energy standards ASHRAE 90.1 2010 and IECC 2009 (and earlier editions) require a U Factor of 0.049 for metal building roofs for conditioned buildings in climate zones 6 and 7. That can be achieved by using a double layer R-13 + R-19 system that is prescribed in the standards. Alternatively, Kirby Building Systems has completed testing and Finite Element Analysis (FEA) modeling to document the performance of our standing seam roof system utilizing R30 insulation with 1 ½" thermal blocks. This assembly achieved a U Factor of 0.047 by using a single layer of insulation across the purlin.

Please be advised that there is a difference in "R30 Roof Systems". R30 roof insulation can be used in a variety of different roof systems. Each system has a different thermal performance. An R19+R11 Filled Cavity Liner System is very common today. The R19 insulation is used to fill the cavity between the purlins. The R11 insulation is draped over the purins and is compressed at the purlins and expands between the purlins. A Single Layer system drapes all of the insulation over the purlins and the insulation expands between the purlins. Each system has its place. Please make sure you know what is meant when a "R30 Roof System" is specified. The R30 Single layer system has a system U Factor of 0.047. IECC 2012 and later specifies a R19+R11 LS U Factor to be 0.035.

Please verify with your local building official that your project is in the correct climate zone and the necessary energy code has been specified. In addition, the R30 single layer system may be part of the project specificatons, in which case code compliance should be addressed by the project specifier.



R19+R11 Filled Cavity Liner System



Single Layer Across Purlin

For a copy of the FEA report and a path to compliance that describes how to submit the test data please visit the KBS ToolBox app. Select Builder Resources/Energy Solutions/Articles and White Papers or call the Energy Hotline 1-844-682-6724.